

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

PQ LLC,)	
)	
Petitioner,)	
)	
v.)	PCB 2023-015
)	(Permit Appeal - Air)
ILLINOIS ENVIRONMENTAL PROTECTION)	
AGENCY,)	
)	
Respondent.)	

NOTICE OF ELECTRONIC FILING

To: *See Attached Service List*

PLEASE TAKE NOTICE that on the 17th of November, 2022, I caused to be filed with the Office of the Clerk of the Illinois Pollution Control Board by electronic filing: (1) the Respondent’s Certificate of Record on Appeal with Index, a copy of which is attached hereto and (2) the Record on Appeal, a copy of which is provided through a File Transfer Protocol. The Certificate of Record on Appeal with Index and the Record on Appeal are hereby served upon you.

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

/s/ Arlene R. Haas
Arlene R. Haas
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Environmental Bureau
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CERTIFICATE OF SERVICE

I, Arlene R. Haas, an Assistant Attorney General, hereby certify that on the 17th day of November, 2022, I caused to be served the foregoing Notice of Electronic Filing and Respondent's Certificate of Record on Appeal with Index and Record on Appeal upon the parties named on the attached Service List, via e-mail and record by file transfer link.

/s/ Arlene R. Haas

Arlene R. Haas
Assistant Attorney General
Environmental Bureau
Office of the Illinois Attorney General
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Chicago, IL 60602
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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

PQ LLC)	
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AGENCY,)	
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CERTIFICATE OF RECORD ON APPEAL WITH INDEX

Respondent, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY ("Illinois EPA"), in accordance with the procedural rules of the Illinois Pollution Control Board as set forth in 35 Ill. Adm. Code 105.212 and 105.116, files as its Record on Appeal in this cause the Illinois EPA's record of Construction Permit No. 21110013, issued to PQ LLC ("PQ") on June 13, 2022, that consists of the following documents as set out in the index below:

Category 1: Any emails and attachments,¹ including correspondence with Petitioner

PAGES	DOCUMENT	DATE
R 000001	Email from DoNotReply.EJRequest@illinois.gov to Bob Smet (Illinois Environmental Protection Agency ("IEPA")), Cassandra Metz (IEPA), Brad Frost (IEPA), Chris Pressnall (IEPA), Cynthia Sanchez (IEPA), Alane Herr (IEPA)re: request for environmental justice ("EJ") review	9-Nov-2021
R 000002	Email thread between Chloe Reece (Trinity Consultants) and Bob Smet re: confirmation of public notice/comment requirement	9-Nov-2021
R 000003 - 000004	Email thread between Bob Smet and Chloe Reece re: public notice requirement and fees	10-Nov-2021

¹ Certain company and agency logos were identified on emails as jpg attachments when the emails were converted to PDFs. Illinois EPA is not providing these as attachments given they are not real attachments.

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000005 - 000007	Email thread between Cynthia Sanchez and Bob Smet re: copy of EJ public notice; Attachment: EJ public notice letter from Chris Pressnal 10-Nov-2021	10-Nov-2021
R 000008 - 000015	Email from Bob Smet to Chloe Reece re: draft PQ, LLC ("PQ")) construction permit, Application No. 21110013 ("Construction Permit"); Attachment: 9-Nov-2021 draft Construction Permit with comments	15-Nov-2021
R 000016	Email from Bob Smet to David Ogulei (United States Environmental Protection Agency ("USEPA"))re: adding PQ project to New Source Review ("NSR") list	18-Nov-2021
R 000017	Email from David Ogulei to Bob Smet re: adding PQ to the NSR List	18-Nov-2021
R 000018	Email from Bob Smet to Chloe Reece re: status of PQ's draft Construction Permit review	3-Dec-2021
R 000019	Email thread between Chloe Reece, Bob Smet, and Mark Skowron (PQ), LLC ("PQ")) re: PQ's review of draft Construction Permit	3-Dec-2021
R 000020 - 000021	Email thread between Bob Smet, Chloe Reece, and Mark Skowron re: PQ's review of draft permit	6-Dec-2021
R 000022 - 000024	Email thread between Bob Smet, Chloe Reece, and Mark Skowron re: review of draft Construction Permit	15-Dec-2021
R 000025 - 000027	Email thread between Bob Smet, Chloe Reece, and Mark Skowron re: review of draft Construction Permit	15-Dec-2021
R 000028 - 000032	Email from Bob Smet to Chloe Reece and Mark Skowron re: draft Construction Permit project summary ("Project Summary") and request for input; Attachment: 30-Nov-2021 draft project summary	15-Dec-2021
R 000033 - 000039	Email from Bob Smet to Chloe Reece and Mark Skowron re: revised draft Construction Permit; Attachment: 13-Dec-2021 revised draft Construction Permit	21-Dec-2021
R 000040	Email from Mark Skowron to Bob Smet re: Revised draft Construction Permit: out of office reply	21-Dec-2021
R 000041 - 000042	Email from Chloe Reece to Bob Smet and Mark Skowron re: revised draft Construction Permit and Condition 4(a)	21-Dec-2021
R 000043	Email from Bob Smet to Chloe Reece re: status of draft Construction Permit & Project Summary review	5-Jan-2022
R 000044	Email from Chloe Reece to Bob Smet re: status of draft Construction Permit & Project Summary review	7-Jan-2022

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000045	Email from Bob Smet to Chloe Reece re: request for waiver of review period	20-Jan-2022
R 000046 - 000047	Email thread between Chloe Reece, Bob Smet, and Mark Skowron re: request for review deadline waiver	21-Jan-2022
R 000048 - 000049	Email thread between Chloe Reece, Bob Smet, and Mark Skowron re: request for review deadline waiver	21-Jan-2022
R 000050	Email from Mark Skowron to Bob Smet re: requesting waiver of review deadline	24-Jan-2022
R 000051	Email from Ken Schute (PQ) to Bob Smet, Mark Skowron, and Chloe Reece re: PQ waiving permit 90-day review deadline	24-Jan-2022
R 000052	Email from Bob Smet to Trent Nation (IEPA) re: updating IEPA Bureau of Air's ("BOA") emission inventory database, ICEMAN with 90-day review deadline waiver	24-Jan-2022
R 000053 - 000054	Email from Trent Nation to Bob Smet re: updating ICEMAN with 90-day review deadline waiver	24-Jan-2022
R 000055	Email from Bob Smet to Chloe Reece re: meeting with PQ	1-Feb-2022
R 000056 - 000058	Email thread between Bob Smet, Mark Skowron, Chloe Reece, Ken Schulte, and Paige Pryse (PQ) re: PQ review update and questions re furnace capacity	2-Feb-2022
R 000059 - 000067A	Email thread between Mark Skowron, Bob Smet, Chloe Reece, Ken Schulte, and Paige Pryse thread re: permit review waiver and questions re furnace capacity; Attachment: PQ LLC 2009 construction permit 4-Dec-2009	3-Feb-2022
R 000068 - 000082	Email from Bob Smet to Chloe Reece and Mark Skowron re: next round of draft Construction Permit and Project Summary; Attachments: 2-Feb-2022 draft Construction Permit with comments and 2-Feb-2022 draft Project Summary with comments	4-Feb-2022
R 000083	Email from Mark Skowron to Bob Smet and Chloe Reece re: response to next versions of draft Construction Permit & Project Summary	4-Feb-2022

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000084	Email from Chloe Reece to Bob Smet, Jason Schnepf (IEPA), Paige Pryse, and Mark Skowron re: proposing call about latest draft Construction Permit	9-Feb-2022
R 000085 - 000086	Email thread between Chloe Reece, Bob Smet, Jason Schnepf, Paige Pryse, and Mark Skowron re: scheduling a call to discuss draft permit conditions	10-Feb-2022
R 000087 - 000089	Email thread between Jason Schnepf, Bob Smet, Chloe Reece, Paige Pryse, and Mark Skowron re: scheduling a call to discuss draft Construction Permit with PQ	10-Feb-2022
R 000090	Email from Bob Smet to Chloe Reece re: PQ Furnace Discussion: Outlook acceptance	10-Feb-2022
R 000091	Email from Bob Smet to Kevin Mattison (IEPA) and Jason Schnepf re: seeking input re emission requirements and stack test vs performance standard	15-Feb-2022
R 000092	Email thread between Bob Smet and David Ogulie re: adding PQ to NSR list	15-Feb-2022
R 000093	Email thread between David Ogulei and Bob Smet re: PQ location to add to NSR List	15-Feb-2022
R 000094	Email from Bob Smet to Mark Skowron, Chloe Reece, and Jason Schnepf re: furnace and decision to add nitrogen oxide ("NOx") continuous emission monitoring system ("CEMS") requirement	16-Feb-2022
R 000095 - 000097	Email thread between Kevin Mattison, Bob Smet, and Jason Schnepf re: decision to add CEMS requirement	17-Feb-2022
R 000098	Email from Bob Smet to Chloe Reece, and Mark Skowron re: request for comments and waiver	23-Feb-2022
R 000099	Email thread between Mark Skowron, Bob Smet, Chloe Reece, Jennie Houle (PQ), Ken Schulte, and Paige Pryse re: request for comments and waiver	25-Feb-2022
R 000100 - 000101	Email thread between Bob Smet, Mark Skowron, Chloe Reece, Jennie Houle, Paige Pryse, and Ken Schulte re: request for comments and waiver	25-Feb-2022

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000102 - 000109	Email thread between Bob Smet, Chloe Reece, and Mark Skowron re: next version of draft Construction Permit and draft Project Summary; Attachment 2-Feb-2022 draft Project Summary with comments	4-Mar-2022
R 000110 - 000112	Email thread between Mark Skowron, Chloe Reece, Bob Smet, and Jennie Houle re: next version of draft Construction Permit with CEMS requirement	4-Mar-2022
R 000113	Email from Bob Smet to Chloe Reece and Mark Skowron re: request for comments on Project Summary & new waiver	7-Mar-2022
R 000114	Email from Jason Schnepf to Bob Smet re: forwarding email thread re: review period waiver	9-Mar-2022
R 000115 - 000116	Email thread between Jason Schnepf, Chloe Reece, and Bob Smet re: Project Summary and waiver	10-Mar-2022
R 000117 - 000118	Email thread between Chloe Reece, Jason Schnepf, and Bob Smet re: Project Summary and review deadline waiver	10-Mar-2022
R 000119 - 000129	Email from Jason Schnepf to Bob Smet re: edits to comments on draft Construction Permit; Attachment: 11-Mar-2022 draft Construction Permit with comments	11-Mar-2022
R 000130 - 000140	Email from Jason Schnepf to Kevin Mattison and Bob Smet re: forwarding edits to comments on draft Construction Permit and requesting input on monitoring and testing; Attachment: 11-Mar-2022 draft Construction Permit with comments	11-Mar-2022
R 000141 - 000152	Email from Kevin Mattison to Jason Schnepf and Bob Smet re: reply with comments on draft Construction Permit; Attachment: 12-Mar-2022 draft Construction Permit with comments	12-Mar-2022
R 000153 - 000163	Email from Bob Smet to Chloe Reece and Mark Skowron re: latest version of draft Construction Permit with changes based on comments; Attachment: 14-Mar-2022 draft Construction Permit with changes based on comments from Jason Schnepf and Kevin Mattison	14-Mar-2022

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R 000164 - 000168	Email thread between Mark Skowron, Jason Schnepf, Bob Smet, Chloe Reece, Jennie Houle, Lou Henderson (PQ), and Paige Pryse re: next version of draft Construction Permit with changes based on comments	21-Mar-2022
R 000169 - 000173	Email thread between Jason Schnepf, Mark Skowron, Bob Smet, Chloe Reece, Jennie Houle, Lou Henderson, and Paige Pryse re: scheduling a call to discuss next version of Draft Permit with changes	21-Mar-2022
R 000174	Email from Bob Smet to Mark Skowron re: PQ LLC Joliet draft Construction Permit: Outlook acceptance	21-Mar-2022
R 000175 - 000180	Email thread between Mark Skowron, Jason Schnepf, and Bob Smet re: scheduling a call to discuss next version of Draft Permit with changes	25-Mar-2022
R 000181	Email from Bob Smet to Paige Pryse re: Joliet Construction Permit meeting: outlook acceptance	25-Mar-2022
R 000182	Email from Paige Pryse to Bob Smet re: Joliet Construction Permit meeting: automatic reply (out of office)	25-Mar-2022
R 000183 - 000193	Email from Bob Smet to Chloe Reece and Mark Skowron re: next version of draft Construction Permit and follow up on CEMS requirement; Attachment: 6-Apr-2022 draft Construction Permit with comments	6-Apr-2022
R 000194	Email from Bob Smet to Chloe Reece and Mark Skowron re: request for comments on latest draft of the Construction Permit	13-Apr-2022
R 000195	Email from Mark Skowron to Bob Smet, Chloe Reece, Jennie Houle, Lou Henderson, Paige Pryse, and Ken Schulte re: response to request for comments on latest draft of the Construction Permit	15-Apr-2022
R 000196 - 000207	Email from Mark Skowron to Bob Smet, Chloe Reece, Jennie Houle, Ken Schulte, Lou Henderson, and Paige Pryse re: sending draft Construction Permit comments; Attachment: 18-Apr-2022 draft Construction Permit with comments	18-Apr-2022
R 000208	Email from Bob Smet to Chloe Reece re: request for NOx emissions data	19-Apr-2022

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R 000209 - 000212	Email thread between Chloe Reece, Bob Smet, and Mark Skowron re: request for NOx emissions data; Attachment: PQ Joilet Facility Fusing Furnace NOx Emissions 2017-18 Table	19-Apr-2022
R 000213 - 000215	Email thread between Bob Smet, Chloe Reece, and Mark Skowron re: request for NOx emissions data	20-Apr-2022
R 000216 - 000217	Email from Bob Smet to Kevin Mattison re: suggested language for CEMS requirement	21-Apr-2022
R 000218 - 000231	Email from Bob Smet to Chole Reece and Mark Skowron re: Construction Permit public notice ("Public Notice"); Attachment: 28-Apr-2022 draft Construction Permit	28-Apr-2022
R 000232	Email from Chloe Reece to Bob Smet and Mark Skowron re: scheduling PQ-IEPA call	28-Apr-2022
R 000233 - 000234	Email thread between Chloe Reece, Bob Smet, Mark Skowron re: setting up PQ-IEPA call	2-May-2022
R 000235 - 000236	Email thread between Bob Smet, Chloe Reece, Mark Skowron, Jason Schnepf re: scheduling PQ-IEPA call	2-May-2022
R 000237	From Bob Smet to Jason Schnepf, Chloe Reece, Mark Skowron, Ken Schulte, Paige Pryse, and Jennie Houle re: Outlook invite: PQ call	2-May-2022
R 000238	Email from Paige Pryse to Bob Smet: PQ Call: Outlook acceptance	2-May-2022
R 000239 - 000244	Email from Bob Smet to Cassandra Metz re: draft Project Summary for Public Notice; Attachment: 2-May-2022 draft Project Summary	2-May-2022
R 000245	Email from Jason Schnepf to Bob Smet re: PQ Call: Outlook acceptance	2-May-2022
R 000246 - 000247	Email from Bob Smet to Jason Schnepf re: proposed changes to Public Notice; Attachment: draft Public Notice	2-May-2022
R 000248	Email from Jason Schnepf to Bob Smet re: comments on draft Public Notice	2-May-2022
R 000249 - 000250	Email thread between Bob Smet and Cassandra Metz re: revised Public Notice; Attachment: draft Public Notice	2-May-2022

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R 000251	Email from Mark Skowron to Bob Smet, Chloe Reece, Jennie Houle, Ken Schulte, Lou Henderson, Paige Pryse Follow-up re: CO, SO2, VOM emission rates	3-May-2022
R 000252 - 000268	Email from Bob Smet to David Ogulei re: draft Construction Permit and Project Summary for USEPA comment; Attachments: 3-May-2022 draft Construction Permit and draft Project Summary	3-May-2022
R 000269	Email from Lou Henderson to Bob Smet re: Draft Construction Permit - emission rates follow up: out of office reply	3-May-2022
R 000270	Email from Bob Smet to Jason Schnepf, Chloe Reece, Mark Skowron, Ken Schulte, Paige Pryse, and Jennie Houle re: PQ Call: canceled	3-May-2022
R 000271 - 000382	Email from Bob Smet to David Ogulei re: sending PQ Construction Permit related documents; Attachment: Construction Permit Application - Furnace Rebuild Project PQ LLC - Joliet Plant -CAAPP Permit No. 96030053- Facility ID No. 197045ABO ("Construction Permit Application") and PQ Joilet Facility Fusing Furnace NOx Emissions 2017-18 Table	3-May-2022
R 000383 - 000384	Email thread between Jason Schnepf, Bob Smet, Mark Skowron, Chloe Reece, Jennie Houle, Lou Henderson, Paige Pryse, and Ken Schulte re: emission rates follow-up and USEPA review	3-May-2022
R 000385 - 000386	Email thread between Jason Schnepf, and Bob Smet re: final review before public notice and comment period	3-May-2022
R 000387 - 000388	Email from Bob Smet to Jason Schnepf re: sending PQ EJ Clearance Memo; Attachment: PQ EJ Clearance Memo	4-May-2022
R 000389	Email from Bob Smet to Mark Skowron and Chloe Reece re: timing of CEMS installation	4-May-2022
R 000390	Email from Bob Smet to Mark Skowron, and Chloe Reece re: request for waiver	5-May-2022
R 000391	Email Mark Skowron to Bob Smet and Chloe Reece re: request for waiver	5-May-2022
R 000392	Email from Bob Smet to Mark Skowron re: CEMS and public notice/comment	5-May-2022

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000393 - 000406	Email from Ken Schulte to Bob Smet, Jason Schnep, Paige Pryse, Mark Skowron, Jennie Houle, Lou Henderson, Chloe Reece re: waiver and draft Construction Permit comments; Attachment: 6-May-2022 PQ comments on draft Construction Permit	6-May-2022
R 000407 - 000420	Email Bob Smet to Trent Nation and Jason Schnep re: updating ICEMAN with review period waiver & FW of PQ comments on Draft Construction Permit; Attachment: 6-May-2022 draft Construction Permit with comments	6-May-2022
R 000421 - 000423	Email thread between Trent Nation, Bob Smet, and Jason Schnep re: final waiver and PQ comments on Draft Construction Permit	6-May-2022
R 000424	Email from Bob Smet to Sabrina Bailey (IEPA) and Jason Schnep re: EJ Indicator Analysis request	6-May-2022
R 000425	Email from Mark Skowron to Bob Smet re: Public Notice requirements	6-May-2022
R 000426	Email thread between Bob Smet and Mark Skowron re: Public Notice	6-May-2022
R 000427 - 000428	Email thread between Mark Skowron and Bob Smet re: Public Notice	6-May-2022
R 000429	Email from Genevieve Damico (USEPA) to Bob Smet re: PQ draft permit and project summary: out of office reply	6-May-2022
R 000430 - 000441	Email from Bob Smet to Mark Skowron and Chloe Reece re: USEPA comments on draft Construction Permit; Attachment: 3-May-2022 draft Construction Permit with comments	6-May-2022
R 000442 - 000444	Email from Sabrina Bailey (IEPA) to Bob Smet and Jason Schnep re: PQ EJ Indicator Analysis; Attachment: EJ Indicator Analysis for PQ LLC	9-May-2022
R 000445 - 000446	Email thread between David Ogulei, Bob Smet, Jason Schnep, Danny Marcus (USEPA), Daniel Wolski (USEPA), and Genevieve Damico re: PQ draft Construction Permit and request for comments	9-May-2022

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000447 - 000448	Email thread between Bob Smet, David Ogulei, Jason Schnepf, Danny Marcus, Daniel Wolski, and Genevieve Damico re: USEPA providing comments on Draft Permit and draft Project Summary	9-May-2022
R 000449 - 000451	Email from Jason Schnepf to Julie Armitage (IEPA), Bill Marr (IEPA), and Bob Smet re: EJ Clearance Memo; Attachments: 9-May-2022 EJ Clearance Memo and 9-May-2022 EJ Indicator Analysis	9-May-2022
R 000452	Email from Bob Smet to Mark Skowron re: Follow up on draft Construction Permit revisions	10-May-2022
R 000453 - 000457	Email thread between Kevin Mattison and Bob Smet re: monitoring language for draft Construction Permit	11-May-2022
R 000458 - 000482	Email thread between Mark Skowron, Bob Smet, Chloe Reece, Jason Schnepf, Jennie Houle, Lou Henderson, Paige Pryse, Ken Schulte re: draft Construction Permit comments; Attachments: 6-Apr-2022 draft Construction Permit with comments and 3-May-2022 draft Construction Permit with comments	11-May-2022
R 000483 - 000494	Email from Bob Smet to David Ogulei re: sending revised draft Construction Permit; Attachment: 13-May-2022 revised draft Construction Permit	12-May-2022
R 000495	Email from Bob Smet to Chloe Reece and Mark Skowron re: request for calendar year production data	12-May-2022
R 000496 - 000555	Email thread between David Ogulei, Bob Smet, and Jason Schnepf re: revised draft Construction Permit; Attachment of email thread between David Ogulei, Danny Marcus, Daniel Wolski, Brad Frost, Bill Marr, Michael Reed (IEPA), Ryan McSweeney (IEPA)with attachments re: PQ Clean Air Act Permit Program ("CAAPP") Minor Modification Permit; Attachment: PQ CAAPP Minor Modification Permit Application; Attachment: PQ CAAPP Minor Modification Permit Application	12-May-2022
R 000556 - 000557	Email thread between Bob Smet, Mark Skowron, Chloe Reece, Jennie Houle, Ken Schulte, Lou Henderson, Paige Pryse, and Jason Schnepf re: production and emissions data	12-May-2022
R 000558	Email from Paige Pryse to Bob Smet re: out of office reply to email thread on production and emissions data	12-May-2022

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000559 - 000560	Email thread between Mark Skowron, Bob Smet, Chloe Reece, Jennie Houle, Ken Schulte, Lou Henderson, Paige Pryse, and Jason Schnepf re: production and emissions data	12-May-2022
R 000561 - 000562	Email thread Bob Smet, David Ogulei, Danny Marcus, Daniel Wolski, and Jason Schnepf re: revised draft Construction Permit and production data	12-May-2022
R 000563 - 000574	Email from Bob Smet to Mark Skowron and Chloe Reese re: revised draft Construction Permit and public notice and comment; Attachment: 13-May-2022 revised draft Construction Permit	12-May-2022
R 000575	Email from Bob Smet to Mark Skowron and Chloe Reece re: request for comments	13-May-2022
R 000576 - 000577	Email thread between Bob Smet, Mark Skowron, and Chloe Reece re: status of PQ review before public notice	13-May-2022
R 000578 - 000579	Email thread between Cassandra Metz and Bob Smet re: documents needed for public notice	13-May-2022
R 000580 - 000591	Email thread between Mark Skowron, Bob Smet, Chloe Reece, Jennie Houle, Ken Schulte, Lou Henderson, and Paige Pryse re: comments on Draft Construction Permit and Project Summary; Attachment: 13-May-2022 draft Construction Permit with comments	13-May-2022
R 000592 - 000603	Email from Bob Smet to Cassandra Metz re: sending draft Construction Permit; Attachment: 13-May-2022 draft Construction Permit	13-May-2022
R 000604 - 000605	Email from Cassandra Metz to Representative of different states: Kristin Hart (WI DNR), J. Brush (IN IDEM), Kendall Hale (MO DNR), James Morse (KY), Rex Lane (MI), Sarah Piziali (IA DNR), Brad Frost (IEPA) re: Construction Permit Public Notice; Attachment: 13-May-2022 Construction Permit Public Notice	13-May-2022
R 000606	Email from Bob Smet to Bob Smet re: Outlook Invite: PQ Readiness (meeting organizer)	13-May-2022
R 000607 - 000608	Email thread between Bob Smet and Cassandra Metz re: publishing of Public Notice	2-Jun-2022

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000609	Email from DoNotReply.EJRequest@illinois.gov to Cassandra Metz, Brad Frost, Chris Pressnall, Cynthia Sanchez, Alane Herr, and Bob Smet re: request for EJ release	6-Jun-2022
R 000610	Email from DoNotReply.EJRequest@illinois.gov to Cassandra Metz, Brad Frost, Chris Pressnall, Cynthia Sanchez, Alane Herr, and Bob Smet re: EJ outreach status	6-Jun-2022
R 000611 - 000612	Email from Mark Skowron to Bob Smet, Chloe Reece, Jennie Houle, Ken Schulte, Lou Henderson, and Paige Pryse re: checking on public comments	9-Jun-2022
R 000613	Email from Bob Smet to Cassandra Metz re: public comments on Construction Permit	9-Jun-2022
R 000614 - 000615	Email thread between Bob Smet, Mark Skowron, Chloe Reece, Ken Schulte, Jennie Houle, Lou Henderson, and Paige Pryse re: public comments	9-Jun-2022
R 000616	Email from Bob Smet to Bob Smet re: PQ Readiness: Canceled	10-Jun-2022
R 000617 - 000619	Email thread between Cassandra Metz and Bob Smet re: comments on Public Notice and official response; Attachment:13-Jun-2022 Public Notice Mailing List	13-Jun-2022
R 000620 - 000630	Email from Bob Smet to Trent Nation: final permit for formatting and issuance; Attachment: 13-Jun-2022 Construction Permit After Comment	13-Jun-2022
R 000631 - 000641	Email thread between Trent Nation and Bob Smet re: formatting Final Construction Permit; Attachment: 13-Jun-2022 Final Construction Permit	13-Jun-2022
R 000642 - 000643	Email thread between Jason Schnepf, Marlisha Walton (IEPA), Bob Smet, and Ana Barrientos (IEPA) re: BOA 6/13 Weekly Report	13-Jun-2022
R 000644 - 000654	Email from Bob Smet to Ken Schulte, Mark Skowron, and Chloe Reece re: Final Issued Permit; Attachment: 13-Jun-2022 PQ Construction Permit	13-Jun-2022
R 000655 - 000665	Email from Bob Smet to Cassandra Metz and Jason Schnepf re: PQ issued Construction Permit; Attachment: 13-Jun-2022 PQ Construction Permit	13-Jun-2022

Category 2: Construction permit application

PAGES	DOCUMENT	DATE
R 000666 - 000775	Construction Permit Application from Ken Schulte to Bill Marr	28-Oct-2021
R 000776	PQ LLC Joliet 2017 2018 Furnace Air Emissions 041922.xlsx	1-Apr-2022

Category 3: Construction permit drafts

PAGES	DOCUMENT	DATE
R 000777 - 000783	Draft Construction Permit with comments	9-Nov-2021
R 000784 - 000789	Draft Construction Permit with comments	2-Dec-2021
R 000790 - 000798	Draft Construction Permit with comments, including PQ comments	10-Dec-2021
R 000799 - 000804	Draft Construction Permit with 1-Feb-2022 comments on 31-Dec-2021 draft, including PQ comments	1-Feb-2022
R 000805 - 000813	Draft Construction Permit with comments	2-Feb-2022
R 000814 - 000822	Draft Construction Permit with comments	17-Feb-2022
R 000823 - 000831	Draft Construction Permit with 1-Mar-2022 comments on 17-Feb-2022 draft, including PQ comments	1-Mar-2022
R 000832 - 000840	Draft Construction Permit with comments	3-Mar-2022
R 000841 - 000850	Draft Construction Permit with comments	11-Mar-2022
R 000851 - 000860	Draft Construction Permit with comments	14-Mar-2022
R 000861 - 000870	Draft Construction Permit with comments	6-Apr-2022
R 000871 - 000881	Draft Construction Permit with 18-Apr-2022 comments on 6-Apr-2022 draft, including PQ comments	18-Apr-2022
R 000882 - 000893	Draft Construction Permit with comments, including PQ comments	19-Apr-2022
R 000894 - 000905	Draft Construction Permit with comments	21-Apr-2022
R 000906 - 000917	Draft Construction Permit with 6-May-2022 comments on 21-Apr-2022 draft, including PQ comments	6-May-2022
R 000918 - 000928	Draft Construction Permit with comments	13-May-2022
R 000929 - 000939	Draft Construction Permit	13-May-2022
R 000940 - 000950	Draft Construction Permit with comments, including PQ comments	13-May-2022
R 000951 - 000961	Construction Permit Master for Public Notice	1-Jun-2022

Electronic Filing: Received, Clerk's Office 11/17/2022*

R 000962 - 000971	Construction Permit Master After Comment	13-Jun-2022
R 000972 - 000981	Construction Permit Final	13-Jun-2022

Category 4: USEPA comments on construction permit drafts

PAGES	DOCUMENT	DATE
R 000982 - 000992	Draft Construction Permit - Furnace #2 Rebuild Project ("Draft Construction Permit") with comments of D. Ogulei and J. Schnepf	3-May-2022
R 000993 - 001003	Draft Construction Permit with comments of D. Ogulei, USEPA and R. Smet, IEPA	13-May-2022

Category 5: Public notice drafts

PAGES	DOCUMENT	DATE
R 001004	Draft Notice of Public Comment Period for Proposed Issuance of Construction Permit	Unknown
R 001005	Revised Notice of Public Comment Period for Proposed Issuance of Construction Permit	Unknown

Category 6: Project summary drafts

PAGES	DOCUMENT	DATE
R 001006 - 001009	Project Summary for an Application from PQ Corporation for a Construction Permit ("Project Summary") draft with comments	30-Nov-2021
R 001010 - 001014	Project Summary draft with 1-Feb-2022 comments on 30-Nov-2021 draft	1-Feb-2022
R 001015 - 001019	Project Summary draft w/comments	2-Feb-2022
R 001020 - 001024	Project Summary draft with 9-Mar-2022 comments on 2-Feb-2022 draft	9-Mar-2022
R 001025 - 001029	Project Summary draft with comments	10-Mar-2022
R 001030 - 001034	Project Summary draft with comments	14-Mar-2022
R 001035 - 001039	Project Summary draft	13-May-2022

Category 7: Miscellaneous information the Agency relied upon in making its final decision

PAGES	DOCUMENT	DATE
R 001040	Environmental Justice Clearance Memo	4-May-2022
R 001041 - 001042	PQ Calculation Sheet	13-Jun-2022

Illinois EPA is not withholding any documents constituting this Record on Appeal as protected by privilege. However, any inadvertent disclosure of any information or documents that are protected by the attorney-client privilege, the work product doctrine, or any other privilege, doctrine or legal theory protecting information from discovery is not to be deemed a waiver of any such privilege or protection.

I, Robert Smet, of the Illinois Environmental Protection Agency hereby certify that the documents of the Record on Appeal filed in the above-referenced matter and summarized in the above Index are complete to the best of my knowledge, information, and belief.

By



Robert Smet
Permit Analyst, DAPC/Permits Section
Bureau of Air
Illinois Environmental Protection Agency

From: DoNotReply.EJRequest@illinois.gov
To: [Smet, Robert](#); [Metz, Cassandra](#); [Frost, Brad](#); [Pressnall, Chris](#); [Sanchez, Cynthia L.](#); [Herr, Alane](#); [Smet, Robert](#)
Subject: Request for EJ Review for PQ Corp | 197045ABO | 21110013 | Air
Date: Tuesday, November 9, 2021 9:28:45 AM

A new request has been submitted to the EJ Outreach database.

Source Name: PQ Corp

Activity/Subactivity Type: Permit / Construction

Decision Due Date: 12/29/2021

Reviewer - When the permit is ready to be issued, [click this link](#) to view the request. When viewing the request, click the button labeled 'Ready for issuance' to mark the record for EJ Release.

From: [Chloe Reece](#)
To: [Smet, Robert](#)
Subject: [External] RE: PQ
Date: Tuesday, November 9, 2021 3:17:34 PM

Bob –

Thanks for checking in.

I did discuss this with PQ previously, but we didn't discuss it again right before submitting the application. I've gotten in touch with Mark Skowron from PQ, who said he'll get back to me tomorrow.

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, November 09, 2021 10:24 AM
To: Chloe Reece <CRreece@trinityconsultants.com>
Subject: PQ

Hi Chloe,

I have been assigned the permit application for PQ's furnace rebuild project. The increase in NOx emissions will be over 20 tpy (as well as aggregated emissions).

Just to be clear, is PQ clear that the draft will need to go out for public comment?

Thanks.

Bob

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

From: [Smet, Robert](#)
To: [Chloe Reece](#)
Subject: RE: PQ
Date: Wednesday, November 10, 2021 8:22:00 AM

Also, could you double-check the fees? I believe PQ is underpaying.

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Tuesday, November 9, 2021 3:17 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: [External] RE: PQ

Bob –

Thanks for checking in.

I did discuss this with PQ previously, but we didn't discuss it again right before submitting the application. I've gotten in touch with Mark Skowron from PQ, who said he'll get back to me tomorrow.

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

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Just to be clear, is PQ clear that the draft will need to go out for public comment?

Thanks.

Bob

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From: [Sanchez, Cynthia L.](#)
To: [Smet, Robert](#)
Subject: FW: Environmental Justice Notification: PQ Corp, Joliet
Date: Wednesday, November 10, 2021 10:44:59 AM
Attachments: [PQ Corp 197045ABO 21110013.pdf](#)

For your records.

Liz Sanchez

Environmental Justice Intern
Illinois Environmental Protection Agency

From: Sanchez, Cynthia L. <Cynthia.Sanchez@Illinois.gov>
Sent: Wednesday, November 10, 2021 10:44 AM
To: Pressnall, Chris <Chris.Pressnall@Illinois.gov>; Sanchez, Cynthia L. <Cynthia.Sanchez@Illinois.gov>
Cc: Herr, Alane <Alane.Herr@Illinois.gov>
Subject: Environmental Justice Notification: PQ Corp, Joliet

Hello,

Thank you for electing to receive e-notifications.

Please find the attached Environmental Justice Notification Letter and Distribution List for **PQ Corp**; Reference **#21110013**.

The facility is located at **111 Ingalls Avenue** in **Joliet**.

Sincerely,

Liz Sanchez

Environmental Justice Intern
Illinois Environmental Protection Agency

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.



November 10, 2021

Re: PQ Corp (Illinois EPA BOA ID# 197045ABO)
Construction Permit (21110013)

To Distribution List:

In accordance with the Illinois EPA's Environmental Justice Policy, the Office of Environmental Justice wants to provide you with information about a potential action. The Illinois EPA is sending this letter to notify you of an application received by the Bureau of Air (BOA).

The Illinois EPA has received an application for a Construction Permit for PQ Corp located at 111 Ingalls Avenue in Joliet. The application requests a partial rebuild of sodium silicate (fusing furnace #2), comprised of replacing burners and associated burner control systems, changes to firing configuration and increasing the furnace's volume.

The application is currently under review by the BOA. Prior to issuance, the draft Construction Permit will undergo a public notice and comment period. When the public notice and comment period begins, the Bureau of Air will make available the public notice materials, including a draft permit and project summary. Those resources will be located here:

<https://www2.illinois.gov/epa/public-notices/boa-notices/Pages/default.aspx>.

If you are receiving paper notifications and would like to sign up to receive notifications by email instead, please visit the Illinois EPA Environmental Justice webpage:

<https://www2.illinois.gov/epa/topics/environmental-justice/Pages/EJ-Notice-Sign-up.aspx>

If you have questions about the application, please contact Chris Pressnall, Environmental Justice Coordinator at (217) 524-1284, chris.pressnall@illinois.gov.

Sincerely,

Chris Pressnall
Environmental Justice Coordinator

Distribution List

PQ Corp

State Senato John Connor - State Senate District #43

State Representative Lawrence Walsh, Jr. - State Representative District #86

U.S. Representative Bill Foster - U.S. Congressional District #11

U.S. Senator Richard J. Durbin*

U.S. Senator Tammy Duckworth*

City of Joliet – Bob O’Dekirk, Mayor*

City of Joliet – City Council

Will County Board*

Joliet Branch NAACP - Mike Clark*

Illinois NAACP – Teresa Haley*

Illinois NAACP – Gregory Norris*

American Lung Association of Illinois – Angela Tin*

Respiratory Health Association - Brian P. Urbaszewski*

Sierra Club – Jack Darin*

Sierra Club – Christine Nannicelli*

Sierra Club – Mila Marshall*

Prairie Rivers Network – Elliot Brinkman*

Faith in Place – Rev. Brian Sauder*

Illinois Environmental Regulatory Group – Alec Davis*

Chemical Industry Council of Illinois – Lisa Frede*

United States EPA – Kathy Triantafillou*

IL Manufacturers' Association - Donovan Griffith*

Chicago Legal Clinic – Keith Harley*

CPI - Natalie Warkentien*

Natural Resource Defense Council – Ivan Moreno*

Illinois Dept. of Transportation – John Sherrill*

Brian A Voss – Gold Wave, Inc.

Shawnee Hills & Hollers – Georgia de la Garza*

Shawnee Hills & Hollers – Sabrina Hardenbergh*

Illinois Environmental Council – Jennifer Walling*

LVEJO – Juliana Pino*

Environmental Law & Policy Center – Jeffrey Hammons*

Environmental Law & Policy Center – Kiana Courtney*

Illinois Farm Bureau – Lauren Lurkins*

ComEd – Kareena Wasserman*

Earthjustice – Jennifer Cassel*

Earthjustice – Debbie Chizewer*

Northwestern Pritzker School of Law – Nancy Loeb*

Great Rivers Environmental Law Center – Sarah Rubenstein*

Will County Environmental Network - Mary Baskerville*

Exxon Mobil - Brad Sims*

Citizens Against Ruining the Environment (CARE)*

Village of New Lenox - Keith McKeen*

City of Joliet - Allison Swisher*

***Receiving E-Notifications**

From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com)
Subject: PQ Draft Permit
Date: Monday, November 15, 2021 10:34:00 AM
Attachments: [21110013_110921.doc](#)

Hi Chloe,

I've attached the draft permit for PQ. It needs a little work, mainly in bulking up discussion of the fusing feed, material transfer and whether we need to change operating limits relative to what already applies. There are questions to answer and minor blanks to fill in. Straightforward stuff.

We still have to settle whether they want to go out for PC or not and the fee issue is still to be resolved.

No rush here.

Thanks.

Bob

issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

- b. The affected fusing furnace, affected [redacted] and affected [redacted], are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

Commented [SR6]: Fusing feed

Commented [SR7]: Transfer.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx and VOM of the affected furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the increase in NOx, CO, PM, PM₁₀/PM_{2.5} and SO₂ emissions of the affected furnace are less than significant, i.e., less than 40, 100, 25, 15/10 and 40 tons per year, respectively. See Attachment 2 for a summary of emissions increases for purposes of PSD.

Operational limits, e.g., firing rates

Commented [SR8]: Does Condition 2(a) address these operating limits or are new requirements that will supersede the limits in the CAAPP permit?

4. Emission Limits

- a. i. Annual emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit		
	Lb/Ton	Tons/Month	Tons/Year
NOx	4.5	11.0	109.6
CO	1.9	4.6	45.5
VOM	0.24	0.6	5.8
PM/PM ₁₀ /PM _{2.5}	0.56	1.4	13.4
SO ₂	0.24	0.6	5.8

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- ii. Emissions of PM/PM₁₀/PM_{2.5} from the affected solid sodium silicate transfer system shall not exceed 0.0054 lb/ton and 0.65 tons/year.

Page 3

iii. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected **fusing feed**, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

b. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Project Recordkeeping Requirements

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for fuel usage, sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

6. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

7. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Evaluation of the Aggregate NOx and VOM Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx	VOM
Fusing Furnace #2 ^b	2021	24.09	5.8
Contemporaneous Increases			
None	2019	0.94	??
Contemporaneous Decreases			
None	2019	1.13	??
Net Emissions Change:		23.9	??
De Minimis Threshold:		25	25
De Minimis?		Yes	Yes

Commented [SR9]: Will need 5-year history for VOM.

Commented [SR10]: Same.

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2021) and the previous four calendar years (calendar years 2017 through 2020).
- b. Project emission changes only address the changes to the furnace as the affected material handling operations would not emit NOx or VOM.

Attachment 2: Summary of Emissions Increases for Purposes of PSD^a (Tons/Year)

Affected Units	NOx	CO	PM ^b	PM ₁₀ ^c /PM _{2.5} ^c	SO ₂
Fusing Furnace #2 ^d	109.63	45.48	13.40	13.40	5.79
Sodium Silicate Transfers ^e	---	---	0.65	0.65	---
Fusing Feed ^e	---	---	0.12	0.12	---
Tanks T-110 & T-111 ^e	---	---	0.01	0.01	---
Totals:	109.63	45.48	14.18	14.18	5.79
Significant Emission Rate:	40				
Greater Than Significant?	Yes				

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- a. **Since the source is not a major source under PSD**
- b. PM emissions include the filterable component only.
- c. PM₁₀/PM_{2.5} emissions include filterable and condensable components.
- d. As an existing emission unit, these emissions are based on projected actual emissions.
- e. As a new emission unit, these emissions are based on potential to emit.

Page 5

Attachment 3: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx	CO	PM	PM ₁₀ /PM _{2.5}	SO ₂
Increases					
Projected Actuals ^a	109.63	45.48	13.40	13.40	5.79
PTE ^b	---	---	0.77	0.77	---
Decreases					
Baseline Actuals ^c	85.54	32.32	9.65	9.57	5.12
Net Change:	24.09	13.16	4.60	4.60	0.67

- a. Reflects emissions from the modified furnace.
b. Reflects emissions from new units, i.e., fusing feed, sodium silicate transfers and tanks T-110 and T-111.
c. The baseline actual emissions of the plant's emissions were determined as the annual average of the actual emissions of the plant for the 24-month period of _____.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: ["Ogulei.David@epa.gov"](mailto:Ogulei.David@epa.gov)
Subject: Add to the NSR List
Date: Thursday, November 18, 2021 8:58:00 AM

I got some resolution with the company consultant verifying that they want the increase in NOx emissions such that it will necessitate public notice, so here is another project to add to the NSR list:

PQ Corporation (Joliet, Will County). PQ operates a sodium silicate glass manufacturing plant in Joliet. They are seeking to rebuild their sodium silicate furnace #2, which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. It is also expected that sodium silicate glass production will increase above current rates of production, and NOx emissions will be just less than 25 tpy after subtracting out their baseline actuals.

From: [Ogulei, David](#)
To: [Smet, Robert](#)
Subject: [External] RE: Add to the NSR List
Date: Thursday, November 18, 2021 9:14:40 AM

Ok. Thanks.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, November 18, 2021 8:58 AM
To: Ogulei, David <Ogulei.David@epa.gov>
Subject: Add to the NSR List

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From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com)
Subject: PQ - Just Checking In
Date: Friday, December 3, 2021 12:44:00 PM

Hi Chloe,

I'm just checking in to see how your review of the PQ draft permit is progressing. No rush here. Once we square that away, the project summary is up next.

Thinking ahead, will PQ be able to find any reductions in permitted emissions from elsewhere at the facility?

Thanks.

Bob

From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: [External] RE: PQ - Just Checking In
Date: Friday, December 3, 2021 2:02:24 PM

Bob –

Mark Skowron and I have both reviewed the permit, added comments/edits, and discussed a few items amongst ourselves. I need to make a few more tweaks based on the call that I had with Mark earlier this week, and then send the file back to him for a final review. I'm planning to do that still this afternoon, but I think he is tied up today. I would think you'll have the draft from us early next week.

The project itself is a reduction in permitted emissions (although an increase in actuals). Does that help?

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, December 03, 2021 12:44 PM
To: Chloe Reece <CReece@trinityconsultants.com>
Subject: PQ - Just Checking In

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From: [Smet, Robert](#)
To: [Chloe Reece](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: RE: PQ - Just Checking In
Date: Monday, December 6, 2021 9:18:00 AM

I'd like to think so. Thanks.

From: Chloe Reece <CRreece@trinityconsultants.com>
Sent: Friday, December 3, 2021 2:02 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: PQ - Just Checking In

Bob –

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Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, December 03, 2021 12:44 PM
To: Chloe Reece <CRreece@trinityconsultants.com>
Subject: PQ - Just Checking In

Hi Chloe,

I'm just checking in to see how your review of the PQ draft permit is progressing. No rush here. Once we square that away, the project summary is up next.

Thinking ahead, will PQ be able to find any reductions in permitted emissions from elsewhere at the facility?

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Chloe Reece](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: RE: PQ Draft Permit
Date: Wednesday, December 15, 2021 8:39:00 AM

Thanks for the corrections and clarifications. Apparently, I just can't get PSD out of my head.

Jason is on vacation and will not be back until next week. Due to other pressing matters, it may be a little while before he gets to it.

The project summary is up next.

From: Chloe Reece <CRreece@trinityconsultants.com>
Sent: Tuesday, December 14, 2021 5:05 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: PQ Draft Permit

Bob –

Thanks for the status update.

In response to your questions:

1. Only the PSD rules allow projected actuals, not 35 IAC 203 for NA-NSR/MSSCAM. Because we needed to use PTE for VOM and NOx, it was easiest/most straight-forward to use that approach for all pollutants. (Less to have to calculate for the application, less to have to explain in the application, and you never have to worry that your projection was wrong.)
2. We used calendar years 2017 and 2018 as the baseline for all pollutants/all emission units (although you are correct that NOx is the pollutant for which we came closest to triggering something). This is discussed in Section 3.2 of the permit application text.

Please let us know of any other follow-up questions. Do you have a prediction as to when we might see another draft, or is it too soon to tell?

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, December 14, 2021 12:26 PM
To: Chloe Reece <CRreece@trinityconsultants.com>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: PQ Draft Permit

Hi Chloe,

I acted upon most of your comments and made changes accordingly, but I would like to focus on the last attachment. Since I think we will need this attachment, can you provide answers to the following?:

1. Since PQ is modifying existing equipment, why use PTE and not projected actuals?
2. What were the 24 months for the baseline actuals calculation for NOx increases?

Thanks.

Bob

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Friday, December 10, 2021 4:23 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: PQ Draft Permit

Bob –

Thanks for sending us your working draft of the construction permit for PQ's Joliet Furnace Rebuild project. (And we appreciate that you gave us plenty of time to reply, given the Thanksgiving holiday!)

Attached is a marked up draft in which we have responded to your requests for additional details on the emissions units/process, and have also provided other comments/corrections. Please let us know if it would be helpful to schedule a call to discuss.

As noted in previous emails, PQ understands that public notice will be required and this is fine. Please let us know if there are still questions on the permit application fee. I think once you see the additional details provided on existing, insignificant units being affected by the project (not any new units), our calculation of the application fee will make more sense.

We would appreciate a 2nd draft to review before the permit goes to public notice, given that there is quite a bit marked up in this first draft, including emissions tables that need updating.

Many Thanks,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Monday, November 15, 2021 10:34 AM
To: Chloe Reece <CReece@trinityconsultants.com>
Subject: PQ Draft Permit

Hi Chloe,

I've attached the draft permit for PQ. It needs a little work, mainly in bulking up discussion of the fusing feed, material transfer and whether we need to change operating limits relative to what already applies. There are questions to answer and minor blanks to fill in. Straightforward stuff.

We still have to settle whether they want to go out for PC or not and the fee issue is still to be resolved.

No rush here.

Thanks.

Bob

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From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: [External] RE: PQ Draft Permit
Date: Wednesday, December 15, 2021 8:50:05 AM

Thanks for the update, Bob!

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, December 15, 2021 8:40 AM
To: Chloe Reece <CRreece@trinityconsultants.com>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: PQ Draft Permit

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Subject: RE: PQ Draft Permit

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Sent: Friday, December 10, 2021 4:23 PM
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Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: PQ Draft Permit

Bob –

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Chloe

Chloe Reece
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P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

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Sent: Monday, November 15, 2021 10:34 AM
To: Chloe Reece <CReece@trinityconsultants.com>
Subject: PQ Draft Permit

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From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: Project Summary
Date: Wednesday, December 15, 2021 11:44:00 AM
Attachments: [PQ Joliet PS 113021.docx](#)

Hi Chloe,

I've attached the draft project summary. The key area where I will need your major input is section II, the background/description of the sodium silicate production process as conducted at the source. I'm hoping any suggested changes to the rest of the project summary's language are minor.

Just in time for the holidays!

Thanks.

Bob

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ Corporation for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: January XYZ, 2022
Public Comment Period Closes: February XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ Corporation (PQ) has requested a construction permit for a rebuild of its glass furnace (Furnace 2), and other associated equipment at its sodium silicate glass manufacturing plant in Joliet.

The key rebuilding changes to equipment that PQ is seeking to the furnace are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate glass at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. In 1961, PQ installed Furnace 2 with a design capacity of ~~xy~~ tons of sodium silicate per day. The furnace uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

In glass furnaces, glass is made by melting and mixing together silica sand, soda ash (sodium carbonate), limestone (calcium carbonate), dolomite (calcium magnesium carbonate), "salt cake" (sodium sulfate), cullet (recycled glass), and other, lesser ingredients. These raw materials arrive at the plant by rail and trucks and are stored in silos.

From the silo, the dry raw materials are mixed in "batches" with the appropriate recipe for the type of glass that is being made. The batches are fed to the melter section of the glass furnace in which the raw materials melt and mix together to make molten glass. From the melter, molten glass flows to the refiner and forehearth where the glass cools to the proper temperature for the forming process. The melter section of a glass furnace is the operation that is of particular concern for emissions because of the high temperatures that are needed in this operation to melt the raw materials.

In the forming process, the stream of molten glass that flows from the forehearth is cut into portions or "gobs." The forming machine converts the individual gobs into glass bottles and containers of the appropriate size and geometry using molds for the exterior of the container. After these bottles and containers are formed, they travel through the hot end surface treatment hood where tin oxide is applied to the exterior surface of the glass to provide resistance to abrasion. The containers are then reheated and slowly cooled to relieve any stresses that may remain in the glass. The exterior of the cooled glass containers is then sprayed with a polyethylene and water solution to reduce surface friction and be suitable for handling by automated equipment. The final step is packaging the finished glass containers.

Commented [SR1]: What is the design capacity?

Commented [SR2]: Can you provide a description of the SS production process as conducted at the plant? What is written here is for a typical glass manufacturing operation. You are welcome to adapt this language to that at the facility.

Commented [SR3]: This paragraph is in red because, in contrast with the green above and below it, it delivers the holiday spirit that only a project summary can provide!

While Furnace 2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners. The permitted annual emissions for all regulated air pollutants from the project were below the thresholds at which the project would have been a major project under the Illinois' rules for Major Stationary Source Construction And Modification (MSSCAM), 35 IAC Part 203.

III. CURRENT REQUEST

The key changes to PQ's operations will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project. The annual increases in emissions will not be significant.

IV. EMISSIONS OF THE PROJECT

The increases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	85.5	109.6	24.1
Carbon Monoxide (CO)	32.3	45.5	13.2
Volatile Organic Material (VOM)	5.1	5.8	0.7
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	9.6	13.4	4.8

Commented [SR4]: This is getting too close to the 25 tpy threshold. How will PQ ensure that the increase will not creep over 25 tpy?
 This is likely to be the stickiest issue re this project & permit.

Sulfur Dioxide (SO ₂)	5.1	5.8	0.7
-----------------------------------	-----	-----	-----

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ is a major source for NO_x emissions under Illinois' MSSCAM rules. The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NO_x emissions would not be significant for purposes of MSSCAM. That is, the emissions of NO_x, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NO_x.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under PSD. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is already required for the furnace to track actual operation. These measures are imposed to assure that the operation and emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

Commented [SR5]: How true (or untrue) is this statement?

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.

From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: Revised PQ Draft Permit
Date: Tuesday, December 21, 2021 10:44:00 AM
Attachments: [21110013 121321.doc](#)

Hi Chloe,

Attached is the revised draft permit for PQ. I accepted most all changes but Condition 4(a) is the one sticking point. We should have some guarantees for the furnace re emission rates. What does PQ propose?

Please provide comments.

Thanks.

Bob

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ Corporation
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. The affected fusing furnace and affected fusing feed are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.
- c. Sodium silicate production of the affected fusing furnace shall not exceed 12,750 lbs/hour and 55,845 tons per year.

4. Emission Limits

- a. i. Emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit		
		Tons/Month	Tons/Year
NOx	4.5	11.0	109.6
CO	1.9	4.6	45.5
VOM	-0.24	0.6	5.8
PM/PM ₁₀ /PM _{2.5}	-0.56	1.4	13.4
SO ₂	-0.24	0.6	5.8

Commented [SR2R1]: These factors provide specific compliance rates for the furnace, no different than for a boiler.

Page 3

ii. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.44 tons of PM/PM₁₀/PM_{2.5}.

b. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Project Recordkeeping Requirements

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

6. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

7. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Page 4

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2021	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2021) and the previous four calendar years (calendar years 2017 through 2020). There was a project in 2018 but no projects in 2017, 2018 or 2020.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Attachment 2: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Furnace ^a	109.63

Baseline Actuals ^b	85.54
Net Change:	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Subject: [External] Automatic reply: Revised PQ Draft Permit
Date: Tuesday, December 21, 2021 10:46:25 AM

I am on vacation and returning to the office on January 4th with limited access to e-mail. Merry Christmas & Happy New Year!

From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: [External] RE: Revised PQ Draft Permit
Date: Tuesday, December 21, 2021 11:31:39 PM

Bob –

Thanks for continuing to make progress on this draft permit. I believe Mark Skowron is out until after the holidays, so I'll have to confer with him about Condition 4(a) in January.

It looks like you made quite a few edits to the permit, so I'll also review those vs. our last set of comments after the holidays.

Thanks again. Happy holidays!
- Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, December 21, 2021 10:45 AM
To: Chloe Reece <CReece@trinityconsultants.com>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: Revised PQ Draft Permit

Hi Chloe,

Attached is the revised draft permit for PQ. I accepted most all changes but Condition 4(a) is the one sticking point. We should have some guarantees for the furnace re emission rates. What does PQ propose?

Please provide comments.

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com)
Subject: PQ Check-In
Date: Wednesday, January 5, 2022 11:19:00 AM

Hi Chloe,

Just checking in. How is the review of the draft permit and project summary coming along?

Thanks.

Bob

From: [Chloe Reece](#)
To: [Smet, Robert](#)
Subject: [External] RE: PQ Check-In
Date: Friday, January 7, 2022 5:25:52 PM

Bob –

I got in touch with Mark Skowron from PQ earlier in the week, but only enough to learn that he came back from PTO and got sick and has been sleeping it off all week. I'll try to connect with him next week about the updated permit documents instead.

Have a good weekend,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, January 05, 2022 11:19 AM
To: Chloe Reece <CReece@trinityconsultants.com>
Subject: PQ Check-In

Hi Chloe,

Just checking in. How is the review of the draft permit and project summary coming along?

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com)
Subject: PQ and a Waiver
Date: Thursday, January 20, 2022 10:32:00 AM

Hi Chloe,

The time in-house for the PQ application has crept up to 73 days old. Would you mind sending in a waiver for review of the application until May 1st? It probably won't take that long to issue but it saves on getting one waiver after another.

How is review of the draft permit and project summary progressing?

Thanks.

Bob

From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: [External] RE: PQ and a Waiver
Date: Friday, January 21, 2022 8:40:30 AM

Bob -

We are just about done marking up the draft permit and project summary. I'll be sending the files back to Mark Skowron this morning, so you should see them in the next few days.

Given the delays on our end for the past month, we certainly appreciate the possible need for a waiver. I'll figure out the exact timing with Mark Skowron. I don't think anything as late as May 1st is necessary (because that is just your deadline for going out to public notice, right? Not for issuing the permit?). PQ would like to be doing the work in May, I believe, so the project manager at PQ would be very nervous if we gave IEPA permission not to go out to public notice until May 1st.

Files to come soon. Have a good weekend.

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, January 20, 2022 10:33 AM
To: Chloe Reece <CReece@trinityconsultants.com>
Subject: PQ and a Waiver

Hi Chloe,

The time in-house for the PQ application has crept up to 73 days old. Would you mind sending in a waiver for review of the application until May 1st? It probably won't take that long to issue but it saves on getting one waiver after another.

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From: [Smet, Robert](#)
To: [Chloe Reece](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: RE: PQ and a Waiver
Date: Friday, January 21, 2022 8:57:00 AM

I see May 1st as the drop dead issuance date, which includes time for public notice & comment, responses to comments (if necessary) plus approval of any collateral emissions reductions. Timing could still get tight.

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Friday, January 21, 2022 8:40 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: PQ and a Waiver

Bob -

We are just about done marking up the draft permit and project summary. I'll be sending the files back to Mark Skowron this morning, so you should see them in the next few days.

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Files to come soon. Have a good weekend.

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, January 20, 2022 10:33 AM
To: Chloe Reece <CReece@trinityconsultants.com>
Subject: PQ and a Waiver

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From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Subject: [External] PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?
Date: Monday, January 24, 2022 3:27:08 PM
Attachments: [image003.jpg](#)

Re: Waiver for review of the application until March 15th?

Bob,

As a follow-up to our call earlier today, would you be amenable to an extension to March 15th?
If need be, we could provide a waiver to extend the review period again – right?

We plan to return Permit draft responses to you this week.

Thanks,
Mark

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig



www.PQCorp.com

From: [Ken Schulte \(Joliet\)](#)
To: [Smet, Robert](#)
Cc: [Mark Skowron \(Joliet\)](#); [Chloe Reece](#)
Subject: [External] PQ LLC Joliet 197045ABO Construction Permit 90-day Review Waiver – Extension to March 15th
Date: Monday, January 24, 2022 3:54:12 PM
Attachments: [image001.jpg](#)

Dear Bob,

As requested, this correspondence serves as a waiver of the IEPA 90-day review period for PQ LLC Joliet 197045ABO and extends the deadline to March 15, 2022.

Please contact Mark Skowron (331-444-8900) or myself if you have any questions.

Thank you,

Ken Schulte

PQ LLC Joliet Site Manager

815-774-2739



From: [Smet, Robert](#)
To: [Nation, Trent](#)
Subject: FW: PQ LLC Joliet 197045ABO Construction Permit 90-day Review Waiver – Extension to March 15th
Date: Monday, January 24, 2022 3:56:00 PM
Attachments: [image001.jpg](#)

Can you update ICEMAN with this waiver? ID 197045ABO PN 21110013.

Thanks.

From: Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>
Sent: Monday, January 24, 2022 3:54 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Chloe Reece <CReece@trinityconsultants.com>
Subject: [External] PQ LLC Joliet 197045ABO Construction Permit 90-day Review Waiver – Extension to March 15th

Dear Bob,

As requested, this correspondence serves as a waiver of the IEPA 90-day review period for PQ LLC Joliet 197045ABO and extends the deadline to **March 15, 2022.**

Please contact Mark Skowron (331-444-8900) or myself if you have any questions.

Thank you,

Ken Schulte

PQ LLC Joliet Site Manager

815-774-2739



From: [Nation, Trent](#)
To: [Smet, Robert](#)
Subject: RE: PQ LLC Joliet 197045ABO Construction Permit 90-day Review Waiver – Extension to March 15th
Date: Monday, January 24, 2022 3:58:18 PM
Attachments: [image001.jpg](#)

This waiver has been entered in ICEMAN.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Monday, January 24, 2022 3:56 PM
To: Nation, Trent <Trent.Nation@Illinois.gov>
Subject: FW: PQ LLC Joliet 197045ABO Construction Permit 90-day Review Waiver – Extension to March 15th

Can you update ICEMAN with this waiver? ID 197045ABO PN 21110013.

Thanks.

From: Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>
Sent: Monday, January 24, 2022 3:54 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Chloe Reece <CReece@trinityconsultants.com>
Subject: [External] PQ LLC Joliet 197045ABO Construction Permit 90-day Review Waiver – Extension to March 15th

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Please contact Mark Skowron (331-444-8900) or myself if you have any questions.

**Thank you,
Ken Schulte
PQ LLC Joliet Site Manager
815-774-2739**



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From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com)
Subject: Unrelated Follow Up
Date: Tuesday, February 1, 2022 10:51:00 AM

We may need to talk PQ at some point. Things are not progressing as well as they should on that one.....

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#)
Cc: [Chloe Reece](#); [Ken Schulte \(Joliet\)](#); [Paige Pryse](#)
Subject: RE: PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?
Date: Wednesday, February 2, 2022 2:16:00 PM
Attachments: [image002.jpg](#)
[image003.jpg](#)

Let me ask this – what are the furnace’s before and after capacity?

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Wednesday, February 2, 2022 2:11 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Chloe Reece <CReece@trinityconsultants.com>; Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>
Subject: [External] RE: PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?

Bob,

As a follow-up to yesterday’s conversation, please see the attached documents:

Thank you,
Mark

PS: I have copied the PQ Plant Manager, Ken Schulte, and the PQ Furnace Technology & Process Engineering Manager, Paige Pryse.

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig



www.PQCorp.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, January 28, 2022 2:54 PM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?

Mark,

There’s been a lot of deadtime with regard to the review of the draft permit and project summary and with a tight schedule, getting them out for public comment will be difficult. Thus, I’m going to need to get your comments back on them both very soon.

With the tight schedule in mind, is PQ willing to keep the increase in NOx emissions to below 20 tpy so as to avoid the public comment period and meet the March 15 deadline?

Being in an EJ area, PQ will also want to consider how NOx emissions at the source can be reduced elsewhere. What are the current NOx allowables for the furnace?

Bob

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>

Sent: Monday, January 24, 2022 3:32 PM

To: Smet, Robert <Robert.Smet@Illinois.gov>

Subject: [External] RE: PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?

Okay – Thanks Bob.

I'll discuss with the PQ LLC Joliet Site Manager.

Mark

331-444-8900

From: Smet, Robert <Robert.Smet@Illinois.gov>

Sent: Monday, January 24, 2022 3:29 PM

To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>

Subject: RE: PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?

Okay for now; may need an additional waiver if we see that issuance will not occur by then.

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>

Sent: Monday, January 24, 2022 3:27 PM

To: Smet, Robert <Robert.Smet@Illinois.gov>

Subject: [External] PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?

Re: Waiver for review of the application until March 15th?

Bob,

As a follow-up to our call earlier today, would you be amenable to an extension to March 15th?

If need be, we could provide a waiver to extend the review period again – right?

We plan to return Permit draft responses to you this week.

Thanks,

Mark

Mark J. Skowron
EHS Liaison

331-444-8900

hse_pq_sig



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Cacaccio, Maria

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Thursday, February 3, 2022 10:57 AM
To: Smet, Robert
Cc: Chloe Reece; Ken Schulte (Joliet); Paige Pryse
Subject: [External] RE: PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?
Attachments: 2009-10-04 Construction Permit NOx burners Furn 2.pdf

Bob,
 As noted in the current CAAPP Permit (#96030053), Condition 4.1.2(g)(i)(C) and the referenced [attached] 2009 IEPA Construction Permit #09090029, Condition 4.c, Furnace #2 production capacity has remained constant at 12,750 lbs/hr and 55,845 tons/year since 2009. We're proposing a reduction in production capacity to 48,281 tons/year as noted in the draft Construction Permit – see screenshot below:

Perhaps it's worth adding in the project summary (PS):

- Pipeline quality natural gas will continue to be the only fuel fired in the Sodium Silicate Manufacturing Furnace (i.e., no fuel oil).
- The maximum firing rate of the Sodium Silicate Manufacturing Furnace will continue to not exceed 32 MMBtu/hour.
- The Permittee will continue to operate the Venturi Scrubber at all times that Sodium Silicate Manufacturing Furnace is in operation.

Also noteworthy is the fact that with the installation of low NOx burners in 2009, the furnace NOx emission rate dropped from 38.0 lb/hr (2008 test) to 21.7 lb/hr (2016 test).

For this project, installation of newer low NOx burners are being proposed – however, to be conservative, no additional NOx reduction is being claimed in the permit application.

Current Construction Permit Draft:

emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

- b. The affected fusing furnace and affected fusing feed are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.
- c. Sodium silicate production of the affected fusing furnace shall not exceed ~~12,750 tons/month and 55,845 tons per year.~~ 4,828 tons/month and 48,281 tons per year.

Markup Area

Chloe Reece Bob - The ol
 Chloe Reece Deleted: 12,75
 Chloe Reece Deleted: 55,84

CAAPP Permit #96030053; 4.1.2

g. i. Operational and Production Requirements

- A. Pursuant to **Construction Permit #09090029**, pipeline quality natural gas shall be the only fuel fired in the Sodium Silicate Manufacturing Furnace. [T1]
- B. Pursuant to **Construction Permit #09090029**, the maximum firing rate of the Sodium Silicate Manufacturing Furnace shall not exceed 32 MMBtu/hour. [T1]
- C. Pursuant to **Construction Permit #09090029**, the maximum sodium silicate production from the Sodium Silicate Manufacturing Furnace shall not exceed 12,750 lbs/hour and 55,845 tons/year. [T1]
- D. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall operate the Venturi Scrubber at all times that Sodium Silicate Manufacturing Furnace is in operation.

Please let us know if you have any other questions.

Thanks,
Mark
331-444-8900

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, February 2, 2022 2:17 PM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Cc: Chloe Reece <CReece@trinityconsultants.com>; Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>
Subject: RE: PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?

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PS: I have copied the PQ Plant Manager, Ken Schulte, and the PQ Furnace Technology & Process Engineering Manager, Paige Pryse.

Mark J. Skowron
EHS Liaison
331-444-8900



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Sent: Friday, January 28, 2022 2:54 PM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
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Mark
331-444-8900

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Sent: Monday, January 24, 2022 3:27 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: [External] PQ LLC Joliet 197045ABO Construction Permit Review Waiver - March 15th?

Re: Waiver for review of the application until March 15th?

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Mark J. Skowron

EHS Liaison

331-444-8900



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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

R 000063



1021 NORTH GRAND AVENUE EAST, P.O. BOX 19506, SPRINGFIELD, ILLINOIS 62794-9506 - (217) 782-2113

PAT QUINN, GOVERNOR

DOUGLAS P. SCOTT, DIRECTOR

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

PQ Corporation
Attn: Harold Thomas, HSES Specialist
101 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 09090029I.D. No.: 197045ABOApplicant's Designation:Date Received: September 18, 2009Subject: Installation of Low NO_x Burners - Furnace #2Date Issued: December 4, 2009Location: 101 Ingalls Avenue, Joliet, Will County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of installation of low NO_x burners replacing the existing burners in the existing furnace #2 controlled by existing scrubber (affected fusing furnace) as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. This permit authorizes installation of new low NO_x burners replacing the existing burners in the existing natural gas-fired silicate fusing furnace #2, which is currently permitted to operate under the source's CAAPP permit 96030053. There will be 4 burners in each row, totaling 8 burners. Maximum firing rate of the furnace will be 32 mmBtu/hour, as only four burners will be fired at a time. PM emissions from the existing furnace #2 are controlled by a scrubber system.
- 2a. The affected fusing furnace is subject to 35 IAC 212.321, which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit for which construction or modification commenced on or after to April 14, 1972, which, either alone or in combination with the emission of particulate matter from all other similar process emission at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321.
- b. The affected fusing furnace is subject to 35 IAC 218.301, which provides that no person shall cause or allow the discharge of more than 3.6 kg/hour (8 lb/hour) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 218.302, 218.303, or 218.304 and the following exemption: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall only apply to photochemically reactive material.
- c. The affected fusing furnace is subject to 35 IAC 214.301, which provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm.

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- 3a. As established in the source's current CAAPP permit, the affected fusing furnace is not subject to 40 CFR 60, Subpart CC, Standards of Performance for Glass Manufacturers. The affected fusing furnace produces sodium silicate by the fusion of silica or sand with soda ash at very high temperatures. Sodium silicate is available in Glass, anhydrous and hydrated grades. They are water soluble and are also available as aqueous solution. These are known as Water Glass while the more siliceous sodium silicates are Glasses. Subpart CC addresses Container Glass (glass made of soda-lime recipe), Pressed or Blown Glass, Flat Glass (glass made of soda-lime recipe and produced into continuous flat sheets), and Wool Fiberglass (fibrous glass of random texture, including fiberglass insulation, and other products listed in SIC 3296). The subpart does not address the production of sodium silicate.
- b. This permit is issued based on this project not being major for purposes of 40 CFR 52.21, the federal rules for Prevention of Significant Deterioration of Air Quality (PSD) and the state rules for Major Stationary Source Construction and Modification (MSSCAM), 35 IAC, Part 203. This is because there is no increase in the annual emissions of any regulated pollutants from the affected fusing furnace because of the modification.
- 4a. Natural gas shall be the only fuels fired in the affected fusing furnace.
- b. Maximum firing rate of the affected fusing furnace shall not exceed 32 mmBtu/hour.
- c. Maximum sodium silicate production from the affected fusing furnace shall not exceed 12,750 lbs/hour and 55,845 tons/year.
- d. Compliance with the annual limitations, including annual emission limits shall be determined from a running total of 12 months of data.
5. Emissions from the affected fusing furnace shall not exceed the following limits. These emission limits are based on the information provided in the permit application.

Pollutant	Emissions Limit		
	Lbs/Hour	Lbs/mmBtu	Tons/Year
NO _x	31.4	1.0	137.5*
CO	8.2	--	35.9
VOM	1.3	--	5.7
PM/PM ₁₀	4.7	--	20.6
SO ₂	1.3	--	5.6

* Annual NO_x emissions are reduced by 28.9 tons/year because of the installation of low NO_x burners in the affected fusing furnace. There is no change in emissions of all other pollutants.

6. The Permittee shall maintain the following records for the affected fusing furnace:

Page 3

- a.
 - i. A file containing a record of the maximum design heat input capacity of the affected fusing furnace, mmBtu/hour, with supporting documentation.
 - ii. Records of maximum firing rate (mmBtu/hour).
 - b. An operating log or other records for the affected fusing furnace that, at a minimum, shall include the following information:
 - i. Information documenting that operation of the affected fusing furnace complied with the operational restrictions of this permit.
 - ii. Records of amount of sodium silicate produced (lbs/hour, tons/month, and tons/year).
 - iii. Records of operating hours (hours/month and hours/year).
 - c. The Permittee shall keep inspection, maintenance, and repair logs with dates and the nature of such activities for the affected fusing furnace.
 - d. The Permittee shall maintain the following records related to emissions from the affected fusing furnace:

Monthly and annual emissions of NO_x, CO, PM/PM₁₀, VOM, and SO₂ emissions (tons/month and tons/year) with supporting data or calculations.
7. The Permittee shall notify the Illinois EPA, of deviations of the affected fusing furnace with the permit requirements within 30 days of an occurrence. Reports shall describe the probable cause of such deviations, any corrective actions, and preventive measures taken.
8. The Permittee is allowed to operate the modified affected fusing furnace pursuant to this permit until a revised CAAPP permit is issued addressing the affected fusing furnace, provided that the Permittee submits a timely and complete application for a modification of its CAAPP permit to include the furnace.

If you have any questions concerning this permit, please contact Manish Patel at 217/782-2113.



Edwin C. Bakowski, P.E.
Acting Manager, Permit Section
Division of Air Pollution Control

Date Signed: 12/4/2009

ECB:MNP:psj

cc: FOS - Region 1, Illinois EPA
CAAPP Permit File - Illinois EPA



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emissions of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
- 6.
- a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#)
Subject: Next Round of Drafts
Date: Friday, February 4, 2022 10:47:00 AM
Attachments: [21110013 020222.doc](#)
[PQ Joliet PS 020222.docx](#)

Hi Chloe and Mark,

I've attached the next versions of drafts.

Please look over the changes made to the permit in their entirety and provide comments. I've made some key changes that warrant review.

As for the project summary, please focus on the changes and question I made on pages 2 and 3. You do not need to address the comments I made on pages 4 and 5; those I am saving for when Jason reviews the document. In any event, you're welcome to provide comments on pages 4 and 5 as you see fit.

Thanks.

Bob

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. The affected fusing furnace and affected fusing feed are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 120 tons/day (based on a monthly average) and 48,281 tons per year.
- b. The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton. Compliance with this limit shall be based on a 3-hour average, consistent with the results of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.

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b-c. i. Emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit	
	pounds/hour*	Tons/Year
NOx	21.7	109.6
CO	8.2	45.5
VOM	??	5.8
PM/PM ₁₀ /PM _{2.5}	2.2	13.4
SO ₂	??	5.8

Commented [SR1]: May not need since based on 8760 hours/year. TBD.

*Emissions shall be based on a 3-hour average.

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., lead emissions of no more than XY tons/year and total HAP emissions of no more than XY ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.44 tons of PM/PM₁₀/PM_{2.5}.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5-1 Performance and Emission Testing

a. i. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for NOx, CO, PM₁₀ and PM_{2.5}.

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ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

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Filterable PM ₁₀ or PM _{2.5}	Method 201A
Condensable PM	Method 202
Nitrogen Oxides	Method 7
Carbon Monoxide	Method 10

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iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

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b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:

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Page 4

A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

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B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing including:

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- The person(s) who will be performing sampling and analysis and their experience with similar tests.

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- The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.

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- The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.

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- The test method(s) that will be used with the specific analysis method.

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- Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.

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C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:

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- A summary of results.

- General information.

• Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.

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• Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.

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• Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

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5-2. Future Testing??? - ADDRESS NEXT

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6. Project Recordkeeping Requirements

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a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

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7. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

8. Authorization to Operate

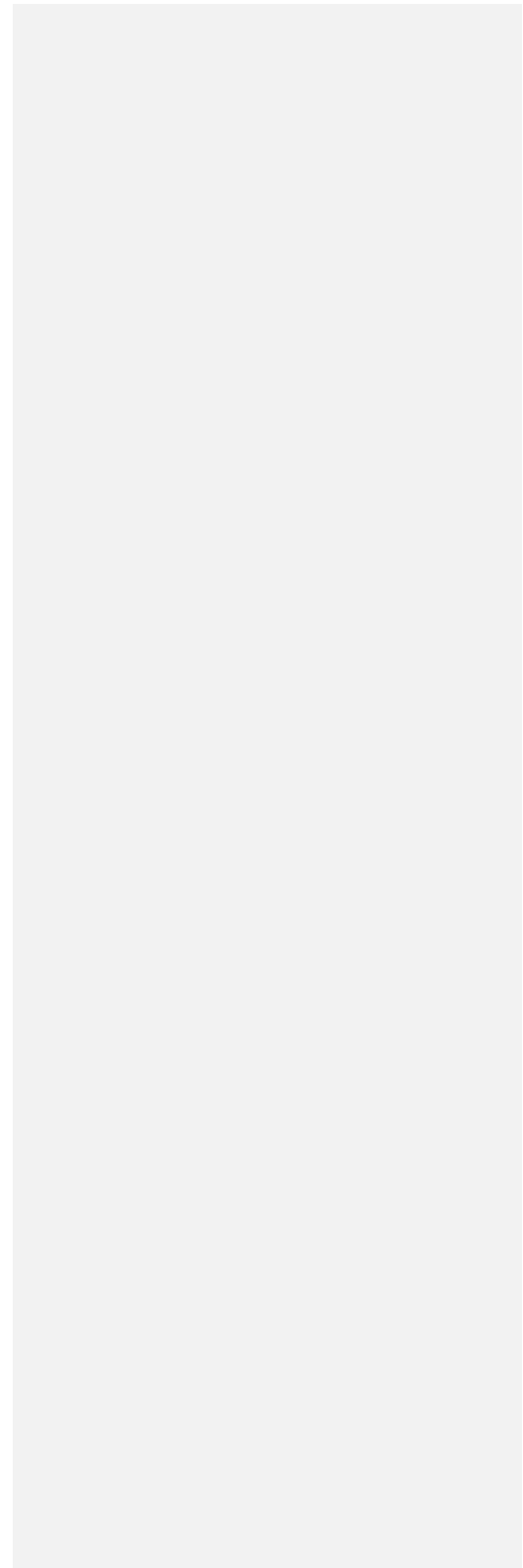
The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

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Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63
Fusing Furnace Baseline Actuals	85.54
Net Change	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.

Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

Commented [SR2]: Remind me again re this project - it did not receive a permit, right? Was it actually installed in 2019?

Commented [SR3]: May be cutting it too close re NSR.

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ LLC for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: February XYZ, 2022
Public Comment Period Closes: March XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ LLC (PQ) has requested a construction permit for a rebuild of its sodium silicate fusing furnace (Fusing Furnace #2), and other associated equipment at its sodium silicate manufacturing plant in Joliet.

The key rebuilding changes to equipment that PQ is seeking to the furnace are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume (Project). It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed by PQ in 1961, four decades before PQ acquired the facility. Fusing Furnace #2 has a current rated heat input capacity of 32 MMBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand is transported via bucket elevator and screw conveyor to Fusing Furnace #2. Any dust generated from the silos, weigh bin and mixer (collectively referred to in the current CAAPP permit as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. The furnace is natural gas fired and has a rated heat input current production capacity of 32 million Btu per hour (MMBtu/hr) 56,000 tons per year and it will decrease as a result of this project, to 48,281 tons per year. PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers, or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through

several intermediate tanks, which can be filtered (using filter aid or similar dry raw materials added through ~~insignificant activity~~negligible emitting bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (~~an insignificant activity~~negligible emissions).

What about the furnace itself? Does it have a melter, forehearth, etc.?
Please describe the furnace...

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While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners. The permitted annual emissions for all regulated air pollutants from the project were below the thresholds at which the project would have been a major project under the Illinois' rules for Major Stationary Source Construction And Modification (MSSCAM), 35 IAC Part 203.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, ~~the Zeolite manufacturing plant, and the Mmetasilicate manufacturing plants~~. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project. The annual increases in emissions will not be significant.

Commented [SR1]: Do these shutdowns include reductions in NOx, CO, etc.?

IV. EMISSIONS OF THE PROJECT

The increases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement

of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	137.5	109.6	-37.9
Carbon Monoxide (CO)	35.9	45.5	9.6
Volatile Organic Material (VOM)	5.7	5.8	0.1
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	20.6	13.4	-7.2
Sulfur Dioxide (SO ₂)	5.6	5.8	0.2

Commented [SR2]: This is permitted-to-permitted? Do we want to also include the MSSCAM increase?

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions under Illinois' MSSCAM rules. The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under MSSCAM. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is performed by PQ to track operation of the furnace. —This monitoring is performed to determine that the operation

Commented [SR3]: How true (or untrue) is this statement?

Commented [CR4R3]: IEPA – The only continuous monitoring required by the permit is on the scrubber, which controls PM emissions (so the monitoring is unrelated to actual furnace operation and also unrelated to NOx emissions).

There are furnace parameters that are continuously monitored, as part of properly operating the furnace, but those are not addressed by the CAAPP permit.

Specifically, PQ does and will monitor raw material feed rate that will ensure permit limit compliance. PQ also controls natural gas flow rates.

PQ is willing to include requirements in the permit for continuous monitoring of these parameters to ensure compliance, in addition to more frequent stack testing.

of the furnace is within ranges that are consistent with good operating, combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are: raw material feed rate and natural gas flow rate. These measures are imposed to assure that the operation and emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Subject: [External] RE: Next Round of Drafts
Date: Friday, February 4, 2022 11:03:13 AM

Bob,

Will do. Thank you again for the prompt turn-around – very much appreciated.

Mark
331-444-8900

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, February 4, 2022 10:48 AM
To: Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: Next Round of Drafts

Hi Chloe and Mark,

I've attached the next versions of drafts.

Please look over the changes made to the permit in their entirety and provide comments. I've made some key changes that warrant review.

As for the project summary, please focus on the changes and question I made on pages 2 and 3. You do not need to address the comments I made on pages 4 and 5; those I am saving for when Jason reviews the document. In any event, you're welcome to provide comments on pages 4 and 5 as you see fit.

Thanks.

Bob

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From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Schnepp, Jason](#); [Paige Pryse](#); [Mark Skowron \(Joliet\)](#)
Subject: [External] Draft Permit Discussion for PQ Application 21110013 (Furnace Rebuild)
Date: Wednesday, February 9, 2022 4:01:57 PM
Attachments: [image001.png](#)

Hi Bob –

Mark Skowron and I have taken a look at the latest draft permit that you sent on Friday last week (2/4/2022) for the PQ furnace rebuild project (#21110013).

There are several permit conditions that we'd like to discuss with IEPA, and given the time sensitivity, it may be easiest if PQ, Trinity, you and Jason can all get on the phone at the same time.

Are you guys available on Friday this week in any of these windows:

- 11:00 – 12:30
- 1:30 – 2:30
- After 3:30 PM?

Thanks!
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com



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From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Schnepp, Jason](#); [Paige Pryse](#); [Mark Skowron \(Joliet\)](#)
Subject: [External] RE: Draft Permit Discussion for PQ Application 21110013 (Furnace Rebuild)
Date: Thursday, February 10, 2022 11:46:52 AM
Attachments: [image001.png](#)

Bob –

Thanks for getting back to us so quickly yesterday afternoon.

Are you and Jason available on Monday either from 1- 2 PM (it may not take a full hour) or starting at 3:30 PM?

Thanks,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, February 09, 2022 4:35 PM
To: Chloe Reece <CRreece@trinityconsultants.com>
Cc: Schnepp, Jason <Jason.Schnepp@Illinois.gov>; Paige Pryse <Paige.Pryse@pqcorp.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: Draft Permit Discussion for PQ Application 21110013 (Furnace Rebuild)

Friday is a holiday. What about Monday, when pretty much any time is fine?

From: Chloe Reece <CRreece@trinityconsultants.com>
Sent: Wednesday, February 9, 2022 4:02 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Schnepp, Jason <Jason.Schnepp@Illinois.gov>; Paige Pryse <Paige.Pryse@pqcorp.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] Draft Permit Discussion for PQ Application 21110013 (Furnace Rebuild)

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From: [Schnepp, Jason](#)
To: [Smet, Robert](#); [Chloe Reece](#)
Cc: [Paige Pryse](#); [Mark Skowron \(Joliet\)](#)
Subject: RE: Draft Permit Discussion for PQ Application 21110013 (Furnace Rebuild)
Date: Thursday, February 10, 2022 1:00:08 PM
Attachments: [image001.png](#)

Put me down as optional, please.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, February 10, 2022 12:58 PM
To: Chloe Reece <CReece@trinityconsultants.com>
Cc: Schnepp, Jason <Jason.Schnepp@Illinois.gov>; Paige Pryse <Paige.Pryse@pqcorp.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: Draft Permit Discussion for PQ Application 21110013 (Furnace Rebuild)

I am available then but Jason may exercise his option not to attend. By the time we speak though, I will have spoken with him re the key issues.

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Thursday, February 10, 2022 11:46 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Schnepp, Jason <Jason.Schnepp@Illinois.gov>; Paige Pryse <Paige.Pryse@pqcorp.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
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Sent: Wednesday, February 9, 2022 4:02 PM

To: Smet, Robert <Robert.Smet@Illinois.gov>

Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>; Paige Pryse <Paige.Pryse@pqcorp.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>

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attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

From: [Smet, Robert](#)
To: [Chloe Reece](#)
Subject: Accepted: PQ Furnace Discussion

From: [Smet, Robert](#)
To: [Mattison, Kevin](#)
Cc: [Schnepp, Jason](#)
Subject: Seeking Your Input
Date: Tuesday, February 15, 2022 2:46:00 PM

Hi Kevin,

PQ LLC has a sodium silicate (SS) furnace in Joliet that it is modifying. The source is in a NAA for ozone (NOx in this case) but not a PSD source for pollutant.

We are struggling with PQ to sort out which emission requirements should apply to the furnace. Besides monthly and annual production limits for SS, we want to impose a 4.5 lb/ton (3-hr avg.) emission rate for NOx as well as ton/month and ton/year remission limits for NOx, CO, etc.

PQ does not like having that 4.5 lb/ton limit since they see that only as an emission factor. Instead, they want to rely on a once-every-five-years stack test to demonstrate compliance to the monthly and annual emission limits based on annual production.

As stated above, our argument is that we want to impose some kind of performance standard (e.g., 4.5 lb/ton, whether 3-hr avg. or 12 month avg.) just to set as a operational compliance standard for the furnace. My thinking is that we could have a (temporarily) high standard of, say 5.0 lb/ton, with a lower production rate, such that if they test at 4.75 lb/ton, then they can later revise the permit for a lower emission rate and a higher production rate. PQ doesn't seem keen to that, instead having faith that they can rely on that once-every-five-year stack test as a means for them meeting the annual (and monthly) limits.

You've had a lot of experience over the years dealing with this type of thing so what have you seen works best in this type of situation? If you had a wish list for ensuring ongoing compliance and minimizing enforcement issues, what would your wishes be? Do you think a lb/ton rate should be imposed, and if so, a worst-case rate? Do you have faith in the use of just one stack test as means of meeting an annual emission rate? Is there an averaging time that you think works best?

Your thoughts are welcome.

Thanks.

Bob

From: [Smet, Robert](#)
To: [Ogulei, David](#)
Subject: RE: For the NSR List
Date: Tuesday, February 15, 2022 4:11:00 PM

Oops, sorry. Yes, it is PQ LLC, located in Joliet in Will County).

From: Ogulei, David <Ogulei.David@epa.gov>
Sent: Tuesday, February 15, 2022 4:10 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: [External] RE: For the NSR List

Thanks Bob. Is this for PQ LLC? Which location?

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, February 15, 2022 2:58 PM
To: Ogulei, David <Ogulei.David@epa.gov>
Subject: For the NSR List

This permit authorizes the rebuild of sodium silicate furnace #2, which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. The increase in NOx emissions, including aggregated emissions, will be over 20 tpy, necessitating a public notice and comment period.

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From: [Ogulei, David](#)
To: [Smet, Robert](#)
Subject: [External] RE: For the NSR List
Date: Tuesday, February 15, 2022 4:13:33 PM

Okay, thanks.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, February 15, 2022 4:11 PM
To: Ogulei, David <Ogulei.David@epa.gov>
Subject: RE: For the NSR List

Oops, sorry. Yes, it is PQ LLC, located in Joliet in Will County).

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Subject: [External] RE: For the NSR List

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From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Cc: [Schnepp, Jason](#)
Subject: Furnace & a NOx CEMS
Date: Wednesday, February 16, 2022 2:01:00 PM

We spoke with Kevin Mattison to get his input on the situation. He said that rather than rely on the stack test for mini-perpetuity, most particularly where the emissions increase pushes the envelope close to 25 tpy for NOx, a NOx CEMS is necessary. Besides Jason and I agreeing to this resolution, it is highly likely that the Region will agree as well because they would be skeptical that one stack test would be sufficient to ensure compliance to the NOx emission limit, particularly where it is proposed to be just below the significance threshold of 25 tpy in the NAA.

I will send a revised draft permit with the CEMS language (minus the stack test language) within the next day or so.

From: [Mattison, Kevin](mailto:Kevin.Mattison@Illinois.gov)
To: [Smet, Robert](mailto:Robert.Smet@Illinois.gov)
Subject: RE: 197045ABO - PQ LLC: Seeking Your Input
Date: Thursday, February 17, 2022 10:05:37 AM

If we have a CEMS, no need for the #/ton emission factor.

Just need to determine the #/hr short term limit value and over what time frame... could be 3 hr average or 24 hr average based on how tight we need to monitor the NO_x.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, February 17, 2022 9:58 AM
To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Subject: RE: 197045ABO - PQ LLC: Seeking Your Input

Would you still include the 4.5 lb/ton rate?

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Sent: Wednesday, February 16, 2022 10:10 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>
Subject: RE: 197045ABO - PQ LLC: Seeking Your Input

CEMS would resolve the issue.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, February 16, 2022 10:04 AM
To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>
Subject: RE: 197045ABO - PQ LLC: Seeking Your Input

I argue for the 4.5 lb/ton being an emission limit while the company argues that it is an emission factor. The fact that one lousy stack test dictates the compliance future for the furnace until testing is re-conducted is, as I see it, inherently problematic.

I argued that the 4.5 lb/ton limit could cause noncompliance issues after the test and into the future, in which case it becomes an ongoing cleanup issue (all because we wanted to “accommodate” their wishes). I argued that since this is a reconstructed furnace, then the 4.5 lb/ton is more of a performance standard (the furnace’s signature so to speak) than an EF. But they want the 4.5 to serve as a compliance method, again, all based on one stack test.

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Sent: Wednesday, February 16, 2022 9:48 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>

Subject: RE: 197045ABO - PQ LLC: Seeking Your Input

My answer is simple... install and NOX CEMS for measure ppm and flow to determine #/hr emissions... and use that to determine compliance with their limits.

Question with respect to the production rate, would the 4.5 #/T be a limit or an emissions factor? If an emissions factor used to calc. monthly and annual limits and not an short term limit, then they should not have an issue unless a new stack test changes that emission factor in which monthly limits would calculation non-compliance.

If the 4.5 #/T on a 3-hr ave is a emission limit, they might be concerned if they don't have high confidence that is a stable #.

CEMS is definitely the way to go.

From: Smet, Robert <Robert.Smet@Illinois.gov>

Sent: Tuesday, February 15, 2022 2:46 PM

To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>

Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>

Subject: 197045ABO - PQ LLC: Seeking Your Input

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From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#)
Subject: Checking In
Date: Wednesday, February 23, 2022 11:09:00 AM

Hi Chloe and Mark,

What comments do you have re the draft permit and when do you think you will submit them by?

Note that if PQ still wishes to keep an overall increase in NOx emissions over 20 tpy, we will need another waiver in order to go out for public notice and comment. Clearly, to avoid that, PQ would have to accept a limit less than 20 tpy.

Thanks.

Bob

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Cc: [Chloe Reece](#); [Jennie Houle \(NS\)](#); [Paige Pryse](#); [Ken Schulte \(Joliet\)](#)
Subject: [External] RE: Checking In
Date: Friday, February 25, 2022 1:07:58 PM

Bob,

Thank you so much for your patience! PQ reviewed the draft permit this week with the PQ Operations and Engineering groups. My boss, Jennie Houle (copied), still needs a chance to review the draft and we should be able to send comments to you early next week.

PQ Joliet Site Manager, Ken Schulte (copied), can extend the waiver. Would April 8th work (including the Public Comment period)? PQ was planning to start the project during the first week of May.

Thanks,

Mark

331-444-8900

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, February 23, 2022 11:09 AM
To: Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: Checking In

Hi Chloe and Mark,

What comments do you have re the draft permit and when do you think you will submit them by?

Note that if PQ still wishes to keep an overall increase in NOx emissions over 20 tpy, we will need another waiver in order to go out for public notice and comment. Clearly, to avoid that, PQ would have to accept a limit less than 20 tpy.

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#)
Cc: [Chloe Reece](#); [Jennie Houle \(NS\)](#); [Paige Pryse](#); [Ken Schulte \(Joliet\)](#)
Subject: RE: Checking In
Date: Friday, February 25, 2022 1:20:00 PM

I want to ask for only one more waiver, so once we (my supervisor and I) settle on a draft permit and project summary, only then, and if we are still within days of March 15 (the current waiver expiration date), then I'll ask for another waiver at that point (for approximately 45 days after).

How does PQ want to address reductions elsewhere? Can you demonstrate that the PTE for each pollutant from this rebuilt furnace will be less than the previous one?

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Friday, February 25, 2022 1:08 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Chloe Reece <CReece@trinityconsultants.com>; Jennie Houle (NS) <Jennie.Houle@silicates.com>; Paige Pryse <Paige.Pryse@pqcorp.com>; Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>
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From: [Smet, Robert](#)
To: [Chloe Reece](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: RE: Next Version
Date: Friday, March 4, 2022 9:19:00 AM
Attachments: [PQ Joliet PS 020222.docx](#)

Hi Chloe,

I will pass the draft permit on to Jason for his hopefully final review.

I've attached the draft of the project summary. You're welcome to read through the whole document but you can focus on the tracked changes, in particular the questions raised on page 3.

Thanks.

Bob

From: Chloe Reece <CRreece@trinityconsultants.com>
Sent: Thursday, March 3, 2022 7:18 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: Next Version

Bob –

Thanks for your quick review of our comments.

The annual production limit is correct as-is (both in numerical value and units): 132.28 tons/day (120 MT/day) x 365 days/year = 48,281 tons/year

The fusing feed has not had a PM emission limit in the past, so I think PQ was thinking perhaps it didn't need one now since it's negligible/not really the main focus of the project. Mark can chime in with any other thoughts on that, if I'm not explaining it right.

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, March 03, 2022 10:52 AM
To: Chloe Reece <CRreece@trinityconsultants.com>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: Next Version

Hi Chloe,

A couple questions.

In condition 4(a)(ii), should the annual production of sodium silicate also increase from 48,281 tons/year to a higher value?

Also, why shouldn't there be a PM/PM10/PM2.5 limit on the fusing feed in Condition 4(d), even if it is only negligible (0.44 tons/year)? BTW, I'm thinking of turning your language about the baghouse associated with the fusing feed into a Note.

Bob

From: Chloe Reece <CReece@trinityconsultants.com>

Sent: Wednesday, March 2, 2022 5:35 PM

To: Smet, Robert <Robert.Smet@Illinois.gov>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>

Subject: [External] RE: Next Version

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Please let us know if you'd like to set up a call to discuss. I'm not sure about Mark's schedule, but I am flexible on Friday from 10 AM – 2 PM.

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>

Sent: Thursday, February 17, 2022 11:02 AM

To: Chloe Reece <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>

Subject: Next Version

Hi Chloe and Mark,

I've attached the next version with a CEMS requirement, minus the lb/ton limit and testing. Please provide comments. Please address the questions raised in the draft.

Once we settle on the draft permit, I will then pass the draft project summary on for your review.

Thanks.

Bob

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Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ LLC for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: March XYZ, 2022
Public Comment Period Closes: April XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ LLC (PQ) has requested a construction permit for a rebuild of its sodium silicate fusing furnace (Fusing Furnace #2), and other associated equipment at its sodium silicate manufacturing plant in Joliet.

The key rebuilding changes to equipment that PQ is seeking to the furnace are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed by PQ in 1961, four decades before PQ acquired the facility. Fusing Furnace #2 has a current rated heat input capacity of 32 MMBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand is transported via bucket elevator and screw conveyor to Fusing Furnace #2. Any dust generated from the silos, weigh bin and mixer (collectively referred to as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. The furnace is natural gas fired and has a rated heat input current production capacity of 32 million Btu per hour (MMBtu/hr) 56,000 tons per year and it will decrease as a result of this project, to 48,281 tons per year. PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers, or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through

several intermediate tanks, which can be filtered (using filter aid or similar dry raw materials added through negligible emitting bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (an-emits insignificant activity negligible quantities of PM).

Description of the furnace itself.

While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners. The permitted annual emissions for all regulated air pollutants from the project were below the thresholds at which the project would have been a major project under the Illinois' rules for Major Stationary Source Construction And Modification (MSSCAM), 35 IAC Part 203.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, the zeolite and metasilicate manufacturing plants. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project. The annual increases in emissions will not be significant.

IV. EMISSIONS OF THE PROJECT

The increases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing

Commented [SR1]: What about the furnace itself? Does it have a melter, forehearth, etc.? Please describe the furnace...

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Commented [SR2]: Do these shutdowns include reductions in NOx, CO, etc.?

configuration and an increase in furnace volume. The actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	137.5	109.6	-37.9
Carbon Monoxide (CO)	35.9	45.5	9.6
Volatile Organic Material (VOM)	5.7	5.8	0.1
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	20.6	13.4	-7.2
Sulfur Dioxide (SO ₂)	5.6	5.8	0.2

Commented [SR3]: For Jason -- This is permitted-to-permitted. Do we want to also include the MSSCAM increase?

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions under Illinois' MSSCAM rules. The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under MSSCAM. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is performed by PQ to track operation of the furnace. This monitoring is performed to determine that the operation of the furnace is within ranges that are consistent with good operating,

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combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are: raw material feed rate and natural gas flow rate. A continuous emissions monitor of NOx emissions and the operational monitoring are both being ~~These measures are imposed required~~ to assure that the operation and NOx emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.

From: [Mark Skowron \(Joliet\)](#)
To: [Chloe Reece](#); [Smet, Robert](#)
Cc: [Jennie Houle \(NS\)](#)
Subject: [External] RE: Next Version
Date: Friday, March 4, 2022 9:30:45 AM
Attachments: [image001.jpg](#)

Bob,

Since the [negligible] Fusing Feed baghouse permit conditions are already captured in the current CAAPP Permit – is it really necessary to cover them again in the Construction Permit?

Thanks,
Mark

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig



www.PQCorp.com

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Thursday, March 3, 2022 7:18 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
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Regards,
Chloe

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Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, March 03, 2022 10:52 AM
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Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>

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Sent: Thursday, February 17, 2022 11:02 AM

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From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#)
Subject: Project Summary & a New Waiver
Date: Monday, March 7, 2022 9:54:00 AM

How soon do you think you will be providing your comments on the project summary?

Also, would you be able to provide a waiver until April 30th? This assume that we will go out fr public notice and comment around the 15th of this month with two weeks at the back end to address contingencies such as comments from the USEPA.

From: [Schnepp, Jason](#)
To: [Smet, Robert](#)
Subject: FW: Project Summary & a New Waiver
Date: Wednesday, March 9, 2022 4:52:51 PM

FYI

From: Schnepp, Jason
Sent: Wednesday, March 9, 2022 4:52 PM
To: Chloe Reece <CReece@trinityconsultants.com>
Subject: FW: Project Summary & a New Waiver

Chloe,

Do you see a problem providing a waiver?

Thanks,

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Smet, Robert
Sent: Monday, March 7, 2022 9:55 AM
To: Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
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From: [Schnepp, Jason](#)
To: [Chloe Reece](#)
Cc: [Smet, Robert](#)
Subject: RE: Project Summary & a New Waiver
Date: Thursday, March 10, 2022 9:46:08 AM

Hearing you say Project Summary triggered something...with a date received of Nov 8, 2021, we have until May 7, 2022. Unfortunately, our tracking system defaults to 90 days and I was under the impression we were up against a 90 day clock. So, no waiver is needed unless we approach May 7. Can you pass this along to Mark?

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Thursday, March 10, 2022 9:33 AM
To: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Subject: [External] RE: Project Summary & a New Waiver

Hi Jason –

I just sent the project summary comments back to Bob. (I didn't get the green light to send them until late yesterday afternoon and had my hands full at the time.)

I also reminded Mark Skowron from PQ that Bob was asking about another waiver. He probably needs to check with/inform the plant manager and the project engineer, just so that everyone's on the same page.

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Principal Consultant

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1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

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From: [Chloe Reece](#)
To: [Schnepp, Jason](#)
Cc: [Smet, Robert](#)
Subject: [External] RE: Project Summary & a New Waiver
Date: Thursday, March 10, 2022 12:58:13 PM

I let Mark know just now via email.

- Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Sent: Thursday, March 10, 2022 9:46 AM
To: Chloe Reece <CRreece@trinityconsultants.com>
Cc: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Project Summary & a New Waiver

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Email: creece@trinityconsultants.com

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From: Smet, Robert
Sent: Monday, March 7, 2022 9:55 AM
To: Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: Project Summary & a New Waiver

How soon do you think you will be providing your comments on the project summary?

Also, would you be able to provide a waiver until April 30th? This assumes that we will go out for public notice and comment around the 15th of this month with two weeks at the back end to address contingencies such as comments from the USEPA.

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

From: [Schnepp, Jason](#)
To: [Smet, Robert](#)
Subject: 21110013 030322_jms.doc
Date: Friday, March 11, 2022 5:27:08 PM
Attachments: [21110013 030322_jms.doc](#)

I edited the file on your share drive. There are a lot of comments so feel free to stop by to discuss.

Thanks
Jason

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued: [DRAFT 3-11-2022](#)

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

~~b. The affected fusing furnace is subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(e).~~

- Commented [SR1]: This is being removed since it is already in the CAAPP permit.
- Commented [SJ2R1]: agree
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3. Nonapplicability Provisions

a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace ~~are-is~~ de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.

b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

a. i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition ??? of the CAAPP Permit.
ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition ??? of the CAAPP Permit.

~~b. The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton of sodium silicate. Compliance with this limit shall be based on a 3-hour average, consistent with the results~~

- Commented [SR3]: No longer necessary since CEMS will now be used.
- Commented [SJ4R3]: agree

~~of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.~~

- c. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions ??? of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	10.38*	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7*	13.4
SO ₂	1.32	5.8

~~*Emissions shall be based on a 3-hour average.~~

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than ~~0.44~~0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: Per Section 4.5.1 of CAAPP Permit No. 96030053, the baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for ~~NOx, CO, PM and PM₁₀~~ and PM_{2.5} emissions.
- B. This testing shall also be conducted every five years thereafter.
- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Commented [CR5]: Bob - I seem to recall that you said on the phone that Jason had comments on this asterisk. Can you please confirm that it can be deleted?

Commented [SR6R5]: It stays. Does it apply to VOM and SO2 also?

Commented [SJ7R5]: Talked to KM about this and he is ok deleting. The emissions rates apply to any 1 hour period.

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Commented [CR8]: IEPA - Is it necessary to list an emission limit here? See the note in CAAPP permit Section 4.5.1 ("does not serve a function for air pollution regulatory compliance").

Commented [SR9R8]: Her point may be valid. The fusing feed was constructed in 1961 so is grandfathered. The fact that a higher throughput will increase emissions does not alter that.

Commented [SJ10R8]: They requested a limit of 0.12. I'd prefer to say it's negligible at 0.12 tpy. As an alternative, they can retract their request for a limit, rely on PAE-BAE (not PTE) and we can delete the condition.

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Commented [SR11]: Removed because CEMS is now required.

Commented [SJ12R11]: You only have a CEMS for NOx, so why would we delete testing for other pollutants. I confirmed this with KM.

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Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ (filterable)*	Method 201A
PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202

~~Filterable PM₁₀ or PM_{2.5} Method 201A~~

~~Condensable PM Method 202~~

~~Nitrogen Oxides~~

~~Method 7~~

~~Carbon Monoxide~~

~~Method 10~~

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀.

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:

A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing including:

1. The person(s) who will be performing sampling and analysis and their experience with similar tests.

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Page 5

2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 4. The test method(s) that will be used with the specific analysis method.
 5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

56. Monitoring Requirements

- a. For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.

Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.

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Commented [SJ13]: This doesn't apply. Also, it has nothing to do with NOx CEMS.

Page 6

a. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The NO_x CEMS shall monitor continuously and record the hourly NO_x emission concentration (parts per million) at all times that the affected fusing furnace is in operation.

ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 2) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. The Permittee shall either:

- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
 3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and

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Page 7

handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Commented [SJ14]: Run this by KM.

76. Project Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces only.

Commented [CR15]: IEPA - We suggest making this more specific (as shown here) rather than citing the whole section. There are some paragraphs for combustion tuning of boilers/heaters, documenting non-applicability, etc. that can be eliminated as not applicable to the fusing furnace.

78. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

Commented [SJ16R15]: This doesn't apply - what is going on here?

98. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63 ^s
Fusing Furnace Baseline Actuals	85.54 ^s
Net Change	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 ~~since these years were more representative of operation.~~

Commented [SJ17]: This table should reflect all PSD pollutants applicable to the project. It should also be identified as a PSD table.

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Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Commented [SJ18]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years, what is the justification?

Commented [SR19]: Remind me again re this project - it did not receive a permit, right? Was it actually installed in 2019?

Commented [CR20R19]: IEPA - That is correct, the heater was exempt from construction permitting per 201.146(c) or (d) and also an insignificant activity for the CAAPP permit. The work was completed in 2019.

Commented [SJ21]: Confirm this is based on actuals.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Schnepp, Jason](#)
To: [Mattison, Kevin](#)
Cc: [Smet, Robert](#)
Subject: FW: 21110013 030322_jms.doc
Date: Friday, March 11, 2022 5:27:53 PM
Attachments: [21110013 030322_jms.doc](#)

Kevin,

We will need your eye on the testing and monitoring sections, please.

Thanks,

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Schnepp, Jason
Sent: Friday, March 11, 2022 5:27 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: 21110013 030322_jms.doc

I edited the file on your share drive. There are a lot of comments so feel free to stop by to discuss.

Thanks
Jason

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: [DRAFT 3-11-2022](#)
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. ~~The affected fusing furnace is subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(e).~~

Commented [SR1]: This is being removed since it is already in the CAAPP permit.

Commented [SJ2R1]: agree

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3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace are-is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
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4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition ??? of the CAAPP Permit.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition ??? of the CAAPP Permit.
- b. ~~The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton of sodium silicate. Compliance with this limit shall be based on a 3-hour average, consistent with the results~~

Commented [SR3]: No longer necessary since CEMS will now be used.

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~~of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.~~

- c. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions ??? of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	10.38*	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7*	13.4
SO ₂	1.32	5.8

~~*Emissions shall be based on a 3-hour average.~~

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than ~~0.44~~0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: Per Section 4.5.1 of CAAPP Permit No. 96030053, the baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for ~~NOx, CO, PM and PM₁₀~~ and PM_{2.5} emissions.
- B. This testing shall also be conducted every five years thereafter.
- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Commented [CR5]: Bob - I seem to recall that you said on the phone that Jason had comments on this asterisk. Can you please confirm that it can be deleted?

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Commented [SJ7R5]: Talked to KM about this and he is ok deleting. The emissions rates apply to any 1 hour period.

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Commented [SJ12R11]: You only have a CEMS for NOx, so why would we delete testing for other pollutants. I confirmed this with KM.

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Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ (filterable)*	Method 201A
PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202

~~Filterable PM₁₀ or PM_{2.5} Method 201A~~

~~Condensable PM Method 202~~

~~Nitrogen Oxides~~

~~Method 7~~

~~Carbon Monoxide~~

~~Method 10~~

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀.

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:

A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing including:

1. The person(s) who will be performing sampling and analysis and their experience with similar tests.

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2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 4. The test method(s) that will be used with the specific analysis method.
 5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

56. Monitoring Requirements

- a. For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.

Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.

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Commented [SJ13]: This doesn't apply. Also, it has nothing to do with NOx CEMS.

Page 6

a. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The NO_x CEMS shall monitor continuously and record the hourly NO_x emission concentration (parts per million) at all times that the affected fusing furnace is in operation.

ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 2) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. The Permittee shall either:

- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
 3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and

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Page 7

handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Commented [SJ14]: Run this by KM.

76. Project Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces only.

Commented [CR15]: IEPA - We suggest making this more specific (as shown here) rather than citing the whole section. There are some paragraphs for combustion tuning of boilers/heaters, documenting non-applicability, etc. that can be eliminated as not applicable to the fusing furnace.

78. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

Commented [SJ16R15]: This doesn't apply - what is going on here?

98. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63 ³
Fusing Furnace Baseline Actuals	85.54 ³
Net Change	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 ~~since these years were more representative of operation.~~

Commented [SJ17]: This table should reflect all PSD pollutants applicable to the project. It should also be identified as a PSD table.

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Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Commented [SJ18]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years, what is the justification?

Commented [SR19]: Remind me again re this project - it did not receive a permit, right? Was it actually installed in 2019?

Commented [CR20R19]: IEPA - That is correct, the heater was exempt from construction permitting per 201.146(c) or (d) and also an insignificant activity for the CAAPP permit. The work was completed in 2019.

Commented [SJ21]: Confirm this is based on actuals.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Mattison, Kevin](#)
To: [Schnepp, Jason](#)
Cc: [Smet, Robert](#)
Subject: RE: 197045ABO - PQ LLC: 21110013 030322_jms.doc
Date: Saturday, March 12, 2022 1:02:19 PM
Attachments: [21110013 030322_jms-KJM.doc](#)

My comments are attached.

From: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Sent: Friday, March 11, 2022 5:28 PM
To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Cc: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: FW: 197045ABO - PQ LLC: 21110013 030322_jms.doc

Kevin,

We will need your eye on the testing and monitoring sections, please.

Thanks,

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Schnepp, Jason
Sent: Friday, March 11, 2022 5:27 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: 21110013 030322_jms.doc

I edited the file on your share drive. There are a lot of comments so feel free to stop by to discuss.

Thanks
Jason

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: [DRAFT 3-11-2022](#)
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

~~b. The affected fusing furnace is subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(e).~~

Commented [SR1]: This is being removed since it is already in the CAAPP permit.

Commented [SJ2R1]: agree

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3. Nonapplicability Provisions

a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace ~~are-is~~ de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.

b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

a. i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition ??? of the CAAPP Permit.

Commented [MK3]: 4.1.2.g.i.B.

ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition ??? of the CAAPP Permit.

Commented [MK4]: 4.1.2.g.i.C.

~~b. The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton of sodium silicate. Compliance with this limit shall be based on a 3-hour average, consistent with the results~~

Commented [SR5]: No longer necessary since CEMS will now be used.

Commented [SJ6R5]: agree

of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.

- c. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions ??? of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	10.38*	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7*	13.4
SO ₂	1.32	5.8

~~Emissions shall be based on a 3-hour average.~~

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than ~~0.44~~ 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: Per Section 4.5.1 of CAAPP Permit No. 96030053, the baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for NOx, CO, PM and PM₁₀ and PM_{2.5} emissions.
- B. This testing shall also be conducted every five years from the date of the last test thereafter.
- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Commented [MK7]: NOx - 4.12.f.i.A.
CO - 4.1.2.e.i.A.
VOM - 4.1.2.d.i.A.
PM - 4.1.2.b.i.B.
SO2 - 4.1.2.c.i.B.

Commented [CR8]: Bob - I seem to recall that you said on the phone that Jason had comments on this asterisk. Can you please confirm that it can be deleted?

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Commented [SJ10R8]: Talked to KM about this and he is ok deleting. The emissions rates apply to any 1 hour period.

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Commented [SR12R11]: Her point may be valid. The fusing feed was constructed in 1961 so is grandfathered. The fact that a higher throughput will increase emissions does not alter that.

Commented [SJ13R11]: They requested a limit of 0.12. I'd prefer to say it's negligible at 0.12 tpy. As an alternative, they can retract their request for a limit, rely on PAE-BAE (not PTE) and we can delete the condition.

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Commented [SJ15R14]: You only have a CEMS for NOx, so why would we delete testing for other pollutants. I confirmed this with KM.

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Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM_{10/2.5} (filterable)*	Method 201A
PM_{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202

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Filterable PM₁₀ or PM_{2.5}	Method 201A
Condensable PM	Method 202
Method 7	Nitrogen Oxides
Method 7	Carbon Monoxide
Method 10	

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* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM_{10/2.5}.

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iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

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b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:

A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

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B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan

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Page 5

shall describe the specific procedures for testing including:

1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 4. The test method(s) that will be used with the specific analysis method.
 5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

56. Monitoring Requirements

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Page 6

- a. For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.

Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.

- a. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The NO_x CEMS shall monitor continuously and record the hourly NO_x emission concentration (parts per million) at all times that the affected fusing furnace is in operation.

ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 2) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. The Permittee shall either:

- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40

Commented [SJ16]: This doesn't apply. Also, it has nothing to do with NO_x CEMS.

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CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);

3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Commented [SJ17]: Run this by KM.

76. ~~Project~~ Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. ~~The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces only.~~

Commented [CR18]: IEPA - We suggest making this more specific (as shown here) rather than citing the whole section. There are some paragraphs for combustion tuning of boilers/heaters, documenting non-applicability, etc. that can be eliminated as not applicable to the fusing furnace.

78. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

One (1) copy of required reports and notifications shall be sent to:

Commented [SJ19R18]: This doesn't apply - what is going on here?

- i. Via mail or overnight delivery:
 - Illinois Environmental Protection Agency
 - Bureau of Air
 - Compliance Section (#40)
 - P.O. Box 19276
 - Springfield, Illinois 62794-9276

- ii. and electronically:
 - epa.boa.smu@illinois.gov

Commented [MK20]: Need to include where such notifications/test plans/reports need to be sent to... also, need to include an electronic version..

Page 8

| 99. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63 ^s
Fusing Furnace Baseline Actuals	85.54 ^s
Net Change	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 ~~since these years were more representative of operation.~~

Commented [SJ21]: This table should reflect all PSD pollutants applicable to the project. It should also be identified as a PSD table.

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Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Commented [SJ22]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years, what is the justification?

Commented [SR23]: Remind me again re this project - it did not receive a permit, right? Was it actually installed in 2019?

Commented [CR24R23]: IEPA - That is correct, the heater was exempt from construction permitting per 201.146(c) or (d) and also an insignificant activity for the CAAPP permit. The work was completed in 2019.

Commented [SJ25]: Confirm this is based on actuals.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#)
Subject: Next Version w/ Changes
Date: Monday, March 14, 2022 10:58:00 AM
Attachments: [21110013 031422.doc](#)

Hi Chloe & Mark,

I've attached the latest version of the draft permit with inserts based on comments from Jason Schnepf and Kevin Mattison. You may want to read through the entire document but focus mostly on the changes as indicated.

Thanks.

Bob

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: [DRAFT 3-11-2022](#)
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	10.38*	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7*	13.4
SO ₂	1.32	5.8

~~*Emissions shall be based on a 3-hour average.~~

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ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for CO, PM and PM₁₀/PM_{2.5} emissions.

B. This testing shall also be conducted every five years thereafter.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

<u>Location of Sample Points</u>	<u>Method 1</u>
<u>Gas Flow and Velocity</u>	<u>Method 2</u>
<u>Flue Gas Weight</u>	<u>Method 3</u>
<u>Moisture</u>	<u>Method 4</u>
<u>PM (filterable)</u>	<u>Method 5</u>
<u>PM₁₀/PM_{2.5} (filterable)*</u>	<u>Method 201A</u>
<u>PM_{2.5} (filterable)*</u>	<u>Method 201A</u>
<u>Condensable Particulate Matter</u>	<u>Method 202</u>
<u>Carbon Monoxide</u>	<u>Method 10</u>

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

Commented [CR1]: IEPA - Is it necessary to list an emission limit here? See the note in CAAPP permit Section 4.5.1 ("does not serve a function for air pollution regulatory compliance").

Commented [SJ2R1]: They requested a limit of 0.12. I'd prefer to say it's negligible at 0.12 tpy. As an alternative, they can retract their request for a limit, rely on PAE-BAE (not PTE) and we can delete the condition.

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Page 4

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:
- A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 4. The test method(s) that will be used with the specific analysis method.

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Page 5

5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
 1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.

Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.

- a. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The NO_x CEMS shall monitor continuously and record the hourly NO_x emission concentration (parts per million) at all times that the affected fusing furnace is in operation.

- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 2) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

- iii. The Permittee shall either:

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Page 6

- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
 3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

7. ~~Project~~ Recordkeeping Requirements

Page 7

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces only.

8. Reporting Requirements

a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

b. One copy of required reports and notifications shall be sent to:

i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

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~~Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)~~

Emissions	NOx
Fusing Furnace PTE	109.62^a
Fusing Furnace Baseline Actuals	-85.54^b
Net Change	24.09

- ~~a. Reflects potential emissions from the modified furnace.~~
- ~~b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.~~

~~Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)~~

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

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Commented [SJ3]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years for purposes of MSSCAM, what is the justification for using earlier years?

Commented [SR4]: Confirm, with calculations, that these (the 2.2 and 4.5 mmBtu/hr heaters) are both based on actual emissions.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

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3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
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 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
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7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Mark Skowron \(Joliet\)](#)
To: [Schnepp, Jason](#); [Smet, Robert](#); [Chloe Reece](#)
Cc: [Jennie Houle \(NS\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#)
Subject: [External] RE: Next Version w/ Changes
Date: Monday, March 21, 2022 1:25:40 PM
Attachments: [image002.jpg](#)

Jason,
I think 1:00 pm on 3/25 will work. How does that sound?

Thanks,
Mark
331-444-8900

From: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Sent: Friday, March 18, 2022 4:29 PM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Smet, Robert <Robert.Smet@Illinois.gov>;
Chloe Reece <CReece@trinityconsultants.com>
Cc: Jennie Houle (NS) <Jennie.Houle@silicates.com>; Lou Henderson(VF)
<lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>
Subject: RE: Next Version w/ Changes

We can do the 3/25 or generally most times during the week of 3/28.

Thanks,

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Friday, March 18, 2022 11:22 AM
To: Schnepp, Jason <Jason.Schnepp@Illinois.gov>; Smet, Robert
<Robert.Smet@Illinois.gov>; Chloe Reece <CReece@trinityconsultants.com>
Cc: Jennie Houle (NS) <Jennie.Houle@silicates.com>; Lou Henderson(VF)
<lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>
Subject: [External] RE: Next Version w/ Changes

Thanks Jason –

Chloe Reece, Principal Consultant, Trinity Consultants
Mark Skowron, PQ EHS Liaison
Jennie Houle, PQ EHS Director for Management Systems, Compliance and Global Silicas
Lou Henderson, PQ Senior Manager of Engineering, Global Silicates Technology / Project Engineering
North America
Paige Pryse, PQ North American Furnace Technology & Process Engineering CI Manager

Possibly Ken Schulte, PQ LLC Joliet Site Manager

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig



www.PQCorp.com

From: Schnepf, Jason <Jason.Schnepf@Illinois.gov>
Sent: Friday, March 18, 2022 11:17 AM
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Cc: [Jennie Houle \(NS\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#)
Subject: Re: Next Version w/ Changes
Date: Monday, March 21, 2022 1:43:15 PM
Attachments: [image002.jpg](#)

Sounds good - please send appointment

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To: Schnepp, Jason <Jason.Schnepp@Illinois.gov>; Smet, Robert <Robert.Smet@Illinois.gov>; Chloe Reece <CReece@trinityconsultants.com>
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hse_pq_sig



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From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#)
Subject: Accepted: PQ LLC Joliet draft Construction Permit

From: [Mark Skowron \(Joliet\)](#)
To: [Schnepp, Jason](#); [Smet, Robert](#)
Subject: [External] FW: Next Version w/ Changes
Date: Friday, March 25, 2022 9:47:25 AM
Attachments: [image001.jpg](#)

Jason & Bob,
Just a heads-up that although Paige is on vacation, she will try to join the call.

Thanks,
Mark
331-444-8900

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From: [Smet, Robert](#)
To: [Paige Pryse](#)
Subject: Accepted: Joliet Permit Meeting

From: [Paige Pryse](#)
To: [Smet, Robert](#)
Subject: [External] Automatic reply: Joliet Permit Meeting
Date: Friday, March 25, 2022 1:09:27 PM

I am out of the office until Monday, March 28th at 8:00 a.m. I will be checking my emails periodically and can be reached by cell phone at 502-262-2239 if you have an urgent need which cannot wait until my return.

Thank you.

Paige Pryse

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To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#)
Subject: Next Version
Date: Wednesday, April 6, 2022 4:08:00 PM
Attachments: [21110013 040622.doc](#)

Hi Chloe and Mark,

I've attached the draft permit for your review.

We spoke with the Region and Kevin Mattison and it was unanimous that a CEMS be required due to the various factors we discussed on our call a couple weeks back. There are only a few noted items to review but it is probably worth your effort to read through the whole document. You may want to propose language re operation of the furnace prior to full operation of the CEMS.

A waiver will be necessary at some point in the future. I will ask for one once we know when the draft permit and project summary are ready to undergo the public notice and comment period.

Thanks.

Bob

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Condition 4.1.2(f)(i)(A) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	----	109.6
CO	10.38	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	13.4
SO ₂	1.32	5.8

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for CO, PM and PM₁₀/PM_{2.5} emissions.

B. This testing shall also be conducted every five years thereafter.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

Commented [CR1]: IEPA - Is it necessary to list an emission limit here? See the note in CAAPP permit Section 4.5.1 ("does not serve a function for air pollution regulatory compliance").

Commented [SJ2R1]: I'd prefer to say it's negligible at 0.12 tpy. As an alternative, they can retract their request for a limit, rely on PAE-BAE (not PTE) and we can delete the condition.

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- b. i. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
 - A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - 1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - 4. The test method(s) that will be used with the specific analysis method.
 - 5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.

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- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The NOx CEMS shall monitor continuously and record the hourly NOx emission concentration (parts per million) at all times that the affected fusing furnace is in operation.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall either:
- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced

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proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or

B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:

1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces.

8. Reporting Requirements

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- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2018	23.9
De Minimis Threshold:	2019	25
De Minimis?	2020	Yes

Commented [SJ3]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years for purposes of MSSCAM, what is the justification for using earlier years?

Commented [SR4]: Confirm, with calculations, that these (the 2.2 and 4.5 mmBtu/hr heaters) are both based on actual emissions.

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#)
Subject: Next Update
Date: Wednesday, April 13, 2022 9:57:00 AM

How soon will you be providing comments to the latest version of the draft permit?

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Cc: [Chloe Reece](#); [Jennie Houle \(NS\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#); [Ken Schulte \(Joliet\)](#)
Subject: [External] RE: Next Update
Date: Friday, April 15, 2022 10:52:35 AM

Bob,

My apologies! I was hoping to have provided comments to you by now. There was still some discussion within PQ late yesterday and today is a holiday for both PQ and Trinity. I anticipate submittal of the comments on Monday.

Thank you,
Mark
331-444-8900

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, April 13, 2022 9:57 AM
To: Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: Next Update

How soon will you be providing comments to the latest version of the draft permit?

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Cc: [Chloe Reece](#); [Jennie Houle \(NS\)](#); [Ken Schulte \(Joliet\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#)
Subject: [External] PQ LLC - Joliet | draft Construction Permit Comments
Date: Monday, April 18, 2022 7:26:26 PM
Attachments: [image002.jpg](#)
[21110013 040622 \(PQ proposed updates for IEPA 0418\).doc](#)

Bob,

As requested, please see the attached comments:

Thanks,

Mark

Mark J. Skowron

EHS Liaison

331-444-8900

hse_pq_sig



www.PQCorp.com

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 4-6-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Condition 4.1.2(f)(i)(A) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	----	109.6
CO	10.38	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	13.4 20.6
SO ₂	1.32	5.8

Commented [CR1]: IEPA - PQ originally proposed lowering the PM limits based on a 2016 stack test and a safety factor. Then, in draft permit review, we proposed maintaining the prior hourly emission limit to give short-term flexibility, but we kept the proposed new annual emission limit. Upon further review, PQ would also like to keep the prior annual limit. It is marked here, and matches CAAPP Condition 4.1.2.b.i.B, which cites Construction Permit #09090029.

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ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter. Ongoing compliance for NOx is addressed by Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
<u>Nitrogen Oxides</u>	<u>Method 7E</u>
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

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- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. i. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
 - A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - 1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - 4. The test method(s) that will be used with the specific analysis method.

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5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60-90 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

Commented [CR2]: IEPA - Please update timing for consistency with the CAAPP permit and because stack testing firms remain very busy these days, so report turnaround can be affected.

6. Monitoring Requirements

- a.
 - i. Except as provided in Condition 6.b of this permit, the Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within [18-24] months after the results from the testing in Condition 5.a are obtained. The period in which the Permittee must install and calibrate the NOx CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NOx CEMS or CERMS shall be operated as provided in Condition 6.a.iii shall monitor continuously and record the hourly NOx emission concentration (parts per million) at all times that the affected fusing furnace is in operation.
 - ii. The CEMS from Condition 6.a.i shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

Commented [CR3]: TBD.

Commented [CR4]: IEPA - PQ proposes linking the timing to the stack test results, in the event that the stack test shows NOx is considerably lower than estimated in the permit application.

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- iii. Except as provided in Condition 6.b of this permit, the Permittee shall either:
- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, ~~certify~~, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
 3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Commented [CR5]: IEPA - Does this include calculating flow rate from some surrogate parameter, such as gas usage?

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NOTE: The timing for the requirements in Condition 6.a.iii.A and B is as specified in Condition 6.a.i.

b. i. If Will County, Illinois (or the portion of it where the affected fusing furnace is located), is redesignated to attainment with the 2008 national ambient air quality standard for ozone (8-hour average), or if the results of the initial NOx testing in Condition 5.a are less than 95% of the applicable standard, the Permittee may demonstrate compliance with the NOx emission limits established in this permit for the affected fusing furnace as follows, in lieu of installing a CEMS (or CERMS):

- A. If the results of the NOx emissions testing in Condition 5.a.i.A of this permit are less than 80% of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 5 years thereafter.
- B. If the results of the NOx emissions testing in Condition 5.a.i.A of this permit are between 80 and 95% of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 3 years thereafter.
- C. If the results of the NOx emissions testing in Condition 5.a.i.A of this permit are greater than 95% of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated within 13 months.
- D. The results of any NOx emissions testing shall be compared to the applicable standard and the timing of the subsequent test shall be based on Conditions 6.b.i.A-C, as applicable.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. ~~The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces.~~

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:

Commented [CR6]: IEPA - Is this CEMS vs. CERMS distinction needed? We have not seen it in other permits.

Commented [CR7]: IEPA - If the results are equivalent to 95% of 109.6 tpy NOx from Condition 4.b, then the annual result is 104.1 tpy.

If we had used 104.1 tpy in our NANSR math, the project increase would be ~5.5 tpy less, which would be < 20 tpy NOx increase, which would be < 80% of the NANSR triggering threshold.

(This gets a little confusing with paragraph C below. Maybe the ranges in B and C need to get shifted slightly. We wanted to draft in the concept for now.)

Commented [CR8]: IEPA - If we are not going to refer to 35 IAC 217 for monitoring requirements, it seems like we should also eliminate using it a substitute for recordkeeping permit conditions. Please check and see which provisions of 35 IAC 217.156 are important to IEPA and draft them as stand-alone permit conditions instead.

Page 8

- i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

- ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan

Commented [SJ9]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years for purposes of MSSCAM, what is the justification for using earlier years?

Commented [CR10R9]: IEPA - Please refer to Section 3.2 of the permit application for the justification. There is a half-page write-up about it there.

The short version is:
 2019 = polar vortex-related downtime and other mechanical/ maintenance work;
 2020 = COVID-related demand/ production decrease

Commented [SR11]: Confirm, with calculations, that these (the 2.2 and 4.5 MMBtu/hr heaters) are both based on actual emissions.

Commented [CR12R11]: IEPA - Why would we base the value for the 2.2 MMBtu/hr heater on actual emissions? It is a new unit, so the number is (and must be) based on PTE.

The NOx PTE of a 4.5 MMBtu/hr heater is 1.93 tpy:

$$4.5 \text{ MMBtu/hr} \times \text{MMscf}/1020 \text{ MMBtu} \times 8760 \text{ hr/year} \times 100 \text{ lb/MMscf} \times 1 \text{ ton}/2,000 \text{ lb} = 1.93 \text{ tpy.}$$

Therefore the 1.13 tpy does represent actuals rather than PTE.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com)
Subject: Quick Request re PQ
Date: Tuesday, April 19, 2022 9:52:00 AM

Hi Chloe,

Can you send me a page (for purposes of the permit record) for the 2017 and 2018 NOx emissions data that forms the basis of the representative calculation of the two year average of 24.09 tpy for PQ's fusing furnace?

Thanks.

Bob

From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: [External] RE: Quick Request re PQ
Date: Tuesday, April 19, 2022 9:59:31 PM
Attachments: [PQ LLC Joliet 2017 2018 Furnace NOx Emissions \(2022-0419\).pdf](#)

Bob –

Just to clarify, 24.09 tpy is not the two year average NOx emission rate for the furnace. 24.09 tpy is the difference between the proposed new permit limit (109.63 tpy) and the two year average (85.54 tpy). The two year average (85.54 tpy) is the average of 2017 emissions (86.28 tpy) and 2018 emissions (84.79 tpy).

The two year NOx history for 2017-2018, tpy for each year, two year total, and average are all shown in the attached table.

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert Robert.Smet@Illinois.gov
Sent: Tuesday, April 19, 2022 3:03 PM
To: Chloe Reece <CReece@trinityconsultants.com>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: Quick Request re PQ

Should just be a spreadsheet table which includes each years' 12 months of NOx emissions, where 24.09 tpy is determined to be the average.

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Tuesday, April 19, 2022 3:00 PM
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Thanks for clarifying, Bob.

Mark does the monthly tracking and annual emissions reporting for this site, so I think he'll be able to provide what you need.

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Subject: RE: Quick Request re PQ

Just a summary table of the 24 months of the per-month NOx emissions (in tpm) that formed the basis for the 24.09 tpy number. Need it for a complete application.

From: Chloe Reece <CRreece@trinityconsultants.com>
Sent: Tuesday, April 19, 2022 2:47 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: Quick Request re PQ

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I'm not 100% sure what you're asking for here in terms of a page with prior emissions data. Are you wanting the AER forms for the furnace for those 2 years? Something printed out of their tracking spreadsheet? A summary table and one paragraph write-up?

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PQ LLC - Joliet Facility**Fusing Furnace NOx Emissions 2017-2018**

DATE	NOx TONS	
Jan-17	6.54	
Feb-17	6.64	
Mar-17	7.89	
Apr-17	7.41	
May-17	7.40	
Jun-17	5.73	
Jul-17	7.73	
Jul-17	7.77	
Sep-17	7.00	
Oct-17	6.72	
Nov-17	7.43	
Dec-17	8.03	86.28 tpy
Jan-18	6.42	
Feb-18	7.10	
Mar-18	7.40	
Apr-18	7.61	
May-18	6.20	
Jun-18	7.28	
Jul-18	7.64	
Aug-18	7.35	
Sep-18	6.60	
Oct-18	7.80	
Nov-18	7.57	
Dec-18	5.84	84.79 tpy
TOTAL	171.07	
Average	85.54	

From: [Smet, Robert](#)
To: [Chloe Reece](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: RE: Quick Request re PQ
Date: Wednesday, April 20, 2022 8:12:00 AM

Of course. Thanks for the clarification. And thanks for the attached information.

From: Chloe Reece <CRreece@trinityconsultants.com>
Sent: Tuesday, April 19, 2022 9:59 PM
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Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: Quick Request re PQ

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From: [Smet, Robert](#)
To: [Mattison, Kevin](#)
Subject: Suggested Monitoring Language
Date: Thursday, April 21, 2022 9:17:00 AM

Hi Kevin,

Below is our tentative language for monitoring for the sodium silicate fusing furnace at PQ in Joliet, the source where you, Jason and I discussed requiring a CEMS rather than stack testing to determine emissions. Would you mind proofreading the language below and providing comments and suggesting changes? BTW, what is the distinction between a CEMS and a CERMS? Should we focus only on a CEMS or is it appropriate to allow for a CERMS as an alternative?

6. Monitoring Requirements

- a.
 - i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 6 months after the results from the testing in Condition 5(a) are obtained. The period in which the Permittee must install and calibrate the NO_x CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NO_x CEMS or CERMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation.
 - ii. The CEMS from Condition 6(a)(i) shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
 - iii. The Permittee shall either:
 - A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. **[Does this include calculating flow rate from some surrogate parameter, such as gas usage?]** In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
 - B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:

1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Note: The timing for the requirements in Condition 6(a)(iii)(A) and (B) is as specified in Condition 6(a)(i).

Thanks.

Bob

From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#)
Subject: Proposed Draft Permit
Date: Thursday, April 28, 2022 3:24:00 PM
Attachments: [89030015_042822.doc](#)

Besides the question raised re Condition 6(a)(iii), the attached is the draft permit we propose to go out for public notice and comment. With that in mind, please submit a waiver for extended review until the end of June, just to be on the safe side.

We will have to discuss the issue wrt not all pollutants will be decreasing from the annual limits set in the earlier permit (e.g., annual CO emissions are increasing).

Page 1

217/785-1705

CONSTRUCTION PERMIT - REVISED
~~PSD APPROVAL~~

PERMITTEE

INEOS US Chemicals
Attn: Junling Qiu
150 W. Warrenville Road
Naperville, IL 60563

Application No.: 89030015 I.D. No.: 043065AAG
Applicant's Designation: COGEN SYS Date Received: April 27, 2016
Subject: Cogeneration System
Date Issued: **DRAFT 4/28/2022**
Location: 150 W. Warrenville Road, Naperville

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a natural gas fired turbine and supplementary duct burner, with waste heat boiler, as described in the above referenced application. This Permit is granted based upon and subject to the findings and conditions which follow.

~~In conjunction with this permit, approval is given with respect to the regulations for Prevention of Significant Deterioration of Air Quality (PSD) for the plant, as described in the application, in that the Illinois EPA finds that the application fulfills all applicable requirements of 35 IAC Part 204. This approval is issued pursuant to the federal Clean Air Act and the PSD rules at 35 IAC Part 204. This approval may be appealed in accordance with provisions of 415 ILCS 5/40.3 and 35 IAC Part 105. This approval is based upon the findings that follow. This approval is subject to the following conditions. This approval is also subject to the general requirement that the plant be developed and operated consistent with the specifications and data included in the application and any significant departure from the terms expressed in the application, if not otherwise authorized by this permit, must receive prior written authorization from the Illinois EPA.~~

Revised Findings

- 1a. INEOS US Chemicals (INEOS), formerly BP Amoco, is revising their PSD permit, originally subject to the rules for the Prevention of Significant Deterioration (PSD), to (1) lower source-wide limits so as to no longer be a major source under the rules for PSD clarify that the lb/hr and ppm carbon monoxide limits for the turbine do not apply during periods of startup, shutdown or subzero temperature operation, (2) apply operational limits during startup, shutdown and subzero temperatures, (3) clarify that the lb/hr and ppm carbon monoxide limits for the turbine do not apply during periods of startup, shutdown or

Page 2

~~subzero temperature operation, lower source-wide limits so as to no longer be a major source under the rules for PSD and (4) update current language and requirements that apply, and do not apply, to the turbine and cogeneration system (e.g., replacement of water injection with SoLoNOx technology with discontinued use of water injection and removal of condition relating to ice fog hazards).~~

- b. The current units and controls consist of a gas turbine with a SoLoNOx combustion system, a supplementary duct burner and a waste heat boiler. This cogeneration system supplies electricity and steam to the site and as well as extra electricity to the City of Naperville.

Note: The use of a cogeneration system for the turbine, including the use of Low-NOx burners is addressed in Construction Permit 13010033.

2. ~~Although this revised permit will no longer be subject to PSD, the proposed changes will not affect the previous BACT determination for the turbine except where tighter requirements now apply (e.g., 42 ppm as required by 35 IAC 217.388(a)(1)(E)).~~ However, changes to the Illinois Pollution Control Board rules for requirements that apply to turbines in the Chicago ozone nonattainment area now necessitate that the NOx emission limitations be tighter than the original determination of BACT, ~~because the plantwide engine and turbine NOx emissions are below 100 tons per year, these requirements do not apply.~~
3. After reviewing all material submitted by INEOS, the Illinois EPA has determined that the project (i) complies with all applicable Board emission limits, (ii) complies with the ~~updated~~-federal New Source Performance Standards that apply to the turbine, and (iii) utilizes Best Available Control Technology for emissions of NOx.
4. An air quality analysis was not necessary for this revised permit because there will not be an emissions increase associated with the changes made to this permit.
5. The Illinois EPA has determined that the construction of the proposed project complies with all applicable Illinois Air Pollution Control Board Regulations and the federal Prevention of Significant Deterioration of Air Quality Regulations (PSD), 35 IAC Part 204.
6. A copy of the application, the Project Summary prepared by the Illinois EPA for this application, and a draft of this construction permit were made available at a repository in the regional office in Des Plaines and online, and the public was given notice and an opportunity to examine this material, to submit comments on the draft permit, and to participate in a public hearing on this matter.

Formatted: Not Strikethrough

The Illinois EPA is issuing approval to construct the proposed project subject to the following conditions and consistent with the specifications and data included in the application. Any departure from the conditions of

Commented [SR1]: Keep.

Page 3

this approval or terms expressed in the application would need to receive prior written authorization of Illinois EPA.

Conditions

1. Standard conditions for issuance of construction permits, attached hereto and incorporated herein by reference, shall apply to this project, unless superseded by the following special conditions.

2a. i. Emissions of nitrogen oxides (NOx) from the gas turbine shall be controlled by a low-NOx burner system.

ii. Emissions of NOx, attributable to the turbine, shall not exceed 49-42 ppm, adjusted to 15 percent oxygen in the exhaust gas, at ISO standard day conditions.

Note: The previous determination of BACT for the turbine, 49 ppm, adjusted for 15 percent oxygen in the exhaust gas at ISO standard day conditions has been superseded by tighter RACT requirements pursuant to 35 IAC 217.388(a)(1)(E).

~~iii. These limitations shall not apply to the extent that noncompliance is a result of a malfunction of the system for production of injection water, provided that good air pollution control practice to minimize NOx emissions is followed. For this purpose, the definition of "malfunction" at 40 CFR 60.2 shall apply.~~

b. Emissions of NOx attributable to the duct burner shall not exceed 0.1 lb/million Btu heat input to the duct burner.

Condition 2 represents the application of the Best Available Control Technology for NOx as required by Section 165 of the Clean Air Act.

3-1a. The gas turbine is subject to a New Source Performance Standard (NSPS) for Stationary Gas Turbines, 40 CFR 60 Subparts A and GG adopted as 35 IAC Part 230. The Illinois EPA is administering NSPS in Illinois on behalf of USEPA under a delegation agreement.

b. The NOx emission rate from the combustion turbine shall not exceed 42 ppm NOx concentration (corrected to 15 percent O₂ on a dry basis), pursuant to 35 IAC 217.388(a)(1)(E).

Note: This standard became effective after the original permit for the turbine was constructed. It should be noted that the turbine cannot be treated as a low usage unit because the turbine complied with the requirement of 35 IAC 217.388(a)(1)(E) at the time the rule became effective.

c. At all times, the permittee shall, to the extent practicable, maintain and operate the turbine and associated control system in a manner

Commented [CR2]: IEPA - Can we move the BACT language to the start of this condition? When the "basis" is listed at the end of the condition, it's a little confusing where this 49 ppm value comes from (NOx RACT, NSPS, etc.).

Commented [SR3R2]: State the technology first, then the standard.

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Commented [SR4]: With this now being removed, should this entire condition be replaced with RESERVED?

Commented [CR5R4]: IEPA – Could we replace injection water with SoLoNOx system malfunctions instead?

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Page 4

consistent with good air pollution control practice for minimizing emissions.

- 3-2a. This permit is issued based on the turbines not being subject to the NSPS for Electric Utility Steam Generating Units, 40 CFR 60 Subpart Da. This is because the nominal 11 MW turbine does meet the definition of an electric steam generating unit, which requires in part, that it supply more than 25 MW net-electrical output to any utility power distribution system for sale.
- b. This permit is issued based on the turbine not being subject to 40 CFR 60 Subpart TTTT, the NSPS for Greenhouse Gas Emissions for Electric Generating Units. This is because the turbine was constructed prior to the applicability date of the rule (i.e., January 8, 2014).
- c. This permit is issued based on the turbine not being subject to the requirements of the federal Acid Rain Program because the rating of the turbine has a nameplate capacity that is less than 25 MWe. (Refer to 40 CFR 72.6(b)(2)).
- d. This permit is issued based on the turbine not being subject to the requirements of the federal Cross-State Air Pollution Rule (CSAPR), 40 CFR Part 97. This is because the nominal 11 MW turbine does not meet the applicability requirements for a cogenerating unit, which in part, requires that it serve during 1995 or 1996 a generator with a nameplate capacity greater than 25 MWe.
- e. This permit is issued based on the turbine not being subject to the requirements of 35 IAC 217.706 because, pursuant to 35 IAC 217.304(b), the rating of the turbine has a design heat input that is not greater than 250 mmBtu/hr and did not commence operation after January 1, 1999.
- 4a. Natural gas shall be the only fuel fired in the turbine and duct burner.
- b. i. Operation of the turbine during startup, shutdown and subzero temperature modes shall not exceed 400 hour per year, total.
- ii. The duration of each shutdown event shall not exceed 60 minutes.
- iii. The duration of each startup event shall not exceed 240 minutes.
- c. The emissions of carbon monoxide (CO) from the cogeneration system, i.e., the turbine and duct burner combined, shall not exceed 77 ppm, 20 pounds/hour and 61.4 tons/year, except that the lb/hr and ppm CO limits for the turbine do not apply during periods of startup, shutdown or subzero temperature operation. For purposes of this permit, based on manufacturer-provided data, a startup shall be defined as "the operation in the period of shutdown from fuel flow/light on conditions until the turbine reaches SoLoNOx mode. A shutdown shall be defined as "the operation in the period of time from the initiation of the shutdown and descending to fuel flow/light off conditions." The subzero

Page 5

operation is any "operation of the turbine during which ambient temperatures are lower than -6 °F."

- d. i. The emissions of nitrogen oxides from the cogeneration system shall not exceed 20 pounds/hour, and 42.8 tons/year.
- ii. The cogeneration system, i.e., the turbine and duct burner, shall also meet the requirements, including operational and emissions limits, specified in construction permit 13010033.
- e. i. Fuel usage rates shall not exceed the following limits:
 - A. For natural gas:
 - 1. Turbine and Duct Burner: 124 mmscf/month and 1459 mmscf/year.
 - 2. Boilers: 30 mmscf/month and 300 mmscf/year.
 - 3. Engines: 1.0 mmscf/month and 9.0 mmscf/year.
 - B. For diesel fuel:
 - 1. Engines: 920 gallons/month and 9150 gallons/year.
- ii. Emissions from the source shall not exceed the limits in Attachment 1.
- f. Compliance with the annual limits set by this permit shall be determined from the sum of the data for the current month plus the preceding 11 months (running 12 months total).

5a. Reserved.

This Condition previously addressed requirements that applied to the initial startup of the turbine.

- b. The Permittee shall notify the Agency in writing upon the initial start-up of the cogeneration system.
- 6-1a. The nitrogen oxide (NOx) emissions of the cogeneration system shall be measured by an approved testing service. Measurements shall be made in accordance with 40 CFR 60, Appendix A, Method 20. These tests shall be conducted, documented and reported in accordance with 35 IAC Part 283.
- b. Within 180 days of the initial startup of the cogeneration system, NOx emissions shall be measured.
- c. Prior to carrying out these tests, the Pre-Test Procedures of 35 IAC Part 283, Subpart B, shall be completed. The Agency's regional office in Peoria and the Agency's Source Emission Test Specialist shall be notified a minimum of thirty (30) days prior to the expected date of

Commented [SR6]: Why is this the same when the ppm value went down from 49 to 42 ppm?

Page 6

these tests and further notified a minimum of five (5) working days prior to the test of the exact date, time and place of these tests, to enable the Agency to witness these tests.

Illinois Environmental Protection Agency
Attn: Source Emission Test Specialist
Division of Air Pollution Control
9511 Harrison Street
Des Plaines, Illinois 60016

- d. Three (3) copies of the Final Report(s) for these tests, in accordance with 35 Ill. Adm. Code 283, Subparts E, F, and G, shall be submitted to the Agency within 14 days after the test results are compiled and finalized.
 - e. A copy of the Summary of Results, General Information, and Conclusions, as contained in the Final Report, shall also be submitted to the Source Emission Test Specialist.
- 6-2a. Pursuant to 35 IAC 217.394(b), the Permittee must conduct subsequent performance tests pursuant to 35 IAC 217.394(b)(2), and (b)(3) as follows:
- i. If the monitored data that is required by Condition 7-2 below shows that the unit is not in compliance with the applicable emissions concentration, the Permittee must report the deviation to the Illinois EPA in writing within 30 days and conduct a performance test pursuant to 35 IAC 217.394 (c) within 90 days of the determination of noncompliance; and
 - ii. When, in the opinion of the Illinois EPA or USEPA, it is necessary to conduct testing to demonstrate compliance with 35 IAC 217.388, the Permittee must, at its own expense, conduct the test in accordance with the applicable test methods and procedures specified in 35 IAC 217.294(c) within 90 days after receipt of a notice to test from the Illinois EPA or USEPA.
- 6-3. Pursuant to 35 IAC 217.394(c)(2), the Permittee must conduct a performance test using the applicable procedures and methods in 40 CFR 60.4400, as incorporated by reference in 35 IAC 217.104.
- 7-1. The Permittee may, but is not required to, for purposes of determining excess emissions, use a CEMS that meets the requirements of 40 CFR 60.334(b). Also, if the Permittee has previously submitted and received approval from the Illinois EPA of a procedure for monitoring compliance with the applicable NOx emission limit under 40 CFR 60.332, that approved procedure may continue to be used.
- 7-2. Pursuant to 35 IAC 217.394(d), except for those years in which a performance test is conducted pursuant to 35 IAC 217.394(a) or (b), the Permittee must monitor NOx concentrations from the unit annually, once between January 1 and May 1 or within the first 876 hours of operation

Page 7

per calendar year, whichever is later. If annual operation is less than 876 hours per calendar year, the turbine must be monitored at least once every five years. Monitoring must be performed as follows:

- i. A portable NOx monitor utilizing method ASTM D6522-00, as incorporated by reference in 35 IAC 217.104, or a method approved by the Illinois EPA must be used. If the turbine combusts both liquid and gaseous fuels as primary or backup fuels, separate monitoring is required for each fuel.
 - ii. NOx and O₂ concentrations measurements must be taken three times for a duration of at least 20 minutes. Monitoring must be done at the highest achievable load. The concentrations from the three monitoring runs must be averaged to determine whether the turbine is in compliance with the applicable emissions concentration, as specified in 35 IAC 217.388.
8. Pursuant to 35 IAC 217.388(a)(4), the Permittee shall inspect and perform periodic maintenance on the turbine, in accordance with a Maintenance Plan that documents either:
- i. The manufacturer's recommended inspection and maintenance of the applicable air pollution control equipment, monitoring device, and turbine; or
 - ii. If the original equipment manual is not available or substantial modifications have been made that require an alternative procedure for the applicable air pollution control device, monitoring device, or turbine, the Permittee must establish a plan for inspection and maintenance in accordance with what is customary for the type of air pollution control equipment, monitoring device, and turbine.
- 9a. Pursuant to 35 IAC 217.396(a), the Permittee shall maintain the following records:
- i. Identification, type (e.g., lean-burn, gas-fired), and location of each unit.
 - ii. Calendar date of the record.
 - iii. The number of hours the unit operated on a monthly basis and during each ozone season.
 - iv. Type and quantity of the fuel used on a daily basis.
 - v. The results of all monitoring performed on the unit and reported deviations.
 - vi. The results of all tests performed on the unit.

Page 8

- vii. The plan for performing inspection and maintenance of the units, air pollution control equipment, and the applicable monitoring device pursuant to 35 IAC 217.388(a)(4).
 - viii. A log of inspections and maintenance performed on the unit's air emissions, monitoring device, and air pollution control device. These records must include, at a minimum, date, load levels and any manual adjustments, along with the reason for the adjustment (e.g., air to fuel ratio, timing or other settings).
 - ix. Identification of time periods for which operating conditions and pollutant data were not obtained by either a CEMS or alternate monitoring procedures, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- b. These records shall be retained for two years at the plant and be available for inspection by the Agency.
- 10a. The Permittee shall submit semi-annual reports to the Agency which identify any periods during which the continuous monitoring system was not operational, and a turbine was in operation, with explanation.
- b. i. Pursuant to 35 IAC 217.396(c), the Permittee must notify the Illinois EPA in writing 30 days and five days prior to testing, pursuant to 35 IAC 217.394(a) and (b) and:
- A. If, after the 30-day notice for an initially scheduled test is sent, there is a delay (e.g., due to operational problems) in conducting the performance test as scheduled, the Permittee must notify the Illinois EPA as soon as possible of the delay in the original test date, either by providing at least seven days prior notice of the rescheduled date of the performance test or by arranging a new test date with the Illinois EPA by mutual agreement;
 - B. Provide a testing protocol to the Illinois EPA 60 days prior to testing; and
 - C. Not later than 30 days after the completion of the test, submit the results of the test to the Illinois EPA.
- ii. Pursuant to the requirements for monitoring in 35 IAC 217.394(d), the Permittee must report to the Illinois EPA any monitored exceedances of the applicable NO_x concentration from 35 IAC 217.388(a)(1) or (a)(2) within 30 days after performing the monitoring.
- iii. Within 90 days after permanently shutting down the turbine, the Permittee must withdraw or amend the applicable permit to reflect that the turbine is no longer in service.

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11. One copy of reports and notifications required by this permit shall be sent to:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

12. This approval to construct does not relieve the Permittee of the responsibility to comply with all Local, State, and Federal Regulations which are part of the applicable Illinois State Implementation Plan, as well as all other applicable Federal, State, and Local requirement.

It should be noted that this permit has been revised to (1) clarify that the lb/hr and ppm carbon monoxide limits for the turbine do not apply during periods of startup, shutdown or subzero temperature operation, (2) apply operational limits during startup, shutdown and subzero temperatures, (3) establish limits so as to no longer be a major source under PSD and (4) update current requirements that do and do not apply to the turbine and cogeneration system (e.g., discontinued use of water injection).

If you have any questions on this permit, please call Bob Smet at 217/785 1705.

William D. Marr
Manager, Permit Section
Bureau of Air

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Attachment 1
Maximum Sourcewide Emissions (tpy)

Pollutant	Turbine and Duct Burner ^a	Boilers	Infinia Pilot Plant	Engines ^b	Total Emissions
NO _x	42.8	20.8	0	9.9	73.5
CO	61.4	24.3	0	11.7	97.4
PM/PM ₁₀ /PM _{2.5}	5.9	1.1	0	3.0	10.0
SO ₂	0.5	0.1	0	0.8	1.4
VOM	4.7	0.9	5.4	2.7	13.7 ^c

- a. Values listed in this table include emissions from startup, shutdown and cold weather conditions.
- b. Seven of eight engines are emergency generators and the other is a fire pump also used for emergency purpose. They are listed as insignificant activities in the CAAPP permit.
- c. VOM emissions from other insignificant sources are negligible.

WDM:RPS:tan

Page 11

Attachment 2
Findings for the Original Permit (1989)

1. Amoco Research Center (Amoco) plans to construct a cogeneration facility, consisting of 1 gas turbine controlled by water injection, a supplementary duct burner, and a waste heat boiler. The facility will supply electricity and steam to Amoco.
2. Amoco is located in Naperville Township in DuPage County. The area is currently designated nonattainment for ozone (emissions of volatile organic material). The area is attainment or unclassified for other criteria air contaminants. The project has potential emissions of 96 tons/year of carbon monoxide and 92 tons/year of nitrogen oxides (NOx). The project is subject to the federal PSD rules for NOx emissions as a major modification of an existing major source.
3. After reviewing all material submitted by Amoco, the Illinois EPA has determined that the project (i) should comply with all applicable Board emission limits, (ii) should comply with the federal New Source Performance Standard, and (iii) will utilize Best Available Control Technology on emissions of NOx.
4. The air quality analysis submitted by Amoco and reviewed by the Illinois EPA shows that the project will not cause a violation of the NOx ambient air quality standard or increment.
5. The Illinois EPA has determined that the construction of the proposed project complies with all applicable Illinois Air Pollution Control Board Regulations and the federal Prevention of Significant Deterioration of Air Quality Regulations (PSD), 40 CFR 52.21.
6. A copy of the application, the Agency's review of the application, and a draft of this permit were placed in a location in Naperville. The public was given notice and the opportunity to examine this material and to submit comments and to request and participate in a public hearing on this matter.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
- 6.
- a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: [External] PQ-IEPA Call
Date: Thursday, April 28, 2022 10:06:51 PM
Attachments: [image001.png](#)

Bob –

Mark Skowron and I are both still finishing up May 1st AERs and ACCs tomorrow.

How does your schedule look on Monday or Tuesday for a call instead of tomorrow?

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com



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-

Don't Miss Our Upcoming Trinity Events:

Apr 26-27, 2022 - [Fundamentals of Air Dispersion Modeling](#) – Chicago, IL
Apr 28-29, 2022 - [AERMOD Modeling Computer Lab](#) – Chicago, IL
May 18, 2022 - [Complimentary Illinois Regulatory Update Luncheon](#) – Oakbrook Terrace, IL
May 24, 2022 - [Complimentary Luncheon Seminar – Illinois Regulatory Updates](#) – Decatur, IL

From: [Chloe Reece](#)
To: [Smet, Robert](#)
Cc: [Mark Skowron \(Joliet\)](#)
Subject: [External] RE: Proposed Draft Permit
Date: Monday, May 2, 2022 8:29:05 AM

I can do something between 8:30 – 10:00 AM tomorrow, or at 2:00 PM or later.

Regards,
Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, April 29, 2022 8:54 AM
To: Chloe Reece <CReece@trinityconsultants.com>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: Proposed Draft Permit

Chloe,

Sorry, I was juggling. That's the danger of having multiple files open at the same time and rushing to move product.

Tuesday looks better than Monday for a call. Do you have a preferred time?

Bob

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Thursday, April 28, 2022 9:25 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: Proposed Draft Permit

Bob –

You attached the INEOS permit. Did you mean to copy Junling, or did you mean to attach the PQ – Joliet permit?

Glad I'm not the only one juggling a bit much this week!

- Chloe

Chloe Reece
Principal Consultant

P 630.495.1470

1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>

Sent: Thursday, April 28, 2022 3:25 PM

To: Chloe Reece <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>

Subject: Proposed Draft Permit

Besides the question raised re Condition 6(a)(iii), the attached is the draft permit we propose to go out for public notice and comment. With that in mind, please submit a waiver for extended review until the end of June, just to be on the safe side.

We will have to discuss the issue wrt not all pollutants will be decreasing from the annual limits set in the earlier permit (e.g., annual CO emissions are increasing).

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From: [Smet, Robert](#)
To: [Chloe Reece](#)
Cc: [Mark Skowron \(Joliet\)](#); [Schnepp, Jason](#)
Subject: RE: Proposed Draft Permit
Date: Monday, May 2, 2022 8:32:00 AM

How about 3:30 tomorrow (Tuesday)?

The 180-day review period ends this week. Can I get a waiver until the end of June?

From: Chloe Reece <CRreece@trinityconsultants.com>
Sent: Monday, May 2, 2022 8:29 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: [External] RE: Proposed Draft Permit

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Chloe

Chloe Reece
Principal Consultant

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From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, April 28, 2022 3:25 PM
To: Chloe Reece <CRreece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: Proposed Draft Permit

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From: [Smet, Robert](#)
To: [Smet, Robert](#); [Schnepp, Jason](#); [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#); [Ken Schulte \(Joliet\)](#); [Paige Pryse](#); [Jennie Houle \(NS\)](#)
Subject: PQ Call

-- Do not delete or change any of the following text. --

When it's time, join your Webex meeting here.

Join meeting <<https://illinois.webex.com/illinois/j.php?MTID=m0f6b05e3194429e7168b720d092bdae1>>

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<https://illinois.webex.com/illinois/j.php?MTID=m0f6b05e3194429e7168b720d092bdae1> <<https://illinois.webex.com/illinois/j.php?MTID=m0f6b05e3194429e7168b720d092bdae1>>

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Meeting number (access code): 2456 859 6382

Meeting password: MkYc8bvYU33

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+1-415-655-0002,,24568596382## <tel:%2B1-415-655-0002,,*01*24568596382%23%23*01*> US Toll

Join by phone

+1-312-535-8110 United States Toll (Chicago)

+1-415-655-0002 US Toll

Global call-in numbers <<https://illinois.webex.com/illinois/globalcallin.php?MTID=m904a7d86a384a898af3594b7b7d7cea7>>

Join from a video system or application

Dial [24568596382@illinois.webex.com](tel:24568596382@illinois.webex.com) <<sip:24568596382@illinois.webex.com>>

You can also dial 173.243.2.68 and enter your meeting number.

Join using Microsoft Lync or Microsoft Skype for Business

Dial [24568596382.illinois@lync.webex.com](tel:24568596382.illinois@lync.webex.com) <<sip:24568596382.illinois@lync.webex.com>>

If you are a host, click here <<https://illinois.webex.com/illinois/j.php?MTID=md2e29900f964da1ba2eb978ae504cb18>> to view host information.

Need help? Go to <https://help.webex.com> <<https://help.webex.com>>

From: [Paige Pryse](#)
To: [Smet, Robert](#)
Subject: [External] Accepted: PO Call

From: [Smet, Robert](#)
To: [Metz, Cassandra](#)
Subject: Draft Project Summary
Date: Monday, May 2, 2022 9:48:00 AM
Attachments: [PQ Joliet PS 031422.docx](#)

Hi Cassie,

I've attached a draft project summary that is still in the process of being finalized (but has enough info for you to draft up the public notice document). In the meantime, after you drafted it up, please let me review it and provide my comments.

I will let you know soon when we're ready to go.

Thanks.

Bob

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ LLC for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: May XYZ, 2022
Public Comment Period Closes: June XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ LLC (PQ) has requested a construction permit for a rebuild of its sodium silicate fusing furnace (Fusing Furnace #2), and for other associated equipment at its sodium silicate manufacturing plant in Joliet.

The key changes that PQ is proposing are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed in 1961. Fusing Furnace #2 has a current rated heat input capacity of 32 mmBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Soda ash and silica sand are the only two raw materials used to produce sodium silicate. The soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand (also known as "batch") is transported via bucket elevator and screw conveyor to Fusing Furnace #2. The batch melts in the rectangular furnace bed comprised of refractory and fired by natural gas and discharges on the opposite side as molten, soluble sodium silicate. There are no additives for color or special processing to eliminate bubbles (e.g., no sodium sulfate) or seeds. Any dust generated from the silos, weigh bin and mixer (collectively referred to as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. The furnace has a current production capacity of 56,000 tons per year, but PQ will take a production limit as a result of this project, to 48,281 tons per year. PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers,

or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through several intermediate tanks, which can be filtered (using filter aid or similar dry raw materials added through negligible emitting bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (emits negligible quantities of PM).

The sodium silicate furnace is different than a glass manufacturing furnace, in that there is no post-process finishing of the molten sodium silicate. There is no distributor, forehearth, bowl or working end for bottling or float bath. As noted above, there are no additives for color or special processing to eliminate bubbles. PQ does not manufacture soda-lime glass, lead glass, fused silica, borosilicate, or 96% silicate (i.e., the commercially produced glass types described in AP-42 Section 11.15).

While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are operations that emit negligible amounts of particulate matter. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, the zeolite and metasilicate manufacturing plants. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project.

IV. APPLICABILITY OF NEW SOURCE REVIEW

A. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions while not major for volatile organic material (VOM) emissions under Illinois' MSSCAM rules (35 IAC Part 203). The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

For purposes of MSSCAM, there will be an increase in allowable NOx emissions over their actual emissions. Actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes	Year	NOx
Fusing Furnace #2	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	-1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

B. PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

PQ's Joliet facility is not a major source for any pollutant under Illinois' rules for the Prevention of Significant Deterioration (PSD), 35 IAC Part 204. This is because no pollutant is emitted in excess of its major source threshold.

C. CHANGE IN PERMITTED EMISSIONS ~~OF THE PROJECT~~

The increases and decreases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. As noted above, the actual annual emissions from the project should be lower than the requested permitted emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase/Decrease (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	137.5	109.6	-37.9
Carbon Monoxide (CO)	35.9	45.5	9.6
Volatile Organic Material (VOM)	5.7	5.8	0.1

Particulate Matter (PM/PM ₁₀ /PM _{2.5})	20.6	13.4	-7.2
Sulfur Dioxide (SO ₂)	5.6	5.8	0.2

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. Among the standards that the fusing furnace must meet are: 35 IAC 212.123(a) for opacity, 35 IAC 212.322 for particulate matter emissions, 35 IAC 214.301 for sulfur dioxide emissions ~~and~~, 35 IAC 218.301 for emissions of volatile organic materials ~~and 35 IAC 217.157 for monitoring of NO_x~~. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under MSSCAM. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is performed by PQ to track operation of the furnace. This monitoring is performed to determine that the operation of the furnace is within the ranges that are consistent with good operating, combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are the following: raw material feed rate and natural gas flow rate. Emissions monitoring of NO_x emissions as applicable under 35 IAC 217.157(b) and the operational monitoring are both being required to assure that the operation and NO_x emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

VII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.

From: [Schnepp, Jason](#)
To: [Smet, Robert](#)
Subject: Accepted: PQ Call

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

From: [Smet, Robert](#)
To: [Schnepp, Jason](#)
Subject: Draft of PQ PN
Date: Monday, May 2, 2022 2:05:00 PM
Attachments: [Revised PN New Construction Permit.docx](#)

FYI - I've included my proposed changes.

Illinois Environmental Protection Agency

Notice of Public Comment Period
Proposed Issuance of a Construction Permit
PQ LLC in Joliet

PQ LLC (PQ) has applied to the Illinois EPA Bureau of Air for a construction permit for a rebuild of its sodium silicate fusing furnace, and for other associated equipment at its sodium silicate manufacturing plant located at 111 Ingalls Avenue in Joliet. The key changes that PQ is proposing are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production. The project is not considered major for purposes of the state's rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. The source is not a major source under Illinois' rules for the Prevention of Significant Deterioration, 35 IAC Part 204.

Based on its review of the application, the Illinois EPA has made a preliminary determination that this project will comply with the applicable air pollution control regulations and has prepared a draft permit for public review.

The Illinois EPA is accepting comments prior to making a final decision on this application. Comments must be received by 11:59 PM on **June XX, 2022**. If sufficient interest is expressed in this matter, a hearing or other informational meeting may be held. Comments, questions and requests for information should be directed to Cassandra Metz, Office of Community Relations, Illinois EPA, PO Box 19506, Springfield, Illinois 62794-9506, phone 217/785-7491, TDD 866/273-5488, Cassandra.Metz@Illinois.gov.

The repositories for these documents and the application will be made available at the Illinois EPA's offices at 9511 Harrison Street, Des Plaines, 847/294-4000 and 1021 N. Grand Ave. East, Springfield, 217/785-7491 (please call ahead to assure that someone will be available to assist you). The draft permit and other documents may also be viewed at <http://bit.ly/2SiUSql>. Copies of the documents will be made available upon request to the contact listed above.

The facility is located in an area of Environmental Justice concern. More information concerning Environmental Justice may be found at <https://www2.illinois.gov/epa/topics/environmental-justice/Pages/default.aspx>.

From: [Schnepp, Jason](#)
To: [Smet, Robert](#)
Subject: RE: Draft of PQ PN
Date: Monday, May 2, 2022 2:59:59 PM

I have no comments.

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Monday, May 2, 2022 2:05 PM
To: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Subject: Draft of PQ PN

FYI - I've included my proposed changes.

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From: [Smet, Robert](#)
To: [Metz, Cassandra](#)
Subject: RE: Draft Project Summary
Date: Monday, May 2, 2022 3:01:00 PM
Attachments: [Revised PN New Construction Permit.docx](#)

Attached is the revised PN doc. We'll get back with you when we're ready to officially go forward with the project.

From: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Sent: Monday, May 2, 2022 1:56 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Draft Project Summary

Good afternoon Bob. At present, the PS does not include the address, so I left it highlighted for now.
Cassie

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Monday, May 2, 2022 9:49 AM
To: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Subject: Draft Project Summary

Hi Cassie,

I've attached a draft project summary that is still in the process of being finalized (but has enough info for you to draft up the public notice document). In the meantime, after you drafted it up, please let me review it and provide my comments.

I will let you know soon when we're ready to go.

Thanks.

Bob

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Illinois Environmental Protection Agency

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PQ LLC in Joliet

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Based on its review of the application, the Illinois EPA has made a preliminary determination that this project will comply with the applicable air pollution control regulations and has prepared a draft permit for public review.

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The facility is located in an area of Environmental Justice concern. More information concerning Environmental Justice may be found at <https://www2.illinois.gov/epa/topics/environmental-justice/Pages/default.aspx>.

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Cc: [Chloe Reece](#); [Jennie Houle \(NS\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#); [Ken Schulte \(Joliet\)](#)
Subject: [External] PQ LLC Joliet - draft IEPA Construction Permit: CO, SO2, VOM Emission Rates Follow-up
Date: Tuesday, May 3, 2022 11:08:41 AM
Attachments: [image003.jpg](#)

Bob,

As a follow-up to our call this morning, I confirmed with Chloe that PQ will not exceed the currently permitted Sodium Silicate Fusing Furnace emissions rates for SO2, VOM, and CO:

CAAPP Permit references:

- 4.1.2.c.i.B: SO2 limit 1.3 lb/hr
- 4.1.2.d.i.A: VOM limit 1.3 lb/hr
- 4.1.2.e.i.A: CO limit 8.2 lb/hr

Thanks,

Mark

331-444-8900

Mark J. Skowron

EHS Liaison

331-444-8900

hse_pq_sig



www.PQCorp.com

From: [Smet, Robert](#)
To: ["Ogulei.David@epa.gov"](mailto:Ogulei.David@epa.gov)
Subject: PQ Draft Permit and Project Summary
Date: Tuesday, May 3, 2022 11:21:00 AM
Attachments: [21110013_050322.doc](#)
[PQ Joliet PS 050322.docx](#)

Hi David,

I've attached our current draft permit and project summary for PQ's proposed Furnace Rebuild project at their sodium silicate manufacturing facility in Joliet. There might be some very minor tweaks before we go out for public comments but these are basically the official documents. Please provide comments as usual.

Would it be possible to have your comments to me by Friday afternoon? I apologize if that it is too soon.

Thanks.

Bob

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued: DRAFT 5-3-2022

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.

- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

	Emission Limits
--	-----------------

Pollutant	pounds/hour	Tons/Year
NOx	----	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5

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PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

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- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a.
 - i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 6 to 12 months after the initial startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation.
 - ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
 - iii. The Permittee shall:

Use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow

method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NO_x conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NO_x that is performed on the unit.
 - ix. A log for the NO_x monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - x. Identification of time periods for which operating conditions and pollutant data were not obtained by the

Page 7

continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.

- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr

Page 8

Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Page 9

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
- 6.
- a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ LLC for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: May XYZ, 2022
Public Comment Period Closes: June XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ LLC (PQ) has requested a construction permit for a rebuild of its sodium silicate fusing furnace (Fusing Furnace #2), and for other associated equipment at its sodium silicate manufacturing plant located at 111 Ingalls Avenue in Joliet.

The key changes that PQ is proposing are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed in 1961. Fusing Furnace #2 has a current rated heat input capacity of 32 mmBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Soda ash and silica sand are the only two raw materials used to produce sodium silicate. The soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand (also known as "batch") is transported via bucket elevator and screw conveyor to Fusing Furnace #2. The batch melts in the rectangular furnace bed comprised of refractory and fired by natural gas and discharges on the opposite side as molten, soluble sodium silicate. There are no additives for color or special processing to eliminate bubbles (e.g., no sodium sulfate) or seeds. Any dust generated from the silos, weigh bin and mixer (collectively referred to as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. The furnace has a current production capacity of 56,000 tons per year, but PQ will take a production limit as a result of this project, to 48,281 tons per year. PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium

silicate "chunks" drop down chutes into one of three pressurized dissolvers, or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through several intermediate tanks, which can be filtered (using filter aid or similar dry raw materials added through negligible emitting bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (emits negligible quantities of PM).

The sodium silicate furnace is different than a glass manufacturing furnace, in that there is no post-process finishing of the molten sodium silicate. There is no distributor, forehearth, bowl or working end for bottling or float bath. As noted above, there are no additives for color or special processing to eliminate bubbles. PQ does not manufacture soda-lime glass, lead glass, fused silica, borosilicate, or 96% silicate (i.e., the commercially produced glass types described in AP-42 Section 11.15).

While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are operations that emit negligible amounts of particulate matter. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, the zeolite and metasilicate manufacturing plants. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project.

IV. APPLICABILITY OF NEW SOURCE REVIEW

A. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions but is not major for volatile organic material (VOM) emissions under Illinois' MSSCAM rules (35 IAC Part 203). The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

For purposes of MSSCAM, there will be an increase in allowable NOx emissions over their actual emissions. Actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes	Year	NOx
Fusing Furnace #2	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	-1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

B. PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

PQ's Joliet facility is not a major source for any pollutant under Illinois' rules for the Prevention of Significant Deterioration (PSD), 35 IAC Part 204. This is because no pollutant is emitted in excess of its major source threshold.

C. CHANGE IN PERMITTED EMISSIONS

The increases and decreases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. As noted above, the actual annual emissions from the project should be lower than the requested permitted emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase/Decrease (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	137.5	109.6	-37.9
Carbon Monoxide (CO)	35.9	35.9	0.0

Volatile Organic Material (VOM)	5.7	5.7	0.0
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	20.6	13.4	-7.2
Sulfur Dioxide (SO ₂)	5.6	5.6	0.0

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. Among the standards that the fusing furnace must meet are: 35 IAC 212.123(a) for opacity, 35 IAC 212.322 for particulate matter emissions, 35 IAC 214.301 for sulfur dioxide emissions and 35 IAC 218.301 for emissions of volatile organic materials. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under MSSCAM. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is performed by PQ to track operation of the furnace. This monitoring is performed to determine that the operation of the furnace is within the ranges that are consistent with good operating, combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are the following: raw material feed rate and natural gas flow rate. Emissions monitoring of NOx emissions as applicable under 35 IAC 217.157(b) and the operational monitoring are both being required to assure that the operation and NOx emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

VII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.

From: [Lou Henderson\(VF\)](#)
To: [Smet, Robert](#)
Subject: [External] Automatic reply: PQ LLC Joliet - draft IEPA Construction Permit: CO, SO2, VOM Emission Rates Follow-up
Date: Tuesday, May 3, 2022 11:29:37 AM

I will be out of the office until May 9 and will reply when I return.

Regards,
Lou Henderson

From: [Smet, Robert](#)
To: [Schnepp, Jason](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#); [Mark Skowron \(Joliet\)](#); [Ken Schulte \(Joliet\)](#); [Paige Pryse](#); [Jennie Houle \(NS\)](#)
Subject: Canceled: PQ Call
Importance: High

From: [Smet, Robert](#)
To: ["Ogulei.David@epa.gov"](mailto:Ogulei.David@epa.gov)
Subject: Application Info
Date: Tuesday, May 3, 2022 2:35:00 PM
Attachments: [Application.pdf](#)
[PQ LLC Joliet 2017 2018 Furnace NOx Emissions \(2022-0419\).pdf](#)

Forgot to send you the attached.



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Environmental Protection Agency
BUREAU OF AIR

PQ LLC
111 Ingalls Avenue
Joliet, Illinois 60435
Tel: (815) 727-3651
Fax: (815) 774-2804

October 29, 2021

Mr. Bill Marr
Manager, Permit Section
Division of Air Pollution Control (MC 11)
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794

Re: Construction Permit Application – Furnace Rebuild Project
PQ LLC – Joliet Plant
CAAPP Permit No. 96030053 | Facility ID 197045ABO

Dear Mr. Marr:

PQ LLC (formerly PQ Corporation) is submitting this construction permit application to rebuild portions of the existing sodium silicate manufacturing furnace (Fusing Furnace #2) at its facility located in Joliet, Illinois (Joliet Plant).

Furnace rebuilds are required to maintain the furnace due to degradation of the furnace refractory, normal wear-and-tear, and fouling of the furnace flues. The project at the Joliet Plant is expected to include replacing burners and associated burner control systems, changes to firing configuration, and increasing furnace volume. The project is expected to increase the solid glass production rate above current actual rates.

Enclosed are two (2) copies of the permit application and the application fee check. Should you have any questions regarding this application, please contact me at 815-774-2739 or PQ HSE Specialist Mark Skowron at 331-444-8900 / mark.skowron@pqcorp.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Schulte", is written over a light blue horizontal line.

Ken Schulte
Site Manager

Enclosures: Construction Permit Application (2 copies)
Application Fee Check

cc: Mark J. Skowron, PQ Lead HSE Specialist [electronic copy]
Chloe Reece, Trinity Consultants [electronic copy]

CONSTRUCTION PERMIT APPLICATION

Furnace Rebuild Project

PQ LLC (formerly PQ Corporation) / Joliet Plant

Prepared By:

TRINITY CONSULTANTS

1801 S Meyers Rd
Suite 350
Oakbrook Terrace, IL 60181
630-495-1470

October 2021

Project 211401.0095



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1. INTRODUCTION

PQ LLC (formerly PQ Corporation) (PQ) operates a sodium silicate and silica gel manufacturing facility located in Joliet, Illinois (Joliet Plant). PQ operates its Joliet Plant under Illinois Environmental Protection Agency (Illinois EPA) facility identification number 197045ABO and Clean Air Act Permit Program (CAAPP) Permit No. 96030053, which was renewed on December 31, 2020.

PQ is proposing to rebuild portions of the existing sodium silicate manufacturing furnace (Fusing Furnace #2) at the Joliet Plant. Fusing Furnace #2 is a 32 MMBTU/hr direct-fired natural gas regenerative furnace that is currently permitted to produce the equivalent of 138.8 metric tons (MT) of solid sodium silicate 'glass' per day. (In the facility's CAAPP permit, Condition 4.1.2.g.i.c limits the production rate to 12,750 lbs/hour and 55,845 tons/year.)¹ The facility is not requesting an increase to its current permitted throughput limitations. In fact, as discussed later in this application, to ensure the project does not trigger major source permitting, PQ is proposing to reduce the permitted production limits.

Furnace rebuilds are required to maintain the furnace due to degradation of the furnace refractory, normal wear-and-tear, and fouling of the furnace flues. The project at the Joliet Plant is expected to include replacing burners and associated burner control systems, changes to firing configuration, and increasing furnace volume. The project is expected to increase actual solid glass production rate to 48,281 tons/year (daily rate of 120 MT of solid sodium silicate ('glass') per day), which is still less than the permitted production limit as mentioned above.²

The Joliet Plant is located in Will County, which is designated as "attainment" for all criteria air pollutants except for ozone, for which the area is classified as a "serious nonattainment" area. The Joliet Plant's potential to emit (PTE) for volatile organic material (VOM), a precursor of ozone, is less than the "serious nonattainment" major source threshold of 50 tons per year (tpy). The facility's PTE for nitrogen oxides (NO_x), which is also an ozone precursor, is above the "serious nonattainment" major source threshold of 50 tpy. For purposes of Prevention of Significant Deterioration (PSD), the Joliet Plant is an existing minor source for all PSD pollutants. The Joliet Plant is also an area (non-major) source of Hazardous Air Pollutants (HAPs).

The proposed project emissions increase for NO_x will not be considered a major modification pursuant to the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21. The proposed project is also not a major modification pursuant to Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203, because the proposed project emissions increase for NO_x will be less than the 25 tpy de minimis threshold when other net emissions increases are included. Additional discussion is provided in Section 4 of this application. No changes to the facility's source status are anticipated from this project.

The sodium silicate manufacturing furnace (Fusing Furnace #2) is not subject to NO_x RACT requirements since it produces sodium silicate, and not glass and therefore does not meet the definition of a "Glass Melting Furnace" pursuant to 35 IAC 211.2625.

¹ One short ton (U.S. units) is equivalent to 0.907 metric ton(nes).

² Note that, due to periodic 'material surges' that may develop within the furnace, the product conveyor (downstream of the furnace) will be rated for instantaneous speeds equivalent to 150 MT/day. This instantaneous rating is recommended for safety reasons. For example, if a momentary furnace 'surge' occurs during normal operation, the operator must be able to increase the speed of the conveyor to avoid a spill.

There will be downstream modifications that will not debottleneck the furnace throughput or associated air emissions. The existing slat conveyor used for transferring sodium silicate from the furnace to the dissolvers will be replaced with a traditional mold conveyor. Additionally, the existing hopper/feeder system that supplies all three dissolvers with solid sodium silicate currently utilizes one main feeder. This feeder is located at the center of the three dissolvers and requires manual rotation to the desired dissolver. To eliminate the manual operation (safety improvement), PQ plans to replace the existing system with a hopper that will allow each dissolver to have its own dedicated feeder.

Included in this construction permit application are a plot plan and process flow diagrams and corresponding process description (Section 2), a summary of the project emissions and calculation methodology for the construction permit application (Section 3), and a discussion of the federal and state regulatory applicability for the project (Section 4). The application also includes the required CAAPP permit forms in Appendix A. Emission rate calculations are included in Appendix B in support of other information presented in the application.

2. PROCESS DESCRIPTION AND FACILITY DIAGRAMS

2.1 Process Description

The three active manufacturing areas at the Joliet Plant are the Sodium Silicate Manufacturing, Hydrogel Process, and Xerogel (i.e., Micronized Silica Gel) Process. The facility also includes three boilers, a warehouse and maintenance shop area (with parts washer and chemical storage totes), and ancillary equipment like an emergency generator engine (and associated diesel storage tank), cooling tower, and unloading/loading/storage activities. The only manufacturing area affected by this project is the Sodium Silicate Manufacturing area. The process description for this area is provided as follows.

2.1.1 Sodium Silicate Manufacturing

Soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired soda ash to silica sand ratio is obtained. From the mixer, the mixture of soda ash and silica sand is transported via bucket elevator and screw conveyor to Fusing Furnace #2. Any dust generated from the silos, weigh bin and mixer (collectively referred to in the current CAAPP permit as "Fusing Feed") is captured by a shared Micropul Feed Baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000 °F. The furnace is natural gas fired and has a rated heat input capacity of 32 million Btu per hour (MMBtu/hr). PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers (T-103, T-104 or T-105), or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through several intermediate tanks (T-106, T-107, T-113 and T-116), can be filtered (using filter aid or similar dry raw materials added through insignificant activity bag dump stations at T-110 and T-111) and then on to final liquid product storage (T-118, T-119, T-120, T-123 and T-124). This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (an insignificant activity).

As noted in Section 1 of this application, PQ plans to make modifications to the furnace as part of a periodic furnace rebuild project. The project is expected to increase the production rate achieved in the furnace compared to past actual production. No new emission units will be added.

Figure 2-1 provides the plot plan of the Joliet Plant and Figure 2-2 is the process flow diagram of the Sodium Silicate Manufacturing process. Figures 2-3 and 2-4 provide the existing and proposed layouts of Fusing Furnace #2.

Figure 2-1. Plot Plan

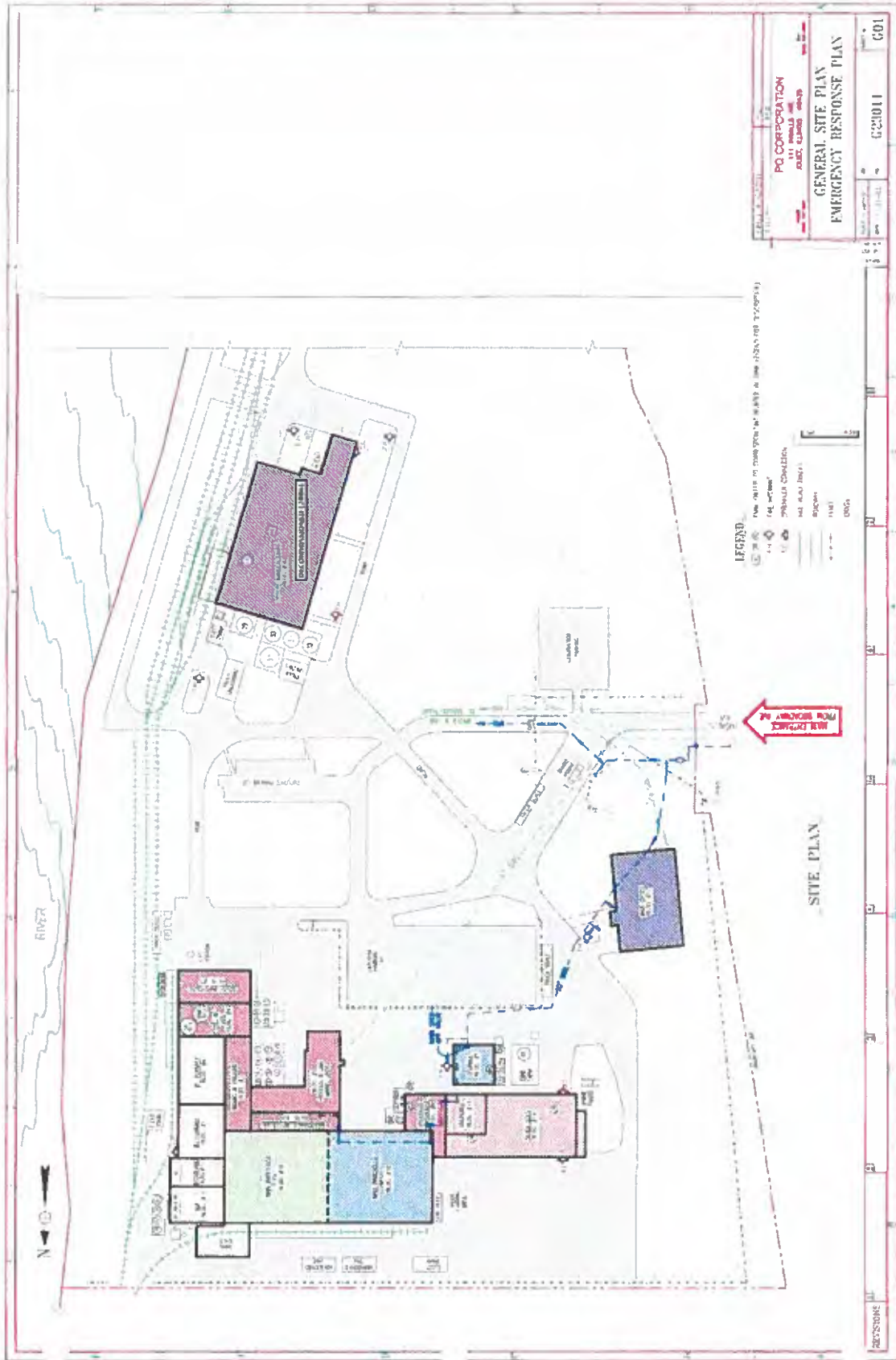


Figure 2-2. Process Flow Diagram for Sodium Silicate Manufacturing

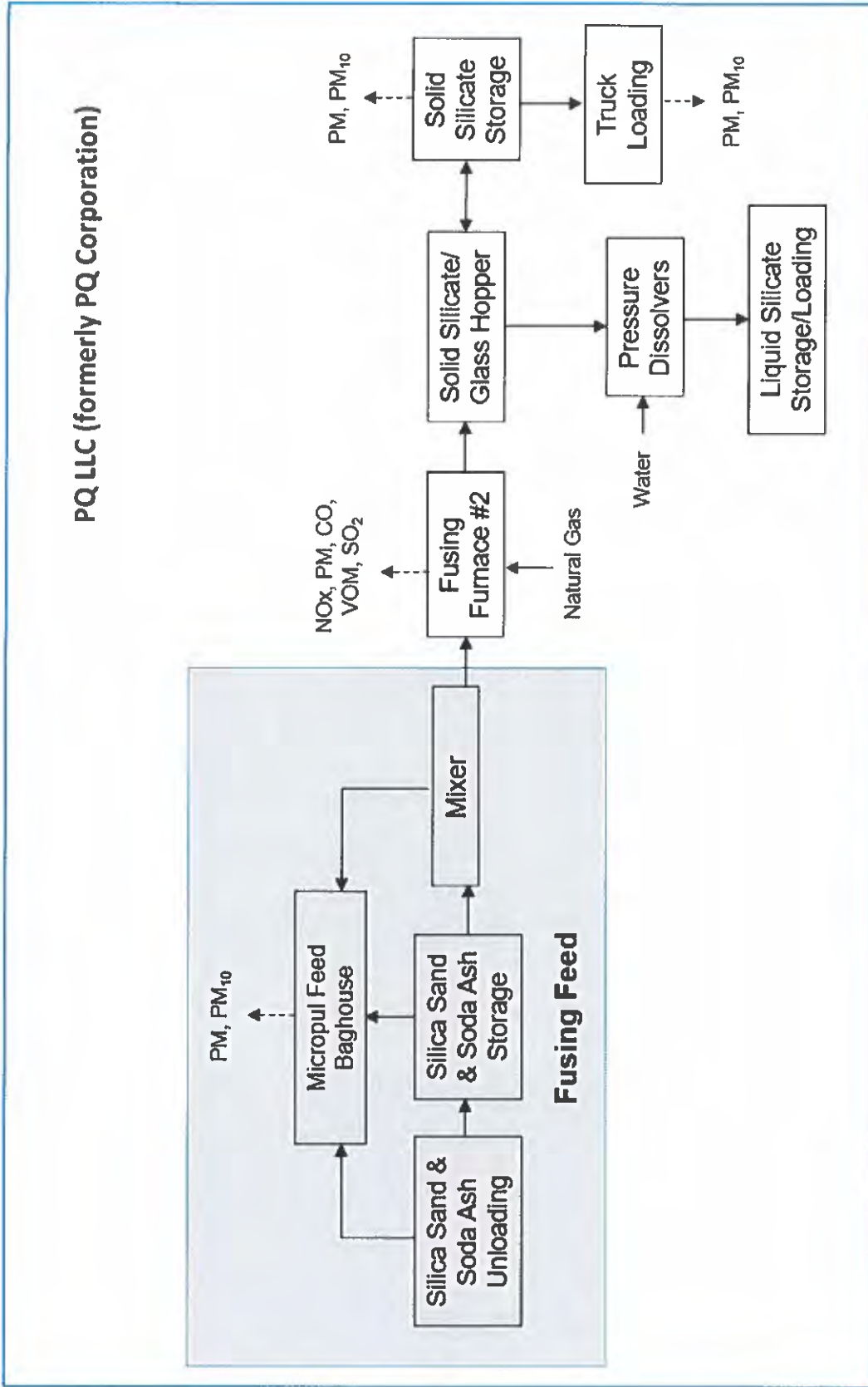


Figure 2-3. Existing Furnace Layout

Sodium Silicate Furnace Flow Diagram - Existing Before 2022 Rebuild

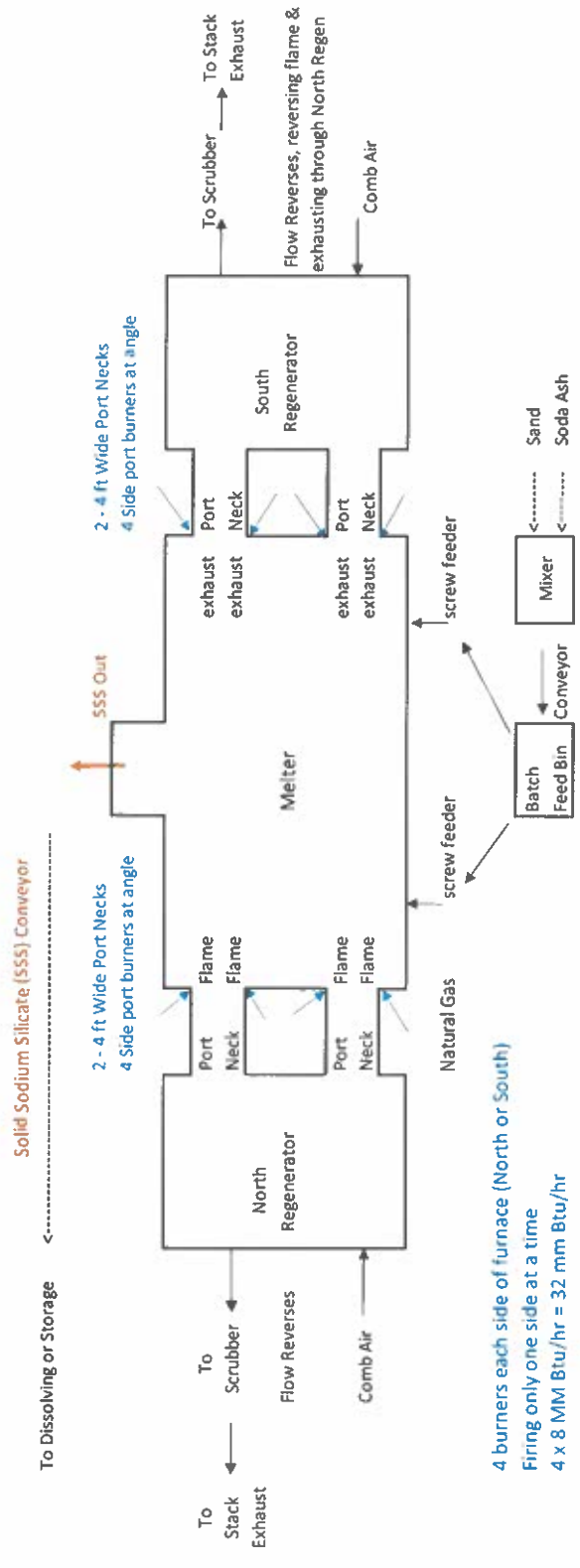
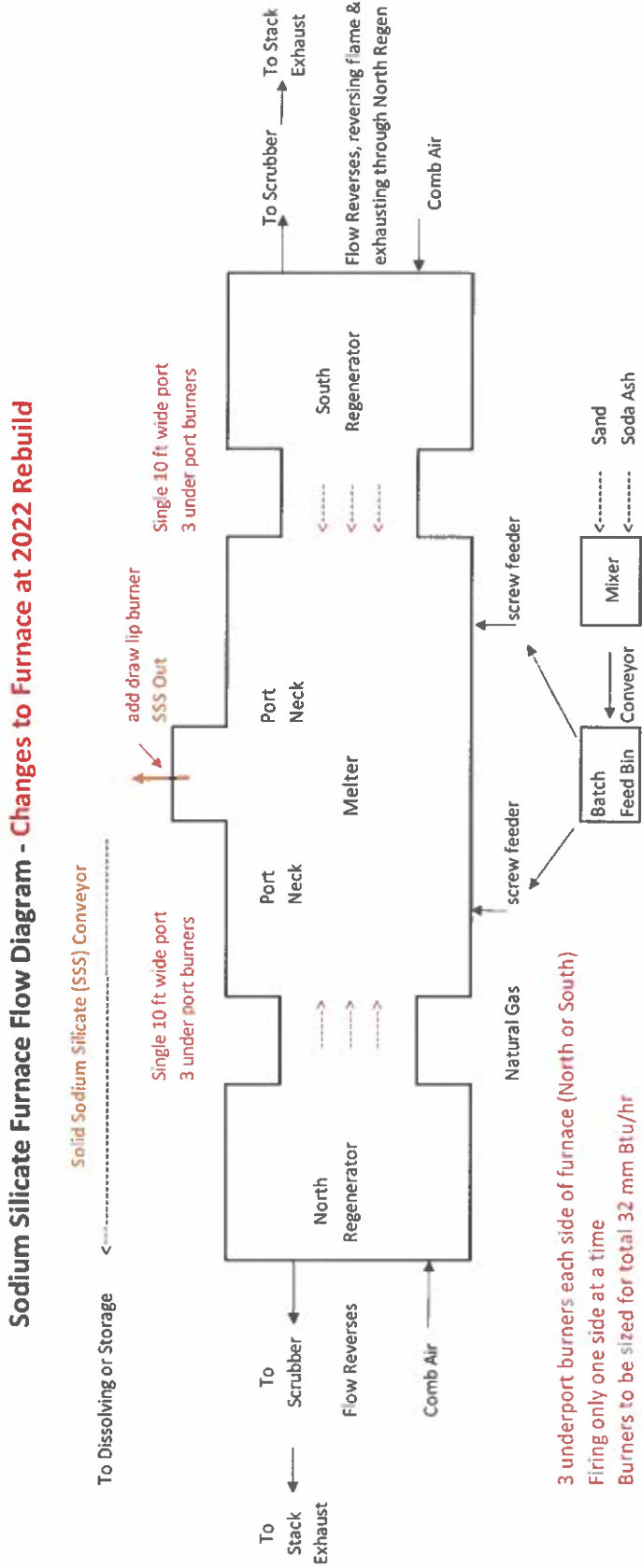


Figure 2-4. Proposed Furnace Layout



3. PROJECT EMISSIONS

This section describes in detail the methods used to calculate emissions from the furnace rebuild project. As described previously in this application, no new emission units are being installed. The furnace modification will only result in additional utilization of existing plant capacity, leading to an increase in actual emissions.

3.1 Potential To Emit Methods

The potential emissions associated with the furnace after the rebuild were calculated based on an annual production capacity of 48,281 tons of solid sodium silicate 'glass' per year. The emission factor for carbon monoxide (CO) was obtained from 2008 stack test data and factors for NO_x and particulate matter (PM) from 2016 stack test data for the Joliet Plant furnace. Emission factors for VOM and sulfur dioxide (SO₂) are from United States Environmental Protection Agency (US EPA) published AP-42 emission factors found in Chapter 11.15 (Glass Manufacturing), Table 11.15-1 with a 20 percent safety factor added. Calculations are provided in Appendix B.

The potential emissions for all of the upstream and downstream equipment affected by the change in actual production capacity of the furnace were also calculated, and the methodology is described as follows. Calculations are provided in Appendix B.

- ▶ **Fusing Feed:** Emissions associated with unloading soda ash and sand from railcar or truck and transferring into silos are calculated based on the feed rates of these raw materials. The feed rates were adjusted to the expected furnace production capacity of 48,281 tons of solid sodium silicate 'glass' per year. The emissions from the unloading operations are controlled by a baghouse with a 99 percent control efficiency. An emission factor from AP-42 Chapter 8.12 (Sodium Carbonate), Table 8.12-2 for "controlled filterable PM emissions for soda ash storage/loading and unloading" was conservatively used to estimate emissions from both soda ash and sand unloading operations.³
- ▶ **Solid Sodium Silicate Bunker Transfers and Rail Car Loading:** Emissions associated with transfer of solid sodium silicate are calculated based on the maximum production rate of solid sodium silicate from the rebuilt furnace and emission factors from AP-42 Chapter 11.19.2 (Crushed Stone Processing and Pulverized Mineral Processing), Table 11.19.2-2 for "Crushed Stone Processing Operations". PQ's calculations account for up to five transfers / drop points (once into the bunker, once from bunker to bunker, once outdoors near the rail loading conveyor, once onto the conveyor, and once into a railcar.)
- ▶ **Tanks T-110 and T-111:** Emissions associated with dumping filter aid or similar dry material into tanks T-110 and T-111, which are used to filter intermediate dissolved sodium silicate 'glass,' are calculated based on maximum expected usage rate of the dry materials at the new expected furnace annual production rate. The emission factor is calculated from AP-42 Chapter 13.2.4 (Aggregate Handling and Storage Piles), Equation 1.

The following table summarizes the annual PTE of each of these emission units. The table also includes proposed monthly emission limits, set at one tenth of the annual limits. Fusing Furnace #2 currently has annual and hourly emission limits, which were established in Construction Permit No. 09090029. PQ is proposing to replace the hourly limits with monthly limits instead.

³ There is also an AP-42 section with emission factors for sand and gravel processing, with an emission factor that is less than the soda ash processing emission factor.

Table 3-1. Summary of Proposed Emission Limits

Emission Units	NOx	CO	PM10	VOM	SO2
Fusing Furnace #2	109.63 tpy 10.96 tons/mo	45.48 tpy 4.55 tons/mo	13.40 tpy 1.34 tons/mo	5.79 tpy 0.58 tons/mo	5.79 tpy 0.58 tons/mo
Fusing Feed	--	--	0.12 tpy	--	--
SSS Transfers	--	--	0.65 tpy	--	--
T-110 & T-111	--	--	< 0.01 tpy	--	--

PQ also proposes to replace the current Fusing Furnace #2 production limits of 12,750 lbs/hour and 55,845 tons/year with new limits of 48,281 tons/year and 4,828 tons/month.

3.2 Project Emissions Increase Calculations

Baseline actual emissions (for Fusing Furnace #2 and Fusing Feed) were determined from actual facility emissions from the two most recent and representative years, 2017 and 2018, as reported from the facility's Annual Emissions Report (AER). Per USEPA's 1990 draft document, "New Source Review Workshop Manual - Prevention of Significant Deterioration and Nonattainment Area Permitting,"⁴ Section III.B.3 - Creditable Contemporaneous Emissions Changes, "In certain limited situations where the applicant adequately demonstrates that the prior 2 years is not representative of normal source operation, a different (2 year) time period may be used upon a determination by the reviewing agency that it is more representative of normal source operation. Normal source operations may be affected by strikes, retooling, major industrial accidents and other catastrophic occurrences." As described below, the two most recent calendar years (2019 and 2020) do not represent normal source operation of Fusing Furnace #2 at the Joliet Plant due to the following reasons:

- ▶ Year 2019: In late January 2019, the Chicago area saw extreme cold weather (a "polar vortex" event) which resulted in some piping that froze and then cracked, causing equipment downtime. This affected furnace production in February 2019, because the third-party personnel and materials needed to make the repairs were not immediately available. This was followed by, in the second quarter of 2019, maintenance work on the conveyor used to transport sodium silicate from the furnace -- without which the furnace cannot operate. Finally, in the fourth quarter, another mechanical part internal to the furnace (the skimmer block) failed and needed to be repaired. Given that three out of the four quarters in 2019 had either weather-related equipment downtime or maintenance and repair, the production was much lower than normal, and this year was not representative of normal operations.
- ▶ Year 2020: Starting in March 2020, COVID-19 caused low customer demand and PQ had to decrease production at the Joliet Plant accordingly. The Joliet Plant production is mostly tied to one large customer, whose business was also negatively impacted by COVID-19, and the Joliet Plant has limited inventory space for product storage. Additionally, there was significant downtime due to routine maintenance and repair of the furnace slat conveyor and furnace skimmer block. Therefore, 2020 also was not representative of the facility's normal operations.

The baseline emissions for filter aid dumps into T-110/111, and for solid sodium silicate transfers, are not required to be in the AER because these are CAAPP permit insignificant activities. The baseline emissions for dry material dumping into tanks T-110 and T-111 were estimated based on actual filter aid usage in 2017

⁴ This document can be found at <https://www.epa.gov/sites/default/files/2015-07/documents/1990wman.pdf>

and 2018. The baseline actual emissions for sodium silicate transfers were estimated by multiplying the potential emissions calculated for these activities per Section 3.1 of this application by the ratio of the actual glass production rates in 2017 and 2018 (35,558 tons of solid glass in 2017 and 35,478 tons of solid glass in 2018) and the proposed annual glass production limit (48,281 tons of solid glass per year). The actual glass production rates have been documented by the Joliet Plant in the AER.

Project emissions increases were calculated as the difference between the average baseline actual emissions and the new potential emission rates calculated for after the project is completed. Because PQ is changing the emission calculation methodology for the storage and loading of fusing feed, the emission difference between the proposed limits and baseline actuals for this activity have not been accounted for (since they are not comparable). The proposed new emissions are accounted for without subtracting any baseline emissions. The project emissions results are summarized in the following table. Detailed emission calculations are included in Appendix B.

Table 3-2. Summary of Project Emissions Increases

Category	Emission Unit	PM	PM₁₀	PM_{2.5}	SO₂	NO_x	VOM	CO
2017 Actual Emissions	Furnace	8.79	8.79	8.79	5.17	86.28	5.17	32.60
	Fusing Feed	0.56	0.47	0.47				
	SSS Transfers	0.38	0.38	0.38				
	T-110 & T-111	<0.001	<0.001	<0.001				
2018 Actual Emissions	Furnace	8.64	8.64	8.64	5.08	84.79	5.08	32.04
	Fusing Feed	0.55	0.46	0.46				
	SSS Transfers	0.38	0.38	0.38				
	T-110 & T-111	<0.001	<0.001	<0.001				
Baseline Actual Emissions	Furnace	8.72	8.72	8.72	5.12	85.54	5.12	32.32
	Fusing Feed	0.55	0.47	0.47				
	SSS Transfers	0.38	0.38	0.38				
	T-110 & T-111	<0.001	<0.001	<0.001				
	Baseline Totals	9.65	9.57	9.57	5.12	85.54	5.12	32.32
Proposed New Emission Limits	Furnace	13.40	13.40	13.40	5.79	109.63	5.79	45.48
	Fusing Feed	0.12	0.12	0.12	--	--	--	--
	SSS Transfers	0.65	0.65	0.65	--	--	--	--
	T-110 & T-111	0.0006	0.0006	0.0006	--	--	--	--
	Combined PTE	14.17	14.17	14.17	5.79	109.63	5.79	45.48
Project Emissions Increase		5.07	5.07	5.07	0.67	24.09	0.67	13.16
PSD Threshold		N/A	250	250	250	N/A	N/A	250
NNSR Threshold		N/A	N/A	N/A	N/A	25	50	N/A
Below Threshold?		N/A	Yes	Yes	Yes	Yes	Yes	Yes

This table shows that none of the project emissions increases are greater than the threshold that would trigger major New Source Review permitting. This is discussed in more detail in Section 4 of this application.

Because the Joliet Plant is a major source of NO_x emissions in a serious ozone nonattainment area, pursuant to 35 IAC 203.207(d), the increase in NO_x emissions shown in Table 3-2 must be "aggregated with all other net increases in emissions from the source over any period of five consecutive calendar years that includes the year in which such increase occurred." The only other project at the Joliet Plant from 2017-2021 (the five-year period that includes when this application is being submitted) that impacted NO_x emissions is the addition of a 2.2 MMBTU/hr natural gas-fired heater to replace a 4.5 MMBTU/hr heater in 2019 in the warehouse area of the facility. Table 3-3 below shows the NO_x emissions increase for the proposed furnace rebuild project, summed with the PTE of the 2019 new heater and subtracting the average of the actual emissions reported for the prior heater for 2017 and 2018 (the two years before the heater was removed). The table also shows that there have been no other construction projects with NO_x emissions during the five-year aggregation period.

Table 3-3. Five-Year NO_x History for Joliet Plant

Year	Project Description	NO_x Emissions Increase (TPY)
2021	Furnace #2 Rebuild (See Table 3-2 above)	24.09
2020	None	--
2019	Add New 2.2 MMBtu/hr Heater	0.94
	Remove 4.5 MMBtu/hr Heater	-1.13
2018	None	--
2017	None	--
Increases Over 5 years		23.90
Allowable Increase Over 5 Years		25

4. REGULATORY APPLICABILITY

This section of the construction permit application describes the applicability or non-applicability of relevant state and federal air quality rules for the proposed project.

4.1 State Regulatory Applicability

The following paragraphs address the applicability of specific state requirements in Title 35 of the Illinois Administrative Code (35 IAC) to the proposed project.

4.1.1 35 IAC 203 - Non-Attainment New Source Review (NNSR)

The Joliet Plant is located in Will County, which is classified as serious non-attainment for ozone pursuant to 40 CFR 81.314. VOM and NO_x are precursors to ozone and are evaluated against 35 IAC Part 203 rule applicability thresholds. The Joliet Plant is an existing minor source of VOM emissions. Per 35 IAC 203.206(c), a physical change at an existing minor source triggers NNSR only if the change would constitute a major stationary source by itself (i.e., if the project emissions increase is at least 50 tpy, in the case of a serious ozone nonattainment area). The Joliet Plant is also an existing major source of NO_x emissions. Per 35 IAC 203.207(d), a change at a major stationary source located in a serious nonattainment is considered *de minimis* if the net emissions increase does not exceed 25 tons when aggregated with all other net increases in emissions from the source over five consecutive years.

As shown in Table 3-2 of this application, the project VOM emissions increase is less than 50 tpy. As shown in Table 3-3 of this application, the NO_x emissions increase is less than the 25 tpy *de minimis* threshold when other net emissions increase from 2017-2021 are included. Therefore, the proposed project is not subject to NNSR.

4.1.2 35 IAC 212.123 – Visible Emissions Limitations

Pursuant to 35 IAC 212.123(a), no emission unit at the Joliet Plant shall emit smoke or particulate matter with opacity greater than 30 percent into the atmosphere, except as provided in 35 IAC 212.123(b) and 212.124. The Fusing Furnace #2 and its associated emission units are currently subject to this rule and will continue to comply.

4.1.3 35 IAC 212.301 – Fugitive Particulate Matter

Pursuant to 35 IAC 212.301, no process shall have an emission of fugitive particulate matter that is visible by an observer looking generally toward the zenith at a point beyond the property line of the Joliet Plant. PQ will continue to comply with this regulation.

4.1.4 35 IAC 212.321/322 – Process Emission Units

35 IAC 212.321 and 35 IAC 212.322 prohibit the emission of particulate matter into the atmosphere in any one-hour period from process emission units. PQ will continue to comply with this regulation. The Fusing Feed silos, Solid Sodium Silicate transfer points, and dry material additions into T-110 and T-111 all have very low particulate matter emission rates that will easily comply with this rule. Compliance information for Fusing Furnace #2 is as follows:

- ▶ Short-term production rate (process weight rate): 120 MT/day, equivalent to 5.51 short (English) tons/hour

- ▶ Allowable PM emission rate, based on 212.321(b)(1) equation: $E = 2.54 \times (5.51)^{0.534} = 6.32$ lb/hr PM emissions
- ▶ Calculated PM emission rate, based on stack test emission factor described in Section 3 and Appendix B of this application: $(5.51 \text{ tons/hour}) \times (0.56 \text{ lb/ton}) = 3.06$ lb/hr PM emissions

4.1.5 35 IAC 214.301 – Process Emission Sources

35 IAC 214.301 limits the emission of sulfur dioxide into the atmosphere from any process emission source to 2000 ppm. PQ will continue to comply with this regulation. Fusing Furnace #2 fires natural gas in its burners.

4.1.6 35 IAC 216, Subpart B – Fuel Combustion Emission Sources

Fusing Furnace #2 is not subject to the CO emission limit in 35 IAC 216.121 because the furnace is not a "fuel combustion emission unit" as defined by 35 IAC 211.2470.

4.1.7 35 IAC 217, Subpart F – Process Heaters

The requirements of 35 IAC 217.180 through 186 apply to process heaters. Pursuant to 35 IAC 211.5195, the definition of "process heater" is as follows: "Process heater means, for purposes of Part 217, an enclosed combustion device that burns gaseous or liquid fuels only and that indirectly transfers heat to a process fluid or a heat transfer medium other than water." The sodium silicate manufacturing furnace is a direct-fired heater. As such, it does not meet the definition of "process heater" and is not subject to the listed Subpart F requirements.

4.1.8 35 IAC 217, Subpart G – Glass Melting Furnaces

Pursuant to 35 IAC 211.2625, a "Glass Melting Furnace" means a unit comprising a refractory vessel in which raw materials are charged and melted at high temperatures to produce molten glass. The sodium silicate manufacturing furnace (Fusing Furnace #2) produces sodium silicate, not glass, and is therefore not subject to this Subpart.

4.1.9 35 IAC 218.301 – Use of Organic Material

Pursuant to 35 IAC 218.301, no emission unit may release organic emissions over 8 lb/hr in the Chicago ozone nonattainment area, unless a control device is used to reduce hydrocarbons by at least 85% per 35 IAC 218.302(a), except as provided in 35 IAC 218.302, 218.303, or 218.304 and the following exemption: if no odor nuisance exists the limitation of 35 IAC 218 Subpart G applies only to photochemically reactive material. Fusing Furnace #2 at the Joliet Plant is currently subject to and will continue to comply with this regulation.

4.2 Federal Regulatory Applicability

4.2.1 Prevention of Significant Deterioration (PSD)

The applicability of the PSD program is evaluated for proposed construction and modification projects that result in an emission increase of a criteria pollutant for which the area is in attainment with the National Ambient Air Quality Standards (NAAQS). The Joliet Plant is located in Will County, which is designated as "attainment" or "unclassifiable" for all criteria pollutants except ozone.

The Joliet Plant does not qualify as one of the 28 listed source categories in 40 CFR 52.21(b)(1)(i)(a) with a 100 tpy "major" source PSD/NSR threshold and therefore has a 250 tpy PSD major source threshold. The Joliet Plant is classified as an existing minor source with respect to the PSD program because the Joliet Plant does not have the potential to emit 250 tpy of any PSD pollutant. As such, emissions resulting from the proposed project are evaluated versus the PSD major source threshold of 250 tpy per pollutant to determine whether the project is in itself major.

As shown in Table 3-2 of this application, the emissions increase of the PSD pollutants (PM_{2.5}, PM₁₀, SO₂, and CO) from the proposed project are less than the 250 tpy major source threshold. Therefore, the project is not subject to PSD review.

4.2.2 New Source Performance Standards (NSPS)

The NSPS rules, located in 40 CFR Part 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions. Fusing Furnace #2 will be undergoing a rebuild (modification) and, therefore, is potentially subject to an NSPS rule.

4.2.2.1 40 CFR 60, Subpart CC, Glass Manufacturing Plants

The provisions of this subpart apply to each glass melting furnace that commenced construction, reconstruction or modification on or after June 15, 1979.

Per the Joliet Plant's current CAAPP permit (see Condition 4.1.3.a), the furnace is not subject to Subpart CC because it produces sodium silicate rather than one of the types of glass described in Subpart CC. This will continue to be the case after the proposed furnace rebuild project.

4.2.3 National Emission Standards for Hazardous Air Pollutants (NESHAP)

The Joliet Plant is an existing area source with respect to HAP emissions. The proposed furnace rebuild will not increase potential HAP emission rates, and therefore will not cause the facility to become a major HAP source. Therefore, the facility will remain an area source for HAPs after the proposed project. In addition, no NESHAP area source standard applies to the proposed furnace rebuild. Specifically:

4.2.3.1 40 CFR Part 63, Subpart SSSSSS, National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources

This subpart applies to each glass manufacturing facility that is an area source of HAP emissions and uses one or more continuous furnaces to produce glass that contains compounds of one or more glass manufacturing metal HAP, as defined in §63 .11459, as raw materials in a glass manufacturing batch formulation.

Because it manufactures sodium silicate rather than glass, the installation is not defined as a glass manufacturing plant; therefore, this subpart does not apply to the furnace.

4.2.3.2 40 CFR Part 63, Subparts DDDDD and JJJJJ, Industrial, Commercial, Institutional Boilers and Process Heaters

As noted in the current CAAPP permit for the Joliet Plant, Fusing Furnace #2 is not subject to the major source or area source NESHAPs for boilers and/or process heaters. The furnace is exempt from Subpart

DDDDD because the Joliet Plant is not a major source of HAP emissions. The furnace is exempt from Subpart JJJJJ because the furnace is not a "boiler" as defined in that subpart.

APPENDIX A. APPLICATION FORMS

The following CAAPP forms are included in this section of the Construction Permit application:

- ▶ 197-FEE – Fee Determination for Construction Permit Application
- ▶ 199-CAAPP – Construction Permit Application for a Proposed Project at a CAAPP Source
- ▶ 220-CAAPP – Process Emission Unit Data and Information
- ▶ 260-CAAPP – Air Pollution Control Equipment Data and Information
- ▶ 260i-CAAPP – Supplemental Form Air Pollution Control Equipment NOx Control

THE STATE OF TEXAS
COUNTY OF []

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office at the City of [] this [] day of [] 2022.



Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

<i>FOR AGENCY USE ONLY</i>			
ID Number: _____	Permit #: _____		
<input type="checkbox"/> Complete	<input type="checkbox"/> Incomplete	Date Complete: _____	
Check Number: _____	Account Name: _____		

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

RECEIVED
STATE OF ILLINOIS

NOV 08 2021

Source Information

- | | |
|---|---|
| 1. Source Name: <u>PQ LLC (formerly PQ Corporation)</u> | |
| 2. Project Name: <u>Furnace Rebuild</u> | 3. Source ID # (if applicable) <u>197045ABO</u> |
| 4. Contact Name: <u>Mark J. Skowron</u> | 5. Contact Phone #: <u>331-444-8900</u> |

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal	\$0.00	+	Section 2, 3 or 4 Subtotal	\$3,000.00	=	\$3,000.00
						Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:

- **Major Source** is a source that is required to obtain a CAAPP permit.
- **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g., FESOP).
- **Non-Major Source** is a source that is not a major or synthetic minor source.

- Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.
- Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.
- New major or synthetic minor source. Proceed to Section 4. \$0.00
- New non-major source. Proceed to Section 3. Section 1 Subtotal
- AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee.** If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

- Addition or replacement of control devices on permitted units.
- Pilot projects/trial burns by a permitted unit
- Land remediation projects
- Revisions related to methodology or timing for emission testing
- Minor administrative-type change to a permit

Section 3: Fees for Current or Projected Non-Major Sources

9.	This application consists of a single new emission unit or no more than two modified emission units. (\$500 fee)	9.	<u> </u> \$0.00
10.	This application consists of more than one new emission unit or more than two modified units. (\$1,000 fee)	10.	<u> </u>
11.	This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. (\$15,000 fee)	11.	<u> </u>
12.	A public hearing is held (see instructions). (\$10,000 fee)	12.	<u> </u>
13.	Section 3 subtotal. (lines 9 through 12 - entered on page 1)	13.	<u> </u> \$0.00


Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter \$2,000.	14.	<u> </u> \$2,000.00
	15. Number of additional modified emission units = <u> </u> 1 <u> </u> x \$1,000.	15.	<u> </u> \$1,000.00
	16. Line 14 plus line 15, or \$5,000, whichever is less.	16.	<u> </u> \$3,000.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter \$4,000.		
	18. Number of additional new and/or modified emission units = <u> </u> x \$1,000.	18.	<u> </u> \$0.00
	19. Line 17 plus line 18, or \$10,000, whichever is less.	19.	<u> </u> \$0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = <u> </u> x \$3,000.	20.	<u> </u> \$0.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter \$25,000.	21.	<u> </u>
	22. If the source is a new major source subject to PSD, enter \$12,000.	22.	<u> </u>
	23. If the project is a major modification subject to PSD, enter \$6,000.	23.	<u> </u>
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter \$20,000.	24.	<u> </u>
	25. If this is a major modification subject to NAA NSR, enter \$12,000.	25.	<u> </u>
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter \$5,000 per unit for which a determination is requested or otherwise required. <u> </u> x \$5,000.	26.	<u> </u> \$0.00
	27. If a public hearing is held (see instructions), enter \$10,000.	27.	<u> </u>
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28.	<u> </u> \$3,000.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: 
 Signature
Michael Chan
 Typed or Printed Name of Signatory

Americas Silicates
 VP & GM, Performance Chemicals
 Title of Signatory
10/27/2021
 Date

NOV 08 2021

Illinois Environmental Protection Agency
Division Of Air Pollution Control – Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Environmental Protection Agency
BUREAU OF AIR

Construction Permit Application for a Proposed Project at a CAAPP Source	For Illinois EPA use only
	ID No.:
	Appl. No.:
	Date Rec'd:
	Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project
1. Working Name of Proposed Project: Furnace Rebuild
2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If Yes, provide BOA ID Number: <u>197045ABO</u>
3. Does this application request a revision to an existing construction permit issued by the BOA? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide Permit Number: _____
4. Brief Description of Proposed Project: The facility is proposing to rebuild its sodium silicate furnace in early 2022. The project includes replacing burners and associated control systems, changes to firing configuration, and increasing furnace volume. The project is expected to increase production rate above the furnace's current capacity but the production rate will still be less than the permitted production limit.

Source Information		
1. Source name:* PQ LLC (formerly PQ Corporation)		
2. Source street address:* 111 Ingalls Avenue		
3. City: Joliet	4. County: Will	5. Zip code:* 60435
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER		
6. Is the source located within city limits? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, provide Township Name: _____		
7. Description of source and product(s) produced: Inorganic Chemicals: Sodium silicate	8. Primary Classification Code of source: SIC: _____ or NAICS: <u>325180</u>	
9. Latitude (DD:MM:SS.SSSS): 41:32:50.0000	10. Longitude (DD:MM:SS.SSSS): 88:05:00.0000	

* Is information different than previous information? Yes No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant	
1. Who is the applicant? <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Operator	2. All correspondence to: (check one) <input checked="" type="checkbox"/> Source <input type="checkbox"/> Owner <input type="checkbox"/> Operator
3. Applicant's FEIN: 230972750	4. Attention name and/or title for written correspondence: Ken Schulte

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: PQ LLC (formerly PQ Corporation)		
2. Address: 300 Lindenwood Drive		
3. City: Malvern	4. State: PA	5. Zip code: 19355

* Is this information idifferent than previous information? Yes No

If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name		
2. Address:		
3. City:	4. State:	5. Zip code:

* Is this information different than previous information? Yes No

If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) <input checked="" type="checkbox"/> Applicant's contact <input type="checkbox"/> Consultant	
2. Applicant's technical contact person for application: Mark J. Skowron	
3. Contact person's telephone number(s): 331-444-8900	4. Contact person's e-mail address: Mark.Skowron@pqcorp.com
5. Consultant for application: Trinity Consultants (Chloe Reece)	
6. Consultant's telephone number(s): 630-495-1470	7. Consultant's e-mail address: creece@trinityconsultants.com


Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER	
1. Address for billing Site Fees for the source: <input type="checkbox"/> Source <input type="checkbox"/> Other (provide below):	
2. Contact person for Site Fees:	3. Contact person's telephone number:
4. Address for Annual Emission Report for the source: <input type="checkbox"/> Source <input type="checkbox"/> Other (provide below):	
5. Contact person for Annual Emission Report:	6. Contact person's telephone number:

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A* * Source not major <input type="checkbox"/> Project not major <input type="checkbox"/>
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY:		<i>Americus Silicates</i>
AUTHORIZED	SIGNATURE	VP & GM, Performance Chemicals
	Michael Chan	TITLE OF SIGNATORY
	TYPED OR PRINTED NAME OF SIGNATORY	<i>10/27/2021</i>
		DATE



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
 DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
 P.O. BOX 19506
 SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE	
Revision #:	_____
Date:	____ / ____ / ____
Page	_____ of _____
Source Designation:	_____

PROCESS EMISSION UNIT DATA AND INFORMATION	FOR AGENCY USE ONLY
	ID NUMBER:
	EMISSION POINT #:
	DATE:

SOURCE INFORMATION	
1) SOURCE NAME: PQ LLC (formerly PQ Corporation)	
2) DATE FORM PREPARED: September 2021	3) SOURCE ID NO. (IF KNOWN): 197045ABO

GENERAL INFORMATION	
4) NAME OF EMISSION UNIT: Sodium Silicate Manufacturing Furnace (Fusing Furnace #2)	
5) NAME OF PROCESS: Sodium Silicate Production	
6) DESCRIPTION OF PROCESS: Fusion of sand and soda ash in a natural gas-fired furnace.	
7) DESCRIPTION OF ITEM OR MATERIAL PRODUCED OR ACTIVITY ACCOMPLISHED: Sodium silicate	
8) FLOW DIAGRAM DESIGNATION OF EMISSION UNIT: Fusing Furnace #2	
9) MANUFACTURER OF EMISSION UNIT (IF KNOWN): N/A	
10) MODEL NUMBER (IF KNOWN): N/A	11) SERIAL NUMBER (IF KNOWN): N/A
12) DATES OF COMMENCING CONSTRUCTION, OPERATION AND/OR MOST RECENT MODIFICATION OF THIS EMISSION UNIT (ACTUAL OR PLANNED)	a) CONSTRUCTION (MONTH/YEAR): 1961
	b) OPERATION (MONTH/YEAR):
	c) LATEST MODIFICATION (MONTH/YEAR): Prior 2009; Proposed 2022
13) DESCRIPTION OF MODIFICATION (IF APPLICABLE): Replacing burners and associated control systems, changes to firing configuration, and increasing furnace volume.	

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

APPLICATION PAGE _____

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14) DOES THE EMISSION UNIT HAVE MORE THAN ONE MODE OF OPERATION? YES NO
 IF YES, EXPLAIN AND IDENTIFY WHICH MODE IS COVERED BY THIS FORM (NOTE: A SEPARATE PROCESS EMISSION UNIT FORM 220-CAAPP MUST BE COMPLETED FOR EACH MODE):

15) PROVIDE THE NAME AND DESIGNATION OF ALL AIR POLLUTION CONTROL EQUIPMENT CONTROLLING THIS EMISSION UNIT, IF APPLICABLE (FORM 260-CAAPP AND THE APPROPRIATE 260-CAAPP ADDENDUM FORM MUST BE COMPLETED FOR EACH ITEM OF AIR POLLUTION CONTROL EQUIPMENT):
 Venturi Model #6 High Energy Scrubber (Existing - no change, not resubmitting form)
 Low NOx Burners (Being replaced - See attached 260-CAAPP form)

16) WILL EMISSIONS DURING STARTUP EXCEED EITHER THE ALLOWABLE EMISSION RATE PURSUANT TO A SPECIFIC RULE, OR THE ALLOWABLE EMISSION LIMIT AS ESTABLISHED BY AN EXISTING OR PROPOSED PERMIT CONDITION? YES NO
 IF YES, COMPLETE AND ATTACH FORM 203-CAAPP, "REQUEST TO OPERATE WITH EXCESS EMISSIONS DURING STARTUP OF EQUIPMENT".

17) PROVIDE ANY LIMITATIONS ON SOURCE OPERATION AFFECTING EMISSIONS OR ANY WORK PRACTICE STANDARDS (E.G., ONLY ONE UNIT IS OPERATED AT A TIME):
 Fusing Furnace #2 currently has annual and hourly production limits, which were established in Construction Permit No. 09090029. PQ proposes to replace the current limits of 12,750 lbs/hour and 55,845 tons/year with new limits of 48,281 tons/year and 4,828 tons/month.

OPERATING INFORMATION				
18) ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSION RELATED, FROM WHICH THE FOLLOWING OPERATING INFORMATION, MATERIAL USAGE INFORMATION AND FUEL USAGE DATA WERE BASED AND LABEL AS EXHIBIT 220-1. REFER TO SPECIAL NOTES OF FORM 202-CAAPP.				
19a) MAXIMUM OPERATING HOURS	HOURS/DAY: 24	DAYS/WEEK: 7	WEEKS/YEAR: 52	
b) TYPICAL OPERATING HOURS	HOURS/DAY: 24	DAYS/WEEK: 7	WEEKS/YEAR: 52	
20) ANNUAL THROUGHPUT	DEC-FEB(%): 25	MAR-MAY(%): 25	JUN-AUG(%): 25	SEP-NOV(%): 25

MATERIAL USAGE INFORMATION				
21a) RAW MATERIALS	MAXIMUM RATES		TYPICAL RATES	
	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
Soda ash		19,278		
Silica sand		37,246		

21b) PRODUCTS	MAXIMUM RATES		TYPICAL RATES	
	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
Sodium Silicate - solid		48,281		

21c) BY-PRODUCT MATERIALS	MAXIMUM RATES		TYPICAL RATES	
	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
N/A				

FUEL USAGE DATA		
22a) MAXIMUM FIRING RATE (MILLION BTU/HR): 32	b) TYPICAL FIRING RATE (MILLION BTU/HR):	c) DESIGN CAPACITY FIRING RATE (MILLION BTU/HR): 32

d) FUEL TYPE:
 NATURAL GAS
 FUEL OIL: GRADE NUMBER _____
 COAL
 OTHER _____
 IF MORE THAN ONE FUEL IS USED, ATTACH AN EXPLANATION AND LABEL AS EXHIBIT 220-2.

e) TYPICAL HEAT CONTENT OF FUEL (BTU/LB, BTU/GAL OR BTU/SCF): 1020 BTU/scf	f) TYPICAL SULFUR CONTENT (WT %, NA FOR NATURAL GAS): N/A
---	--

g) TYPICAL ASH CONTENT (WT %, NA FOR NATURAL GAS): N/A	h) ANNUAL FUEL USAGE (SPECIFY UNITS, E.G., SCF/YEAR, GAL/YEAR, TON/YEAR):
---	---

23) ARE COMBUSTION EMISSIONS DUCTED TO THE SAME STACK OR CONTROL AS PROCESS UNIT EMISSIONS? YES NO
 IF NO, IDENTIFY THE EXHAUST POINT FOR COMBUSTION EMISSIONS:

APPLICABLE RULES

24) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATION(S) SET BY RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT (E.G., VOM, IAC 218.204(i)(4), 3.5 LBS/GAL):

REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)
Opacity & PM	35 IAC 212.123(a) & 212.321	Opacity < 30%; PM < PWR eqn rate (see text -Section 4.1)
SO2	35 IAC 214.301	SO2 exhaust concentration <= 2000 ppm
VOM	35 IAC 218.301	Organic material emissions <= 8 lb/hr

25) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	RECORDKEEPING RULE(S)	REQUIREMENT(S)
	None	

26) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	REPORTING RULE(S)	REQUIREMENT(S)
PM, NOx, CO, VOM, SO2	35 IAC 254	Annual Emission Report

27) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	MONITORING RULE(S)	REQUIREMENT(S)
	None	

28) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE TO THIS EMISSION UNIT :

REGULATED AIR POLLUTANT(S)	TESTING RULE(S)	REQUIREMENT(S)
	None	

29) DOES THE EMISSION UNIT QUALIFY FOR AN EXEMPTION FROM AN OTHERWISE APPLICABLE RULE? YES NO

IF YES, THEN LIST BOTH THE RULE FROM WHICH IT IS EXEMPT AND THE RULE WHICH ALLOWS THE EXEMPTION. PROVIDE A DETAILED EXPLANATION JUSTIFYING THE EXEMPTION. INCLUDE DETAILED SUPPORTING DATA AND CALCULATIONS. ATTACH AND LABEL AS EXHIBIT 220-3, OR REFER TO OTHER ATTACHMENT(S) WHICH ADDRESS AND JUSTIFY THIS EXEMPTION.

COMPLIANCE INFORMATION

30) IS THE EMISSION UNIT IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS? YES NO

IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE -- ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.

31) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:

Compliance with mass emission limits is based on production rate tracking and emission calculations based on prior test results and AP-42 factors.

Compliance with production rate limits is based on production rate tracking.

Compliance with the opacity standard is based on an annual Method 9 observation.

32) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:

Compliance with mass emission limits will be based on production rate tracking and emission calculations based on prior test results and AP-42 factors.

Compliance with production rate limits will be based on production rate tracking.

Compliance with the opacity standard will be based on an annual Method 9 observation (or Method 22, as allowed).

TESTING, MONITORING, RECORDKEEPING AND REPORTING

33a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):

PARAMETER	UNIT OF MEASUREMENT	METHOD OF MEASUREMENT	FREQUENCY
Sodium Silicate	Tons	Weigh Scale	Monthly
Production			
Rate			

33b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON
Sodium Silicate	Electronic	Operator	HSE Manager
Production			
Rate			

c) IS COMPLIANCE OF THE EMISSION UNIT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? YES NO

IF NO, EXPLAIN:

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND SUBMITTAL TO THE AGENCY UPON REQUEST? YES NO

IF NO, EXPLAIN:

34a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:

Production rate tracking
Annual opacity observation

b) WHAT PARAMETER(S) IS(ARE) BEING MONITORED (E.G., VOM EMISSIONS TO ATMOSPHERE)?

Production rate
Opacity

c) DESCRIBE THE LOCATION OF EACH MONITOR (E.G., IN STACK MONITOR 3 FEET FROM EXIT):

Furnace feed weigh scale in Building #4.

34d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? YES NO

IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE:
Opacity measurements are done by trained personnel

e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? YES NO

IF NO, EXPLAIN:
N/A for opacity observations

f) IS EACH MONITOR OPERATED AT ALL TIMES THE ASSOCIATED EMISSION UNIT IS IN OPERATION? YES NO

IF NO, EXPLAIN:
Opacity observations required only once annually

35) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 220-4:

TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS
3/2008	Meth 10	Platt EnvServices	Normal	8.2 lb/hr CO
10/2016	Meth 7E	ARI	Normal	21.7 lb/hr NOx
10/2016	Meth 1-5	ARI	Normal	2.211 lb/hr PM

36) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:

REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY
Annual Emissions	Annual Emission Report	Annual
Compliance Status	Annual Compliance Cert.	Annual
Summary of Monitoring	Semiannual Monitoring Rpt	Semi-Annual

(37) EMISSION INFORMATION

REGULATED AIR POLLUTANT	1 ACTUAL EMISSION RATE				2 PERMITTED EMISSION RATE		
	LBS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	3 OTHER TERMS	4 DM	5 RATE (UNITS)	RATE (UNITS)	TONS PER YEAR (TONS/YR)
CARBON MONOXIDE (CO)	MAXIMUM		SEE		()		
	TYPICAL		APPLI-		()		
LEAD	MAXIMUM		CATION		()		
	TYPICAL		TEXT		()		
NITROGEN OXIDES (NOx)	MAXIMUM		SECTION 3		()		
	TYPICAL		AND		()		
PARTICULATE MATTER (PART)	MAXIMUM		APPENDIX		()		
	TYPICAL		B CALCS		()		
PARTICULATE MATTER <= 10 MICROMETERS (PM10)	MAXIMUM				()		
	TYPICAL				()		
SULFUR DIOXIDE (SO2)	MAXIMUM				()		
	TYPICAL				()		
VOLATILE ORGANIC MATERIAL (VOM)	MAXIMUM				()		
	TYPICAL				()		
OTHER, SPECIFY:	MAXIMUM				()		
	TYPICAL				()		
EXAMPLE: PARTICULATE MATTER	MAXIMUM	5.00	0.3 GR/DSCF	1	6.0 (LBS/HR)	5.5 LBS/HR	22
	TYPICAL	4.00	0.24 GR/DSCF	4	5.5 (LBS/HR)		19.80

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 220-5.

- 1 CHECK UNCONTROLLED EMISSION RATE BOX IF CONTROL EQUIPMENT IS USED, OTHERWISE CHECK AND PROVIDE THE ACTUAL EMISSION RATE TO ATMOSPHERE, INCLUDING INDOORS. SEE INSTRUCTIONS.
- 2 PROVIDE THE EMISSION RATE THAT WILL BE USED AS A PERMIT SPECIAL CONDITION. THIS LIMIT WILL BE USED TO DETERMINE THE PERMIT FEE.
- 3 PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED. REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.)
- 4 DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)
- 5 RATE - ALLOWABLE EMISSION RATE SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

EXHAUST POINT INFORMATION		
THIS SECTION SHOULD NOT BE COMPLETED IF EMISSIONS ARE EXHAUSTED THROUGH AIR POLLUTION CONTROL EQUIPMENT.		
39) FLOW DIAGRAM DESIGNATION OF EXHAUST POINT: Emissions will be exhausted through an existing air pollution control equipment (scrubber)		
40) DESCRIPTION OF EXHAUST POINT (STACK, VENT, ROOF MONITOR, INDOORS, ETC.). IF THE EXHAUST POINT DISCHARGES INDOORS, DO NOT COMPLETE THE REMAINING ITEMS.		
41) DISTANCE TO NEAREST PLANT BOUNDARY FROM EXHAUST POINT DISCHARGE (FT):		
42) DISCHARGE HEIGHT ABOVE GRADE (FT):		
43) GOOD ENGINEERING PRACTICE (GEP) HEIGHT, IF KNOWN (FT):		
44) DIAMETER OF EXHAUST POINT (FT): NOTE: FOR A NON CIRCULAR EXHAUST POINT, THE DIAMETER IS 1.128 TIMES THE SQUARE ROOT OF THE AREA.		
45) EXIT GAS FLOW RATE	a) MAXIMUM (ACFM):	b) TYPICAL (ACFM):
46) EXIT GAS TEMPERATURE	a) MAXIMUM (°F):	b) TYPICAL (°F):
47) DIRECTION OF EXHAUST (VERTICAL, LATERAL, DOWNWARD):		
48) LIST ALL EMISSION UNITS AND CONTROL DEVICES SERVED BY THIS EXHAUST POINT:		
NAME		FLOW DIAGRAM DESIGNATION
a)		
b)		
c)		
d)		
e)		
THE FOLLOWING INFORMATION NEED ONLY BE SUPPLIED IF READILY AVAILABLE		
49a) LATITUDE:		b) LONGITUDE:
50) UTM ZONE:	b) UTM VERTICAL (KM):	c) UTM HORIZONTAL (KM):



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
 DIVISION OF AIR POLLUTION CONTROL – PERMIT SECTION
 P.O. BOX 19506
 SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE	
Revision #:	_____
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Source Designation:	_____

AIR POLLUTION CONTROL EQUIPMENT DATA AND INFORMATION	FOR AGENCY USE ONLY
	ID NUMBER:
	CONTROL EQUIPMENT #:
DATE:	

THIS FORM MUST BE COMPLETED FOR EACH AIR POLLUTION CONTROL EQUIPMENT. COMPLETE AND PROVIDE THIS FORM IN ADDITION TO THE APPLICABLE ADDENDUM FORM 260-A THROUGH 260-K. A SEPARATE FORM MUST BE COMPLETED FOR EACH MODE OF OPERATION OF AIR POLLUTION CONTROL EQUIPMENT FOR WHICH A PERMIT IS BEING SOUGHT.

SOURCE INFORMATION	
1) SOURCE NAME: PQ LLC (formerly PQ Corporation)	
2) DATE FORM PREPARED: 09/01/21	3) SOURCE ID NO. (IF KNOWN): 197045ABO

GENERAL INFORMATION	
4) NAME OF AIR POLLUTION CONTROL EQUIPMENT AND/OR CONTROL SYSTEM: Low NOx Burners (6)	
5) FLOW DIAGRAM DESIGNATION OF CONTROL EQUIPMENT AND/OR CONTROL SYSTEM: Low NOx Burners	
6) MANUFACTURER OF CONTROL EQUIPMENT (IF KNOWN): TBD	
7) MODEL NUMBER (IF KNOWN): TBD	8) SERIAL NUMBER (IF KNOWN): TBD
9) DATES OF COMMENCING CONSTRUCTION, OPERATION AND/OR MOST RECENT MODIFICATION OF THIS EQUIPMENT (ACTUAL OR PLANNED)	a) CONSTRUCTION (MONTH/YEAR): 09/09
	b) OPERATION (MONTH/YEAR): 09/09
	c) LATEST MODIFICATION (MONTH/YEAR): 01/22
10) BRIEFLY DESCRIBE MODIFICATION (IF APPLICABLE): The existing low NOx burners will be replaced as part of the furnace rebuild project planned for Q1 2022.	

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

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11) LIST ALL EMISSION UNITS AND OTHER CONTROL EQUIPMENT DUCTING EMISSIONS TO THIS CONTROL EQUIPMENT:

NAME	DESIGNATION OR CODE NUMBER
Fusing Furnace #2	Fusing Furnace #2

12) DOES THE CONTROL EQUIPMENT HAVE MORE THAN ONE MODE OF OPERATION? YES NO

IF YES, EXPLAIN AND IDENTIFY WHICH MODE IS COVERED BY THIS FORM (NOTE: A SEPARATE AIR POLLUTION CONTROL EQUIPMENT FORM 260-CAAPP MUST BE COMPLETED FOR EACH MODE):

N/A

13) IDENTIFY ALL ATTACHMENTS TO THIS FORM RELATED TO THIS AIR POLLUTION CONTROL EQUIPMENT (E.G., TECHNICAL DRAWINGS):

Form CAAPP-260I

OPERATING SCHEDULE

14) IDENTIFY ANY PERIOD WHEN THE CONTROL EQUIPMENT WILL NOT BE OPERATING DUE TO SCHEDULED MAINTENANCE AND/OR REPAIRS WHEN THE FEEDING EMISSION UNIT(S) TO THIS CONTROL EQUIPMENT IS/ARE IN OPERATION:

N/A

15a) IDENTIFY ANY PERIODS DURING OPERATION OF THE FEEDING EMISSION UNIT(S) WHEN THE CONTROL EQUIPMENT IS/ARE NOT USED:

N/A

b) IS THIS CONTROL EQUIPMENT IN OPERATION AT ALL OTHER TIMES THAT THE FEEDING EMISSION UNIT(S) IS/ARE IN OPERATION? YES NO

IF NO, EXPLAIN AND PROVIDE THE DURATION OF THE CONTROL EQUIPMENT DOWNTIME:

APPLICABLE RULES

16) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATION(S) SET BY RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT (E.G., VOM, IAC 218.207(b)(1), 81% OVERALL & 90% CONTROL DEVICE EFF.):

REGULATED AIR POLLUTANT(S)

None

EMISSION STANDARD(S)

REQUIREMENT(S)

17) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)

None

RECORDKEEPING RULE(S)

REQUIREMENT(S)

18) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)

None

REPORTING RULE(S)

REQUIREMENT(S)

19) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)

None

MONITORING RULE(S)

REQUIREMENT(S)

20) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE TO THIS EMISSION UNIT :

REGULATED AIR POLLUTANT(S)

None

TESTING RULE(S)

REQUIREMENT(S)

COMPLIANCE INFORMATION	
21) IS THE CONTROL SYSTEM IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE – ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.	
22) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:	
The low NOx burners are part of the furnace design, therefore no compliance demonstration needed.	
23) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:	
The low NOx burners are part of the furnace design, therefore no compliance demonstration needed.	

TESTING, MONITORING, RECORDKEEPING AND REPORTING			
24a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):			
PARAMETER	UNIT OF MEASUREMENT	METHOD OF MEASUREMENT	FREQUENCY
N/A			
(See 220-CAAPP			
form)			

24b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON
N/A			
(See 220-			
CAAPP form)			

c) IS COMPLIANCE OF THE CONTROL EQUIPMENT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? YES NO

IF NO, EXPLAIN:
N/A

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND/OR SUBMITTAL TO THE AGENCY UPON REQUEST? YES NO

IF NO, EXPLAIN:
N/A

25a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:
N/A

b) WHAT OPERATING PARAMETER(S) IS(ARE) BEING MONITORED (E.G., COMBUSTION CHAMBER TEMPERATURE)?
N/A

c) DESCRIBE THE LOCATION OF EACH MONITOR (E.G., EXIT OF COMBUSTION CHAMBER):
N/A

25d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE: N/A	<input type="checkbox"/> YES <input type="checkbox"/> NO																									
e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? IF NO, EXPLAIN: N/A	<input type="checkbox"/> YES <input type="checkbox"/> NO																									
f) IS EACH MONITOR OPERATED AT ALL TIMES THE CONTROL EQUIPMENT IS IN OPERATION? IF NO, EXPLAIN: N/A	<input type="checkbox"/> YES <input type="checkbox"/> NO																									
26) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 260-1:																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">TEST DATE</th> <th style="width: 15%;">TEST METHOD</th> <th style="width: 15%;">TESTING COMPANY</th> <th style="width: 15%;">OPERATING CONDITIONS</th> <th style="width: 40%;">SUMMARY OF RESULTS</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS	N/A																				
TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS																						
N/A																										
27) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">REPORTING REQUIREMENTS</th> <th style="width: 33%;">TITLE OF REPORT</th> <th style="width: 34%;">FREQUENCY</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY	N/A																						
REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY																								
N/A																										

CAPTURE AND CONTROL
28) DESCRIBE THE CAPTURE SYSTEM USED TO CONTAIN, COLLECT AND TRANSPORT EMISSIONS TO THE CONTROL EQUIPMENT. INCLUDE ALL HOODS, DUCTS, FANS, ETC. ALSO INCLUDE THE METHOD OF CAPTURE USED AT EACH EMISSION POINT. (IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 260-2): The low NOx burners are part of the furnace design.

29) ARE FEATURES OF THE CAPTURE SYSTEM ACCURATELY DEPICTED IN THE FLOW DIAGRAM CONTAINED IN THIS APPLICATION? YES NO

IF NO, A SKETCH SHOWING THE FEATURES OF THE CAPTURE SYSTEM SHOULD BE ATTACHED AND LABELED AS EXHIBIT 260-3:

30) PROVIDE THE ACTUAL (MINIMUM AND TYPICAL) CAPTURE SYSTEM EFFICIENCY, CONTROL EQUIPMENT DESTRUCTION/REMOVAL EFFICIENCY, AND THE OVERALL REDUCTION EFFICIENCY PROVIDED BY THE COMBINATION OF THE CAPTURE SYSTEM AND CONTROL EQUIPMENT FOR EACH REGULATED AIR POLLUTANT TO BE CONTROLLED. ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH THESE EFFICIENCIES WERE BASED AND LABEL AS EXHIBIT 260-4:

a) CONTROL PERFORMANCE:

	REGULATED AIR POLLUTANT	CAPTURE SYSTEM EFFICIENCY (%)		CONTROL EQUIPMENT EFFICIENCY (%)		OVERALL REDUCTION EFFICIENCY (%)	
		(MIN)	(TYP)	(MIN)	(TYP)	(MIN)	(TYP)
i	NOx	100	100	17	25	17	25
ii							
iii							

iv. EXPLAIN ANY OTHER REQUIRED LIMITS ON CONTROL EQUIPMENT PERFORMANCE SUCH AS OUTLET CONCENTRATION, COOLANT TEMPERATURE, ETC.:
N/A

b) METHOD USED TO DETERMINE EACH OF THE ABOVE EFFICIENCIES (E.G., STACK TEST, MATERIAL BALANCE, MANUFACTURER'S GUARANTEE, ETC.) AND THE DATE LAST TESTED, IF APPLICABLE:

EFFICIENCY DETERMINATION METHOD	DATE LAST TESTED
CAPTURE: Design specifications	
CONTROL: Manufacturer data	
OVERALL:	

c) REQUIRED PERFORMANCE:

	REGULATED AIR POLLUTANT	CAPTURE SYSTEM EFFICIENCY (%)	CONTROL EQUIPMENT EFFICIENCY (%)	OVERALL REDUCTION EFFICIENCY (%)	APPLICABLE RULE
i	N/A				
ii					
iii					

iv. EXPLAIN ANY OTHER REQUIRED LIMITS ON CONTROL EQUIPMENT PERFORMANCE SUCH AS OUTLET CONCENTRATION, COOLANT TEMPERATURE, ETC.:
N/A

(31)EMISSION INFORMATION

REGULATED AIR POLLUTANT	1 ACTUAL EMISSION RATE				ALLOWABLE BY RULE EMISSION RATE			2 PERMITTED EMISSION RATE		
	MAXIMUM	TYPICAL	TONS PER YEAR (TONS/YR)	LBS PER HOUR (LBS/HR)	3 OTHER TERMS	4 DM	5 RATE (UNITS)	APPLICABLE RULES	RATE (UNITS)	TONS PER YEAR (TONS/YR)
CARBON MONOXIDE (CO)							()			
LEAD			SEE				()			
NITROGEN OXIDES (NOx)			APPLI-				()			
PARTICULATE MATTER (PART)			CATION				()			
PARTICULATE MATTER <= 10 MICROMETERS (PM10)			TEXT				()			
SULFUR DIOXIDE (SO2)			SECTION				()			
VOLATILE ORGANIC MATERIAL (VOM)			3 AND				()			
OTHER, SPECIFY:			APPENDIX				()			
			B CALCS.				()			
EXAMPLE: PARTICULATE MATTER	MAXIMUM	5.00	21.9	0.3 GR/DSCF	1	6.0 (LBS/HR)	212.321	26.28	5.5 LBS/HR	22
	TYPICAL	4.00	14.4	0.24 GR/DSCF	4	5.5 (LBS/HR)	212.321	19.80		

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 260-5.

1 PROVIDE CONTROLLED EMISSIONS (E.G., THE EMISSIONS THAT WOULD RESULT AFTER ALL CONTROL AND CAPTURE EFFICIENCIES ARE ACCOUNTED FOR).
 2 PROVIDE THE EMISSION RATE THAT WILL BE USED AS A PERMIT SPECIAL CONDITION. THIS LIMIT WILL BE USED TO DETERMINE THE PERMIT FEE.
 3 PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED. REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.)
 4 DM - DETERMINATION METHOD. 1) STACK TEST. 2) MATERIAL BALANCE. 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS). 4) ENGINEERING ESTIMATE. 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)
 5 RATE - ALLOWABLE EMISSION RATE SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

(32) HAZARDOUS AIR POLLUTANT EMISSION INFORMATION

HAP INFORMATION		1 ACTUAL EMISSION RATE				ALLOWABLE BY RULE	
NAME OF HAP EMITTED	2 CAS NUMBER	POUNDS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	3 OTHER TERMS	4 DM	5 RATE OR STANDARD	APPLICABLE RULE
N/A		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
EXAMPLE: Benzene	71432	MAXIMUM:	10.0			98% by wt control device	CFR 61
		TYPICAL:	8.0			leak-tight trucks	61.302(b), (d)

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 260-6.

1 PROVIDE CONTROLLED EMISSIONS (E.G., THE EMISSIONS THAT WOULD RESULT AFTER ALL CONTROL AND CAPTURE EFFICIENCIES ARE ACCOUNTED FOR).

2 CAS - CHEMICAL ABSTRACT SERVICE NUMBER.

3 PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED - REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.).

4 DM - DETERMINATION METHOD: 1) STACK TEST. 2) MATERIAL BALANCE. 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS). 4) ENGINEERING ESTIMATE. 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS).

5 RATE - ALLOWABLE EMISSION RATE OR STANDARD SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

EXHAUST POINT INFORMATION		
33) DESCRIPTION OF EXHAUST POINT (STACK, VENT, ROOF MONITOR, INDOORS, ETC.). IF THE EXHAUST POINT DISCHARGES INDOORS, DO NOT COMPLETE THE REMAINING ITEMS. Emissions will be exhausted through existing air pollution control equipment (scrubber).		
34) DISTANCE TO NEAREST PLANT BOUNDARY FROM EXHAUST POINT DISCHARGE (FT):		
35) DISCHARGE HEIGHT ABOVE GRADE (FT):		
36) GOOD ENGINEERING PRACTICE (GEP) HEIGHT, IF KNOWN (FT):		
37) DIAMETER OF EXHAUST POINT (FT): NOTE: FOR A NON CIRCULAR EXHAUST POINT, THE DIAMETER IS 1.128 TIMES THE SQUARE ROOT OF THE AREA.		
38) EXIT GAS FLOW RATE	a) MAXIMUM (ACFM):	b) TYPICAL (ACFM):
39) EXIT GAS TEMPERATURE	a) MAXIMUM (°F):	b) TYPICAL (°F):
40) DIRECTION OF EXHAUST (VERTICAL, LATERAL, DOWNWARD):		
41) LIST ALL EMISSION UNITS AND CONTROL DEVICES SERVED BY THIS EXHAUST POINT:		
NAME		FLOW DIAGRAM DESIGNATION
a)		
b)		
c)		
d)		
e)		
f)		
g)		

42) WHAT PERCENTAGE OF THE CONTROL EQUIPMENT EMISSIONS ARE BEING DUCTED TO THIS EXHAUST POINT (%)?
43) IF THE PERCENTAGE OF THE CONTROL EQUIPMENT EMISSIONS BEING DUCTED TO THE EXHAUST POINT IS NOT 100%, THEN EXPLAIN WHERE THE REMAINING EMISSIONS ARE BEING EXHAUSTED TO:

THE FOLLOWING INFORMATION NEED ONLY BE SUPPLIED IF READILY AVAILABLE.		
44a) LATITUDE:	b) LONGITUDE:	
45) UTM ZONE:	b) UTM VERTICAL (KM):	c) UTM HORIZONTAL (KM):



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
 DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
 P.O. BOX 19506
 SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE	
Revision #:	_____
Date:	____ / ____ / ____
Page	_____ of _____
Source Designation:	_____

SUPPLEMENTAL FORM AIR POLLUTION CONTROL EQUIPMENT NO_x CONTROL (260I)	FOR AGENCY USE ONLY
	ID NUMBER:
	CONTROL EQUIPMENT #:
DATE:	

NOTE: A COMBUSTION MODIFICATION SUCH AS ADDING A LOW NO_x BURNER REQUIRES A SEPARATE ATTACHMENT DESCRIBING THE TYPE OF MODIFICATION AND SUBMITTAL OF THE MANUFACTURER'S SPECIFICATIONS AND GUARANTEES.

DATA AND INFORMATION	
1) FLOW DIAGRAM DESIGNATION OF CONTROL: Low NO _x Burners	
2) TYPE OF CONTROL:	
<input type="checkbox"/> SELECTIVE CATALYTIC REDUCTION <input checked="" type="checkbox"/> LOW NO _x BURNERS <input type="checkbox"/> FLUE GAS RECIRCULATION <input type="checkbox"/> LOW ACCESS AIR <input type="checkbox"/> OTHER, DESCRIBE: _____	<input type="checkbox"/> NON-SELECTIVE CATALYTIC REDUCTION <input type="checkbox"/> WATER INJECTION IN BURNER <input type="checkbox"/> CO-FIRING <input type="checkbox"/> BIAS FIRING
<input type="checkbox"/> SELECTIVE NON-CATALYTIC REDUCTION <input type="checkbox"/> STEAM INJECTION IN BURNER <input type="checkbox"/> OVERFIRE AIR	
3) FOR REDUCTION DEVICES:	
TEMPERATURE AT WHICH REDUCTION OCCURS (DEGREES FAHRENHEIT):	
REDUCING AGENT: N/A	
REDUCING AGENT USE RATE:	
DESCRIPTION OF INJECTION SYSTEM: N/A	

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

APPLICATION PAGE _____

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260I-CAAPP

FOR APPLICANT'S USE

4) FOR CATALYTIC DEVICES:

TYPE OF CATALYST USED: N/A
 EXPECTED FREQUENCY OF REPLACEMENT:

5) DESCRIBE NOx CONTROL UTILIZED:

Six (6) low NOx burners

6) NOx CONTROL PARAMETERS:

	DURING MAXIMUM OPERATION OF FEEDING UNIT(S)	DURING TYPICAL OPERATION OF FEEDING UNIT(S)
INLET GAS TEMPERATURE (DEGREES F°):	N/A	N/A
INLET GAS FLOW RATE (SCFM):	N/A	N/A
REDUCING AGENT INPUT RATE (LB/HR):	N/A	N/A
WATER OR STEAM INPUT RATE (LB/HR):	N/A	N/A
FLUE GAS RECIRCULATIONS:	N/A (%)	N/A (%)
EFFICIENCY (NOx REDUCTION):	25 (%)	17 (%)

APPENDIX B. EMISSION RATE CALCULATIONS

**PQ LLC - Joliet Plant
Furnace Rebuild Project**

Inputs for Furnace #2

Maximum Rated Heat Input Capacity 32 MMBTU/hr
 Average Production Rate 120 MT/day
 Proposed Annual Production Limit 48,281 TPY
 Proposed Monthly Production Limit 4,828 Tons/month
 Maximum Hours of Operation 8760 Hrs/year

Pollutant	Emissions Factor	Unit	Potential Emissions		Notes
			tons/mo	TPY	
CO	1.9	lbs/ton	4.55	45.48	2008 stack test [8.2 lb/hr (from test report) / avg production rate of 5.22 tons/hr during the test = 1.57 lb/ton, and then adding 20% safety factor]
NOx	4.5	lb/ton	10.96	109.63	October 2016 stack test (21.7 lb/hr (from test report)/ avg production rate of 9,557 lb/hr = 5 lb/MT)
PM	0.56	lb/ton	1.34	13.40	October 2016 stack test (2.211 lb/hr (from test report)/ avg production rate of 9,557 lb/hr = 0.46 lb/ton, and then adding 20% safety factor)
SO2	0.24	lb/ton	0.58	5.79	AP-42 Section 11.15 (with venturi scrubber) with a 20% safety factor
VOM	0.24	lb/ton	0.58	5.79	AP-42 Section 11.15 with a 20% safety factor

**PQ LLC - Joliet Plant
Furnace Rebuild Project**

Inputs for Fusing Feed:^[1]

Soda Ash Feed Rate 19,278 TPY
 1,928 TPM
 Sand Feed Rate 37,246 TPY
 3,725 TPM

Raw Material	Pollutant	Emissions Factor	Unit	Potential Emissions		Notes
				lbs/mo	TPY	
Soda Ash and Sand Feed	PM	0.0041	lb/ton	23.17	0.12	AP-42 Table 8.12-2 (controlled filterable PM emissions for soda ash storage/loading and unloading)

[1] The raw material inputs are based on the updated annual glass production limit.

**PQ LLC - Joliet Plant
Furnace Rebuild Project**

Inputs for dry material dumping into tanks T-110 and T-111:^[1]

Maximum usage rate for tank T-110	292,553 lb/yr
Maximum usage rate for tank T-111	45,400 lb/yr

Emission Factor calculations:

AP-42 Chapter 13.2.4.3 Predictive Emission
Factor Equations, Equation 1

$$E = k * 0.0032 * ((u/5)^{1.3}) / ((M/2)^{1.4})$$

k (Particle size distribution factor) ^[2]	0.74
u (wind speed) ^[3]	1.3 mph
M ^[4]	0.25 %
E (PM Emission Factor)	0.007553931 lb/ton

Process	Total PM ³
	[TPY]
T-110	5.52E-04
T-111	8.57E-05

[1] The updated usage rates for tanks T-110 and T-111 were calculated based on the prior dry material addition rates for the tanks, the actual annual glass production for the facility in those prior years, and the proposed new annual glass production rate.

[2] The particle size distribution factor of 0.74 was used since it was assumed that the largest particle size is <30 µm.

[3] The lowest possible wind speed noted in AP-42 as valid for the equation was used since the process is carried out indoors.

[4] The lowest possible moisture content noted in AP-42 as valid for the equation was used since the process is carried out indoors.

**PQ LLC - Joliet Plant
Furnace Rebuild Project**

Inputs for SSS bunker transfers:

Maximum throughput 48,281 TPY
4828 TPM
Rail car weight 80 tons/car
Number of railcars 604 cars/year
60 cars/month

Solid Sodium Silicate Bunker Transfers and Rail Car Loading

Process	PM Factor [lbs/ton]	Total PM		Notes
		[lbs/car]	[lbs/month]	
Transfer 1	0.0054	0.43	25.92	AP-42 emission factor from AP-42, Table 11.19.2-2 for "Crushed Stone Processing Operations". See factors for tertiary crushing.
Transfer 2		0.43	25.92	
Transfer 3		0.43	25.92	
Transfer 4		0.43	25.92	
Transfer 5		0.43	25.92	

There are up to five transfers / drop points: Once into the bunker, once from bunker to bunker, once outdoors near the rail loading conveyor, once onto the conveyor, and once into a railcar.

**PQ LLC - Joliet Plant
Furnace Rebuild Project**

Furnace Emissions (TPY)								
Category	Emission Unit	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	VOM	CO
2017 Actual Emissions ^[1]	Furnace	8.79	8.79	8.79	5.17	86.28	5.17	32.60
	Fusing Feed	0.56	0.47	0.47				
	SSS Transfers	0.38	0.38	0.38				
	Dry Material to T-110/T-111	4.08E-04	4.08E-04	4.08E-04				
2018 Actual Emissions ^[1]	Furnace	8.64	8.64	8.64	5.08	84.79	5.08	32.04
	Fusing Feed	0.55	0.46	0.46				
	SSS Transfers	0.38	0.38	0.38				
	Dry Material to T-110/T-111	4.48E-04	4.48E-04	4.48E-04				
Baseline Actual Emissions ^[2]	Furnace	8.72	8.72	8.72	5.12	85.54	5.12	32.32
	Fusing Feed	0.55	0.47	0.47				
	SSS Transfers	0.38	0.38	0.38				
	Dry Material to T-110/T-111	4.28E-04	4.28E-04	4.28E-04				
	Baseline Totals	9.65	9.57	9.57	5.12	85.54	5.12	32.32
Proposed New Emission Limits	Furnace	13.40	13.40	13.40	5.79	109.63	5.79	45.48
	Fusing Feed	0.12	0.12	0.12	--	--	--	--
	SSS Transfers	0.65	0.65	0.65	--	--	--	--
	Dry Material to T-110/T-111	0.0006	0.0006	0.0006	--	--	--	--
	Combined PTE	14.17	14.17	14.17	5.79	109.63	5.79	45.48
Project Emissions Increase ^[3]		5.07	5.07	5.07	0.67	24.09	0.67	13.16
PSD Threshold		N/A	250	250	250	N/A	N/A	250
NNSR Threshold		N/A	N/A	N/A	N/A	25	50	N/A
Below Threshold?		N/A	Yes	Yes	Yes	Yes	Yes	Yes

[1] Sourced from facility's Annual Emissions Report (AER).

[2] Baseline actual emissions were determined as the average of actual facility emissions from the two most recent and representative years, 2017 and 2018. Years 2019 and 2020 do not represent normal source operations as explained in the application narrative.

[3] Because PQ is changing the emission calculation methodology for the storage and loading of fusing feed, the difference between the proposed limits and baseline actuals for this activity have not been accounted for since they are not comparable). The proposed new emission rate is accounted for without subtracting any baseline emissions.

PQ LLC - Joliet Facility**Fusing Furnace NOx Emissions 2017-2018**

DATE	NOx TONS	
Jan-17	6.54	
Feb-17	6.64	
Mar-17	7.89	
Apr-17	7.41	
May-17	7.40	
Jun-17	5.73	
Jul-17	7.73	
Jul-17	7.77	
Sep-17	7.00	
Oct-17	6.72	
Nov-17	7.43	
Dec-17	8.03	86.28 tpy
Jan-18	6.42	
Feb-18	7.10	
Mar-18	7.40	
Apr-18	7.61	
May-18	6.20	
Jun-18	7.28	
Jul-18	7.64	
Aug-18	7.35	
Sep-18	6.60	
Oct-18	7.80	
Nov-18	7.57	
Dec-18	5.84	84.79 tpy
TOTAL	171.07	
Average	85.54	

From: [Schnepp, Jason](#)
To: [Smet, Robert](#); [Mark Skowron \(Joliet\)](#)
Cc: [Chloe Reece](#); [Jennie Houle \(NS\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#); [Ken Schulte \(Joliet\)](#)
Subject: RE: PQ LLC Joliet - draft IEPA Construction Permit: CO, SO2, VOM Emission Rates Follow-up
Date: Tuesday, May 3, 2022 4:11:37 PM
Attachments: [image001.jpg](#)

I will also add that we will ask Region 5 to try for 5/12. If we get comments on 5/12 and they are minimal, we could start notice by 5/13 with notice ending 6/12. I will reach out to Region 5 to see if that is doable.

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, May 3, 2022 4:07 PM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Cc: Chloe Reece <CReece@trinityconsultants.com>; Jennie Houle (NS) <Jennie.Houle@silicates.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>; Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>; Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Subject: RE: PQ LLC Joliet - draft IEPA Construction Permit: CO, SO2, VOM Emission Rates Follow-up

Given that Region 5 will not complete their review of the draft permit and project summary until the end of next week, the request for a waiver has to be revised. In that regard, we will need a waiver that goes a few days further than the date of June 13th.

I'll get back to you soon with the revised date.

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Tuesday, May 3, 2022 11:08 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Chloe Reece <CReece@trinityconsultants.com>; Jennie Houle (NS) <Jennie.Houle@silicates.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>; Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>
Subject: [External] PQ LLC Joliet - draft IEPA Construction Permit: CO, SO2, VOM Emission Rates Follow-up

Bob,

As a follow-up to our call this morning, I confirmed with Chloe that PQ will not exceed the currently permitted Sodium Silicate Fusing Furnace emissions rates for SO2, VOM, and CO:

CAAPP Permit references:

- 4.1.2.c.i.B: SO2 limit 1.3 lb/hr
- 4.1.2.d.i.A: VOM limit 1.3 lb/hr

- 4.1.2.e.i.A: CO limit 8.2 lb/hr

Thanks,
Mark
331-444-8900

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig 

www.PQCorp.com

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From: [Schnepp, Jason](#)
To: [Smet, Robert](#)
Subject: FW: PQ Draft Permit and Project Summary
Date: Tuesday, May 3, 2022 4:24:36 PM

Pass this info along to Mark. Our goal is for notice on next Friday.

thanks

Jason

From: Ogulei, David <Ogulei.David@epa.gov>
Sent: Tuesday, May 3, 2022 4:23 PM
To: Schnepp, Jason <Jason.Schnepp@Illinois.gov>; Smet, Robert <Robert.Smet@Illinois.gov>
Subject: [External] RE: PQ Draft Permit and Project Summary

I should be able to make that. Thank you!!

From: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Sent: Tuesday, May 03, 2022 4:13 PM
To: Ogulei, David <Ogulei.David@epa.gov>; Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: PQ Draft Permit and Project Summary

If possible, Thursday 5/12 would be ideal. Doing so would enable us to get comments resolved the next day and then start notice that night. We are trying to accommodate a construction schedule that gets tight around June 13.

Thanks,

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Schnepp, Jason
Sent: Tuesday, May 3, 2022 3:50 PM
To: Ogulei, David <Ogulei.David@epa.gov>; Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: PQ Draft Permit and Project Summary

Next week is fine. We want this sorted out before we go to notice.

Bob, make sure a waiver affords us time assuming we get comments back from David next Friday and we resolve by the following Monday.

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Ogulei, David <Ogulei.David@epa.gov>
Sent: Tuesday, May 3, 2022 3:30 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>
Subject: [External] RE: PQ Draft Permit and Project Summary

If I say "please", can I get more time? I'm on travel for the rest of the week but I could get to it next week. Given this project is in an EJ area, if time is of essence, I could try to get someone to look at it for big picture issues this week. If that doesn't work, it seems we will have another opportunity after it's noticed.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, May 03, 2022 11:21 AM
To: Ogulei, David <Ogulei.David@epa.gov>
Subject: PQ Draft Permit and Project Summary

Hi David,

I've attached our current draft permit and project summary for PQ's proposed Furnace Rebuild project at their sodium silicate manufacturing facility in Joliet. There might be some very minor tweaks before we go out for public comments but these are basically the official documents. Please provide comments as usual.

Would it be possible to have your comments to me by Friday afternoon? I apologize if that it is too soon.

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Schnepp, Jason](#)
Subject: Clearance Memo
Date: Wednesday, May 4, 2022 8:32:00 AM
Attachments: [EJ Clearance Memo PQ.docx](#)



Date: May 4, 2022

Source: PQ, LLC

Location: 111 Ingalls Avenue, Joliet, Will County

Project: Construction application for the rebuild of sodium silicate furnace #2, which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

The permitted emissions of the various pollutants from the rebuilt furnace will either be equal to or less than the permitted emissions of the current furnace.

Public/EJ Notice: EJ notification/outreach was provided for this project. No comments, questions, or other expressions of concern or interest were received.

Compliance History: The only and most recent flag was from March 2020 which pertained to a possible late submittal of the application for the renewal of the CAAPP permit, which is not relevant to this current permit application and draft permit.

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Subject: Timing for CEMS Installation
Date: Wednesday, May 4, 2022 12:32:00 PM

We will change 6 to 12 months to 9 to 15.

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Subject: Waiver
Date: Thursday, May 5, 2022 8:45:00 AM

We will need the waiver by 10 am tomorrow (Friday).

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Cc: [Chloe Reece \(CRreece@trinityconsultants.com\)](mailto:CRreece@trinityconsultants.com)
Subject: [External] Re: Waiver
Date: Thursday, May 5, 2022 9:56:32 AM

Understood Bob. I am meeting with my boss today and will keep you posted.

Thanks,
Mark
331-444-8900

Sent from my iPhone

On May 5, 2022, at 8:45 AM, Smet, Robert <Robert.Smet@illinois.gov> wrote:

This Message Is From an External Sender

This message came from outside your organization.

[Report Suspicious](#) |

<!--[if !((ie)|(ms0))-->

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<!--[endif]-->

We will need the waiver by 10 am tomorrow (Friday).

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From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#)
Subject: Follow Up
Date: Thursday, May 5, 2022 2:53:00 PM

Mark,

I asked Jason but he is seriously overwhelmed with major, time-sensitive projects, plus he has reiterated again that the issues re CEMS has been settled. We have full concurrence on that issue here.

We will move on to the public notice and comment period once we get the waiver and any comments from the Region.

Bob

From: [Ken Schulte \(Joliet\)](#)
To: [Smet, Robert](#); [Schnepp, Jason](#)
Cc: [Mark Skowron \(Joliet\)](#); [Jennie Houle \(NS\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#); [Chloe Reece](#)
Subject: [External] PQ LLC Joliet Construction Permit Waiver and Draft Permit Comments
Date: Friday, May 6, 2022 8:47:18 AM
Attachments: [image001.jpg](#)
[21110013 042122 \(002\) PQ comments 050622 .doc](#)

Dear Bob,

As requested, this correspondence serves as a waiver of the IEPA 180-day review period for PQ LLC Joliet 197045ABO construction permit application and extends the deadline to June 13, 2022. Please note that as previously discussed with Mark Skowron, June 13th continues to be scheduled furnace drain date with many contractors lined-up.

PQ has reviewed IEPA's latest version of the draft construction permit for its Joliet facility. In this version, IEPA has removed, among other things, a provision proposed by PQ addressing the implementation of a NOx CEMS for the sodium silicate furnace. PQ continues to question the basis of a CEMS requirement for the furnace, and offers the following considerations:

1. The Illinois regulations have a specific regulation that addresses under what circumstances would sources very similar to PQ's sodium silicate furnace be required to install a CEMS. Under 35 IAC 217.157, glass melting furnaces with NOx PTE greater than one ton per day are required to install a CEMS, whereas such furnaces with emissions less than one ton per day are required only to perform periodic stack testing. This framework is established specifically in the context of nonattainment areas for ozone, including facilities in Will County. The Joliet furnace's NOx PTE is significantly less than one ton per day, and would only need to stack test under this provision. Given that this regulation specifically addresses appropriate means for monitoring NOx emissions in areas which are nonattainment for ozone, we believe that following the approach in the rule makes sense in this case and does not give rise to arbitrary and otherwise legally unsupported continuous monitoring requirements in the permit. The IEPA initially seemed to take this approach in a prior draft of the permit, but then, without explanation, departed from it. We suggest returning to that framework as originally proposed.
2. As IEPA acknowledged in the latest draft of the permit, it is necessary to include a grace period to enable PQ to properly install, calibrate, and operate the CEMS. However, there must be some method of determining compliance with the NOx limits in the interim, before the CEMS is installed. It appears that IEPA intends for stack testing under Condition 5.a.i to serve as the interim method of compliance demonstration before a CEMS is implemented. However, it is fully possible that this stack testing could show emissions that are lower than the emission factor currently being used for permitting, and that the resulting actual margin of emissions below the NSR significance threshold of 25 tons/year will be greater than initially thought (and below a threshold that warrants a CEMS). PQ believes that this initial stack test serves as valuable data that should be considered before ultimately requiring a CEMS. Accordingly, we suggest that if a CEMS requirement is written into the permit, it be written in such a way that is made conditional upon the results of the initial stack testing. If the stack testing shows a result corresponding with an emissions increase less than a certain amount (e.g., 80%) of the NSR significance threshold of 25 tons/year, CEMS should not be required.
3. The area in which the facility is located (Will County) was recently proposed by the USEPA to be redesignated to attainment with the 2008 ozone NAAQS. The effect of such redesignation is that the applicable NSR significance threshold would be 40 tons/year, as opposed to 25 tons/year. It is highly likely that before a CEMS is required to be installed under the permit (within 15 months), redesignation would occur. In such case, the need to determine compliance with the 25 tons/year threshold is less acute, and stack testing would suffice given a larger margin with respect to the NSR applicability threshold.

PQ believes that these considerations firmly support either removal, or at minimum, revision of the current CEMS requirement, and we encourage IEPA to reassess its position. In the event that the IEPA rejects these considerations and continues to believe that the CEMS requirement must remain, PQ also offers the attached redlines to the draft permit. PQ provides these proposed edits not as a concession of the basis for the CEMS requirement, but as an effort to keep the permit review process moving. In particular, PQ proposes in these redlines to (1) clarify that the CEMS installation timeframe will begin from the date of initial performance testing, and to provide a potential avenue for an extension if IEPA approves one; and (2) to clarify reasonable data availability associated with operating the CEMS.

Please contact Mark Skowron (331-444-8900) or myself if you have any questions.

Thank you,
Ken Schulte
PQ LLC Joliet Site Manager
815-774-2739



Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 4-6-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

Commented [MS(1): No change to existing CAAPP Permit Limits for these pollutants.

3. Nonapplicability Provisions

a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.

b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: —Upon startup of the affected fusing furnace with new burners, This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.

ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.

b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Commented [MS(2): Per conversation with Bob Smet, existing CAAPP Limits for CO, PM, SO₂, and VOM will remain the same.

	Emission Limits
--	-----------------

Pollutant	pounds/hour	Tons/Year
NOx	---	109.6
CO	10,388.2	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	20.6
SO ₂	1.32	5.8

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of a total individual HAP being no more than 0.1 lb/hour tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5

Commented [MS(3)]: IEPA - To correspond to the 0.44 tpy total HAP limit, this should be 0.1 lb/hr total HAP.

If you are actually wanting an individual HAP tpy limit, the value needs to be updated to 0.25 tpy. Based on AP-42 natural gas combustion factors, there is one individual HAP that contributes heavily to the total HAP value.

Page 4

PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
- B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative of ~~maximum operation~~ operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

Commented [CR4]: IEPA - This condition does not seem necessary, given that there are not separate limits for PM10/PM2.5.

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a.
 - i. ~~Except as provided in Condition 6b of this permit, the Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 612 months after the performance of emission testing provided in Condition 5(-a)(-b). However, this timeframe may be extended upon written request from Permittee and approval by IEPA. after the results from the testing in Condition 5a are obtained performance of emission testing provided in Condition 5.a. initial startup of the rebuilt furnace. However, this timeframe may be extended upon written request from Permittee and approval by IEPA. The period in which the Permittee must install and calibrate the NOx CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NOx CEMS or~~

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Commented [CR5]: IEPA - Upon further review, there doesn't seem to be a reason to give a range of time (i.e., 9- 15 months). The upper limit can be listed instead.

Commented [MS(6)]: In addition, it provides another data point to help determine analyzer monitoring ranges and facilitate implementation of the CEMS.

Commented [MS(7)]: Following the Performance Test(s) would make more sense, since the performance test is the initial compliance demonstration method.

Page 6

~~CERMS shall be operated as provided in Condition 6(a)(iii) shall monitor continuously and record the hourly NOx emission concentration (parts per million) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.~~

ii. The CEMS ~~from Condition 6a~~ shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. ~~Except as provided in Condition 6b of this permit, the~~ Permittee shall either:

A. ~~Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPAan Illinois EPA approved method for calculating flow rate. In conjunction with the USEPA-Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~ ~~or~~

B. ~~Install, calibrate, certify, maintain, and operate NOx Continuous Emission Rate Monitoring System (CERMS) as follows:~~

1. ~~The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);~~

2. ~~The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);~~

3. ~~In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end~~

Commented [SR8]: How would you calculate/determine the flow rate?

Page 7

~~of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.~~

~~N: The timing for the requirements in Condition 6aiiiA and B is as specified in Condition 6ai.~~

- ~~b. i. If Will County, Illinois (or the portion of it where the affected fusing furnace is located), is redesignated to attainment with the 2008 national ambient air quality standard for ozone (8-hour average), or if the results of the initial NOx testing in Condition 5a are less than 95 of the applicable standard, the Permittee may demonstrate compliance with the NOx emission limits established in this permit for the affected fusing furnace as follows, in lieu of installing a CEMS (or CERMS):~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are less than 80 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 5 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are between 80 and 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 3 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are greater than 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated within 13 months.~~

~~The results of any NOx emissions testing shall be compared to the applicable standard and the timing of the subsequent test shall be based on Conditions 6biAC, as applicable.~~

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

Page 8

- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly, ~~seasonal~~, and annual operating hours.
 - iv. Type and quantity of fuel used monthly, ~~seasonally~~, and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NOx that is performed on the unit.
 - ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

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8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable

Page 9

cause of such deviation, the corrective actions taken, and any preventive measures taken.

b. One copy of required reports and notifications shall be sent to:

i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project ~~within 180 days of commencing operation of the modified furnace~~. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Page 10

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Nation, Trent](#)
Cc: [Schnepp, Jason](#)
Subject: FW: PQ LLC Joliet Construction Permit Waiver and Draft Permit Comments
Date: Friday, May 6, 2022 8:55:00 AM
Attachments: [image001.jpg](#)
[21110013_042122_\(002\)_PQ_comments_050622_.doc](#)

Trent,

Could you update ICEMAN with the waiver date of June 13th?

ID 197045ABO and PN 21110013.

Thanks.

Bob

From: Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>
Sent: Friday, May 6, 2022 8:46 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>; Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Jennie Houle (NS) <Jennie.Houle@silicates.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>; Chloe Reece <CReece@trinityconsultants.com>
Subject: [External] PQ LLC Joliet Construction Permit Waiver and Draft Permit Comments

Dear Bob,

As requested, this correspondence serves as a waiver of the IEPA 180-day review period for PQ LLC Joliet 197045ABO construction permit application and extends the deadline to June 13, 2022. Please note that as previously discussed with Mark Skowron, June 13th continues to be scheduled furnace drain date with many contractors lined-up.

PQ has reviewed IEPA's latest version of the draft construction permit for its Joliet facility. In this version, IEPA has removed, among other things, a provision proposed by PQ addressing the implementation of a NOx CEMS for the sodium silicate furnace. PQ continues to question the basis of a CEMS requirement for the furnace, and offers the following considerations:

1. The Illinois regulations have a specific regulation that addresses under what circumstances would sources very similar to PQ's sodium silicate furnace be required to install a CEMS. Under 35 IAC 217.157, glass melting furnaces with NOx PTE greater than one ton per day are required to install a CEMS, whereas such furnaces with emissions less than one ton per day are required only to perform periodic stack testing. This framework is established specifically in the context of nonattainment areas for ozone, including facilities in Will County. The Joliet furnace's NOx PTE is significantly less than one ton per day, and would only need to stack test under this provision. Given that this regulation specifically addresses appropriate means for monitoring NOx emissions in areas which are nonattainment for ozone, we believe that following the approach in the rule makes sense in this case and does not give rise to arbitrary and otherwise legally unsupported continuous monitoring requirements in the permit. The IEPA initially seemed to take this approach in a prior draft of the permit, but then, without

explanation, departed from it. We suggest returning to that framework as originally proposed.

2. As IEPA acknowledged in the latest draft of the permit, it is necessary to include a grace period to enable PQ to properly install, calibrate, and operate the CEMS. However, there must be some method of determining compliance with the NOx limits in the interim, before the CEMS is installed. It appears that IEPA intends for stack testing under Condition 5.a.i to serve as the interim method of compliance demonstration before a CEMS is implemented. However, it is fully possible that this stack testing could show emissions that are lower than the emission factor currently being used for permitting, and that the resulting actual margin of emissions below the NSR significance threshold of 25 tons/year will be greater than initially thought (and below a threshold that warrants a CEMS). PQ believes that this initial stack test serves as valuable data that should be considered before ultimately requiring a CEMS. Accordingly, we suggest that if a CEMS requirement is written into the permit, it be written in such a way that is made conditional upon the results of the initial stack testing. If the stack testing shows a result corresponding with an emissions increase less than a certain amount (e.g., 80%) of the NSR significance threshold of 25 tons/year, CEMS should not be required.
3. The area in which the facility is located (Will County) was recently proposed by the USEPA to be redesignated to attainment with the 2008 ozone NAAQS. The effect of such redesignation is that the applicable NSR significance threshold would be 40 tons/year, as opposed to 25 tons/year. It is highly likely that before a CEMS is required to be installed under the permit (within 15 months), redesignation would occur. In such case, the need to determine compliance with the 25 tons/year threshold is less acute, and stack testing would suffice given a larger margin with respect to the NSR applicability threshold.

PQ believes that these considerations firmly support either removal, or at minimum, revision of the current CEMS requirement, and we encourage IEPA to reassess its position. In the event that the IEPA rejects these considerations and continues to believe that the CEMS requirement must remain, PQ also offers the attached redlines to the draft permit. PQ provides these proposed edits not as a concession of the basis for the CEMS requirement, but as an effort to keep the permit review process moving. In particular, PQ proposes in these redlines to (1) clarify that the CEMS installation timeframe will begin from the date of initial performance testing, and to provide a potential avenue for an extension if IEPA approves one; and (2) to clarify reasonable data availability associated with operating the CEMS.

Please contact Mark Skowron (331-444-8900) or myself if you have any questions.

Thank you,
Ken Schulte
PQ LLC Joliet Site Manager
815-774-2739



Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 4-6-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

Commented [MS(1): No change to existing CAAPP Permit Limits for these pollutants.

3. Nonapplicability Provisions

a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.

b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: —Upon startup of the affected fusing furnace with new burners, This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.

ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.

b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Commented [MS(2): Per conversation with Bob Smet, existing CAAPP Limits for CO, PM, SO₂, and VOM will remain the same.

	Emission Limits
--	-----------------

Pollutant	pounds/hour	Tons/Year
NOx	---	109.6
CO	10,388.2	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	20.6
SO ₂	1.32	5.8

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of a total individual HAP being no more than 0.1 lb/hour tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5

Commented [MS(3)]: IEPA - To correspond to the 0.44 tpy total HAP limit, this should be 0.1 lb/hr total HAP.

If you are actually wanting an individual HAP tpy limit, the value needs to be updated to 0.25 tpy. Based on AP-42 natural gas combustion factors, there is one individual HAP that contributes heavily to the total HAP value.

Page 4

PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
- B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative of maximum operation ~~operating conditions~~ and the means by which the operating parameters for the emission unit and any control equipment will be determined.

Commented [CR4]: IEPA - This condition does not seem necessary, given that there are not separate limits for PM10/PM2.5.

Page 5

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a.
 - i. ~~Except as provided in Condition 6b of this permit, the Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 612 months after the performance of emission testing provided in Condition 5(-a)(-b). However, this timeframe may be extended upon written request from Permittee and approval by IEPA. after the results from the testing in Condition 5a are obtained performance of emission testing provided in Condition 5.a. initial startup of the rebuilt furnace. However, this timeframe may be extended upon written request from Permittee and approval by IEPA. The period in which the Permittee must install and calibrate the NOx CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NOx CEMS or~~

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Commented [CR5]: IEPA - Upon further review, there doesn't seem to be a reason to give a range of time (i.e., 9- 15 months). The upper limit can be listed instead.

Commented [MS(6)]: In addition, it provides another data point to help determine analyzer monitoring ranges and facilitate implementation of the CEMS.

Commented [MS(7)]: Following the Performance Test(s) would make more sense, since the performance test is the initial compliance demonstration method.

Page 6

~~CERMS shall be operated as provided in Condition 6(a)(iii) shall monitor continuously and record the hourly NO_x emission concentration (parts per million) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.~~

ii. The CEMS ~~from Condition 6a~~ shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. ~~Except as provided in Condition 6b of this permit, the~~ Permittee shall either:

A. ~~Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPAan Illinois EPA approved method for calculating flow rate. In conjunction with the USEPA-Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~ ~~or~~

B. ~~Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:~~

1. ~~The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);~~

2. ~~The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);~~

3. ~~In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end~~

Commented [SR8]: How would you calculate/determine the flow rate?

Page 7

~~of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.~~

~~N: The timing for the requirements in Condition 6aiiiA and B is as specified in Condition 6ai.~~

- ~~b. i. If Will County, Illinois (or the portion of it where the affected fusing furnace is located), is redesignated to attainment with the 2008 national ambient air quality standard for ozone (8-hour average), or if the results of the initial NOx testing in Condition 5a are less than 95 of the applicable standard, the Permittee may demonstrate compliance with the NOx emission limits established in this permit for the affected fusing furnace as follows, in lieu of installing a CEMS (or CERMS):~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are less than 80 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 5 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are between 80 and 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 3 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are greater than 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated within 13 months.~~

~~The results of any NOx emissions testing shall be compared to the applicable standard and the timing of the subsequent test shall be based on Conditions 6biAC, as applicable.~~

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

Page 8

- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
- ii. Calendar date of the record.
- iii. Monthly, ~~seasonal~~, and annual operating hours.
- iv. Type and quantity of fuel used monthly, ~~seasonally~~, and annually.
- v. Product and material throughput, as applicable.
- vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
- vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
- viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NOx that is performed on the unit.
- ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
- x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

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- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable

Page 9

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b. One copy of required reports and notifications shall be sent to:

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Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project ~~within 180 days of commencing operation of the modified furnace~~. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Page 10

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

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3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Nation, Trent](#)
To: [Smet, Robert](#)
Cc: [Schnepp, Jason](#)
Subject: RE: PQ LLC Joliet Construction Permit Waiver and Draft Permit Comments
Date: Friday, May 6, 2022 9:03:41 AM
Attachments: [image001.jpg](#)

This waiver has been entered in ICEMAN.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, May 6, 2022 8:56 AM
To: Nation, Trent <Trent.Nation@Illinois.gov>
Cc: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Subject: FW: PQ LLC Joliet Construction Permit Waiver and Draft Permit Comments

Trent,

Could you update ICEMAN with the waiver date of June 13th?

ID 197045ABO and PN 21110013.

Thanks.

Bob

From: Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>
Sent: Friday, May 6, 2022 8:46 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>; Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Jennie Houle (NS) <Jennie.Houle@silicates.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>; Chloe Reece <CReece@trinityconsultants.com>
Subject: [External] PQ LLC Joliet Construction Permit Waiver and Draft Permit Comments

Dear Bob,

As requested, this correspondence serves as a waiver of the IEPA 180-day review period for PQ LLC Joliet 197045ABO construction permit application and extends the deadline to June 13, 2022. Please note that as previously discussed with Mark Skowron, June 13th continues to be scheduled furnace drain date with many contractors lined-up.

PQ has reviewed IEPA's latest version of the draft construction permit for its Joliet facility. In this version, IEPA has removed, among other things, a provision proposed by PQ addressing the implementation of a NOx CEMS for the sodium silicate furnace. PQ continues to question the basis of a CEMS requirement for the furnace, and offers the following considerations:

1. The Illinois regulations have a specific regulation that addresses under what circumstances would sources very similar to PQ's sodium silicate furnace be required to install a CEMS.

Under 35 IAC 217.157, glass melting furnaces with NO_x PTE greater than one ton per day are required to install a CEMS, whereas such furnaces with emissions less than one ton per day are required only to perform periodic stack testing. This framework is established specifically in the context of nonattainment areas for ozone, including facilities in Will County. The Joliet furnace's NO_x PTE is significantly less than one ton per day, and would only need to stack test under this provision. Given that this regulation specifically addresses appropriate means for monitoring NO_x emissions in areas which are nonattainment for ozone, we believe that following the approach in the rule makes sense in this case and does not give rise to arbitrary and otherwise legally unsupported continuous monitoring requirements in the permit. The IEPA initially seemed to take this approach in a prior draft of the permit, but then, without explanation, departed from it. We suggest returning to that framework as originally proposed.

2. As IEPA acknowledged in the latest draft of the permit, it is necessary to include a grace period to enable PQ to properly install, calibrate, and operate the CEMS. However, there must be some method of determining compliance with the NO_x limits in the interim, before the CEMS is installed. It appears that IEPA intends for stack testing under Condition 5.a.i to serve as the interim method of compliance demonstration before a CEMS is implemented. However, it is fully possible that this stack testing could show emissions that are lower than the emission factor currently being used for permitting, and that the resulting actual margin of emissions below the NSR significance threshold of 25 tons/year will be greater than initially thought (and below a threshold that warrants a CEMS). PQ believes that this initial stack test serves as valuable data that should be considered before ultimately requiring a CEMS. Accordingly, we suggest that if a CEMS requirement is written into the permit, it be written in such a way that is made conditional upon the results of the initial stack testing. If the stack testing shows a result corresponding with an emissions increase less than a certain amount (e.g., 80%) of the NSR significance threshold of 25 tons/year, CEMS should not be required.
3. The area in which the facility is located (Will County) was recently proposed by the USEPA to be redesignated to attainment with the 2008 ozone NAAQS. The effect of such redesignation is that the applicable NSR significance threshold would be 40 tons/year, as opposed to 25 tons/year. It is highly likely that before a CEMS is required to be installed under the permit (within 15 months), redesignation would occur. In such case, the need to determine compliance with the 25 tons/year threshold is less acute, and stack testing would suffice given a larger margin with respect to the NSR applicability threshold.

PQ believes that these considerations firmly support either removal, or at minimum, revision of the current CEMS requirement, and we encourage IEPA to reassess its position. In the event that the IEPA rejects these considerations and continues to believe that the CEMS requirement must remain, PQ also offers the attached redlines to the draft permit. PQ provides these proposed edits not as a concession of the basis for the CEMS requirement, but as an effort to keep the permit review process moving. In particular, PQ proposes in these redlines to (1) clarify that the CEMS installation timeframe will begin from the date of initial performance testing, and to provide a potential avenue for an extension if IEPA approves one; and (2) to clarify reasonable data availability associated with operating the CEMS.

Please contact Mark Skowron (331-444-8900) or myself if you have any questions.

Thank you,
Ken Schulte
PQ LLC Joliet Site Manager
815-774-2739



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From: [Smet, Robert](#)
To: [Bailey, Sabrina](#)
Cc: [Schnepp, Jason](#)
Subject: EJ Indicator Analysis for PQ LLC
Date: Friday, May 6, 2022 9:39:00 AM

Hi Sabrina,

An EJ Indicator Analysis is requested for:
PQ LLC

I.D. No.: 197045ABO

111 Ingalls Avenue, Joliet, Will County

Please reply all so that Jason also gets the results. If you have any questions or need further information, please let me know.

Thanks,

Bob Smet
BOA Permits

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Subject: [External] Public Notice Question
Date: Friday, May 6, 2022 9:44:15 AM
Attachments: [image001.jpg](#)

Bob,
Does IEPA handle the Public Notice?
Does PQ need to take any action?

Thanks,
Mark

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig



www.PQCorp.com

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#)
Subject: RE: Public Notice Question
Date: Friday, May 6, 2022 9:45:00 AM
Attachments: [image001.jpg](#)

No, we have a group that handles all of that. They are on notice that once we get feedback from Region 5, public notice and comment must then be initiated.

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Friday, May 6, 2022 9:44 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: [External] Public Notice Question

Bob,
Does IEPA handle the Public Notice?
Does PQ need to take any action?

Thanks,
Mark

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig 

www.PQCorp.com

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Subject: [External] RE: Public Notice Question
Date: Friday, May 6, 2022 9:47:04 AM
Attachments: [image002.jpg](#)

Thanks for the prompt response Bob!

Mark

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, May 6, 2022 9:46 AM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: Public Notice Question

No, we have a group that handles all of that. They are on notice that once we get feedback from Region 5, public notice and comment must then be initiated.

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Friday, May 6, 2022 9:44 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: [External] Public Notice Question

Bob,
Does IEPA handle the Public Notice?
Does PQ need to take any action?

Thanks,
Mark

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig



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From: [Damico, Genevieve](#)
To: [Smet, Robert](#)
Subject: [External] Automatic reply: PQ Draft Permit and Project Summary
Date: Friday, May 6, 2022 11:15:15 AM

I am out of the office until May 9, 2022. I will respond to your message upon my return.

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Subject: USEPA Comments
Date: Friday, May 6, 2022 11:42:00 AM
Attachments: [21110013_050322+EPA.doc](#)

Hi Mark and Chloe,

We received comments from the USEPA (ahead of schedule) and they're attached. The week ahead of us before we go out for public notice and comment will be used to address their concerns. Note that the draft we sent them was prior to our change from 6 to 12 months to 9 to 15.

Please provide your thoughts and responses to the USEPA's comments.

Thanks.

Bob

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-3-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

	Emission Limits
--	-----------------

Pollutant	pounds/hour	Tons/Year
NOx	---	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

Commented [D01]: Where short term limits are determined to be inappropriate due to substantial and unpredictable variation in production or short-term emissions, EPA policy generally expresses a preference for a 365 day rolling average. In addition, "[w]hen such a long term average is used, we believe that it is reasonable to require permit conditions which provide for interim limits that ensure compliance and enforceability during the first year. The method used to provide interim limits and the need to do so should be determined on a case by case basis, considering how close the allowable emissions would be to the applicability threshold, and how closely the enforcing agency believes monitoring is warranted for the particular source." See <https://www.epa.gov/sites/default/files/2015-07/documents/rollave.pdf>.

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely used for industrial hygiene purposes.

Commented [D02]: Is the baghouse's effect on emissions relied upon in calculating potential emissions from the process? If so, operation of the baghouse should be made enforceable as a practical matter.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

Commented [D03]: We recommend this (performance) testing also address NOx emissions. The CEMS required by Condition 6 addresses emissions in between stack tests but the results of the stack testing are used to validate the CEMS data (outside of annual RATAs).

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5

Page 4

PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
 - i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

Page 5

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a.
 - i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 6 to 12 months after the initial startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation.
 - ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
 - iii. The Permittee shall:

Use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow

Commented [D04]: Please address NOx monitoring for the periods before the NOx CEMS is installed and during monitor downtime.

Commented [D05]: Recommend the CEMS be installed, calibrated and certified prior to the stack testing required by Condition 5 (i.e., not later than 180 days after re-startup of the affected fusing furnace). Alternatively, a new stack test for those pollutants (CO and PM) could be required upon installation of the CEMS.

Page 6

method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.

Commented [D06]: Could this provision be expanded/clarified to require a daily calculation of emissions in tpy for compliance with a 365-day rolling average?

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NO_x conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NO_x that is performed on the unit.
 - ix. A log for the NO_x monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - x. Identification of time periods for which operating conditions and pollutant data were not obtained by the

Commented [D07]: What equipment is used to control NO_x emissions?

Page 7

continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.

- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

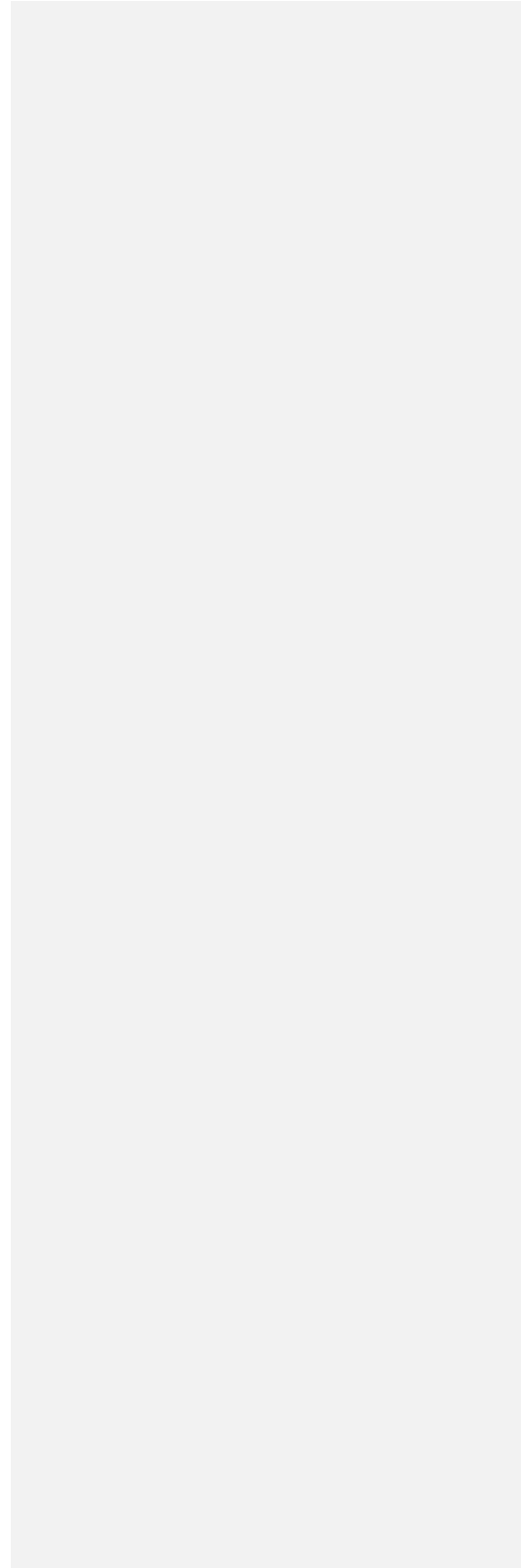
If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr

Page 8

Manager, Permit Section
Bureau of Air

WDM:RPS:tan



Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	XXXX	23.9
De Minimis Threshold:	XXXX	25
De Minimis?	XXXX	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan

Commented [D08]: We have concerns with the methodology used to calculate this increase. Specifically, the application and project summary do not include operating data sufficient to establish that the last two years would not yield representative data needed to calculate actual emissions (as defined at 35 IAC 203.104). The applicant has used the period 2017-2018 as the period for calculating actual emissions. While 35 IAC 203.104(a) allows the use of a different time period, the applicant is required to demonstrate to the Agency that the desired time period is more representative of normal source operation. Consistent with 35 IAC 203.104(a), we recommend that such demonstration include historical operating records for at least the last 5-10 years to establish the baseline annual utilization of the furnace and the frequency of shutdowns and breakdowns and associated repairs/maintenance.

As regards to the justification provided by the applicant, we note the following:
 -Maintenance work that is not triggered by a "catastrophic event" should not count in this evaluation since equipment breakdown and maintenance due to normal wear of equipment should be factored into the normal operation of the unit. Routine maintenance and repair should not be considered a factor in the evaluation.
 -The polar vortex event in 2019 only appears to have impacted February 2019 production. There's no evidence that this event impacted production for the rest of the year.
 -Need to see historical production data for at least the last 10 years to establish the baseline annual utilization of the furnace and the frequency of required repairs.
 -The Covid 19 pandemic (2020) established a new baseline for all facilities and there's no evidence that future production does not already account for the pandemic's effects. Consequently, without records showing a clear dip in production in 2020, it is not clear that 2020 was not a "normal" operating year.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Bailey, Sabrina](#)
To: [Smet, Robert](#)
Cc: [Schnepp, Jason](#)
Subject: Re: EJ Indicator Analysis for PQ LLC
Date: Monday, May 9, 2022 8:48:50 AM
Attachments: [EJ Indicators PQ LLC.xlsx](#)

Okay wrong file sorry.

Sabrina Bailey, PhD
Office of Community Relations
Illinois EPA
(847) 294-4394
Sabrina.Bailey@illinois.gov

From: Bailey, Sabrina <Sabrina.Bailey@Illinois.gov>
Sent: Monday, May 9, 2022 8:47 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Subject: Re: EJ Indicator Analysis for PQ LLC

Hi Robert, request attached.

Sabrina Bailey, PhD
Office of Community Relations
Illinois EPA
(847) 294-4394
Sabrina.Bailey@illinois.gov

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, May 6, 2022 9:39 AM
To: Bailey, Sabrina <Sabrina.Bailey@Illinois.gov>
Cc: Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Subject: EJ Indicator Analysis for PQ LLC

Hi Sabrina,

An EJ Indicator Analysis is requested for:

PQ LLC

I.D. No.: 197045ABO

111 Ingalls Avenue, Joliet, Will County

Please reply all so that Jason also gets the results. If you have any questions or need further information, please let me know.

Thanks,

Bob Smet
BOA Permits

confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

Company
PQ LLC
197045ABO
111 Ingalls Avenue
Joliet,60435
Will County

Environmental Indicators	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Lead Paint (% pre-1960s housing)	0.74	0.4	81	0.37	85	0.28	90
2017 Diesel Particulate Matter (ug/m3)	0.377	0.407	52	0.279	70-80th	0.295	70-80th
2017 Air Toxics Cancer Risk (risk per MM)	30	29	88	24	95-100th	29	80-90th
2017 Air Toxics Respiratory HI	0.4	0.38	78	0.3	90-95th	0.36	80-90th
Traffic Proximity (daily traffic count/distance to road)	610	760	69	610	73	710	73
Wastewater Discharge (toxicity-weighted concentration/m distance)	3.6	36	93	9	97	12	95
Superfund Proximity (site count/km distance)	0.076	0.095	67	0.13	59	0.13	57
RMP Facility Proximity (facility count/km distance)	2.4	1.2	86	0.83	92	0.75	93
Hazardous Waste Proximity (facility count/km distance)	1.5	2.7	46	1.8	62	2.2	64
Ozone (ppb)	46.1	45.3	84	43.5	91	42.6	82
Particulate Matter 2.5 (ug/m3)	10.5	9.96	76	8.96	94	8.74	89
Underground Storage Tanks	9.6	8	71	4.8	84	3.9	88

From: [Ogulei, David](#)
To: [Smet, Robert](#)
Subject: [External] RE: PQ Draft Permit and Project Summary
Date: Monday, May 9, 2022 12:29:01 PM

I see you noticed my typo!

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, May 06, 2022 11:15 AM
To: Ogulei, David <Ogulei.David@epa.gov>
Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>; Marcus, Danny <marcus.danny@epa.gov>; Wolski, Daniel <Wolski.Daniel@epa.gov>; Damico, Genevieve <damico.genevieve@epa.gov>
Subject: RE: PQ Draft Permit and Project Summary

David,

Thank you for that, particularly since you carved out some time to provide it. We will get back with you if we have follow up comments.

Bob

From: Ogulei, David <Ogulei.David@epa.gov>
Sent: Friday, May 6, 2022 10:07 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>; Marcus, Danny <marcus.danny@epa.gov>; Wolski, Daniel <Wolski.Daniel@epa.gov>; Damico, Genevieve <damico.genevieve@epa.gov>
Subject: [External] RE: PQ Draft Permit and Project Summary

Bob,

I was able to carve out some time to review this permit and accompanying project summary and application. Attached are my comments.

When you've had a chance to review the comments, please go ahead and schedule a call, if needed, to discuss some or all of the comments. I'm particularly interested in IEPA's thought process with respect to the last comment. I'm available anytime on Monday, or afternoons on Tue-Thu.

Thanks!

David Ogulei
U.S. Environmental Protection Agency
Region 5 | Air & Radiation Division | AR-18J
77 West Jackson Blvd. | Chicago, Illinois 60604
Phone: (312) 353-0987 | Ogulei.David@epa.gov

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, May 03, 2022 11:21 AM
To: Ogulei, David <Ogulei.David@epa.gov>

Subject: PQ Draft Permit and Project Summary

Hi David,

I've attached our current draft permit and project summary for PQ's proposed Furnace Rebuild project at their sodium silicate manufacturing facility in Joliet. There might be some very minor tweaks before we go out for public comments but these are basically the official documents. Please provide comments as usual.

Would it be possible to have your comments to me by Friday afternoon? I apologize if that it is too soon.

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Ogulei, David](#)
Subject: RE: PQ Draft Permit and Project Summary
Date: Monday, May 9, 2022 1:23:00 PM

Noticed but ignored because I make more than my share of them.

From: Ogulei, David <Ogulei.David@epa.gov>
Sent: Monday, May 9, 2022 12:29 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: [External] RE: PQ Draft Permit and Project Summary

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Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>; Marcus, Danny <marcus.danny@epa.gov>;
Wolski, Daniel <Wolski.Daniel@epa.gov>; Damico, Genevieve <damico.genevieve@epa.gov>
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Sent: Friday, May 6, 2022 10:07 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Schnepf, Jason <Jason.Schnepf@Illinois.gov>; Marcus, Danny <marcus.danny@epa.gov>;
Wolski, Daniel <Wolski.Daniel@epa.gov>; Damico, Genevieve <damico.genevieve@epa.gov>
Subject: [External] RE: PQ Draft Permit and Project Summary

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Thanks!

David Ogulei
U.S. Environmental Protection Agency

Region 5 | Air & Radiation Division | AR-18J
77 West Jackson Blvd. | Chicago, Illinois 60604
Phone: (312) 353-0987 | Ogulei.David@epa.gov

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, May 03, 2022 11:21 AM
To: Ogulei, David <Ogulei.David@epa.gov>
Subject: PQ Draft Permit and Project Summary

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Thanks.

Bob

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From: [Schnepp, Jason](#)
To: [Armitage, Julie](#)
Cc: [Marr, Bill](#); [Smet, Robert](#)
Subject: Request EJ Release for PQ LLC (to Begin Public Notice)
Date: Monday, May 9, 2022 4:03:38 PM
Attachments: [EJ Clearance Memo 21110013 - PQ LLC 05-09-2022.docx](#)
[EJ Indicators PQ LLC.xlsx](#)

Julie,

Attached are indicators and a memo for EJ Release so that the draft permit for PQ can undergo public notice.

PQ has submitted a construction application for the rebuild of a sodium silicate furnace. The permitted emissions of all pollutants from the rebuilt furnace would not increase. NOx CEMS would be required as part of the rebuilt furnace. Initial testing would be required for emissions of NOx, CO and particulates. Periodic testing (every 5 years) would be required for emissions of CO and particulates.

Thanks,

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

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Date: May 9, 2022

Source: PQ LLC

Location: 111 Ingalls Avenue, Joliet, Will County

Project: Construction application for the rebuild of a sodium silicate furnace including the replacement of burners and associated burner control system and an increase in furnace volume. The permitted emissions of all pollutants from the rebuilt furnace would not increase. NOx CEMS would be required as part of the rebuilt furnace. Initial testing would be required for emissions of NOx, CO and particulates. Periodic testing (every 5 years) would be required for emissions of CO and particulates.

Public/EJ Notice: EJ notification/outreach was provided for this project. No comments, questions, or other expressions of concern or interest were received to date. Any comments received will be discussed with the Bureau Chief.

Compliance History: A Compliance flag is listed relating to a possible late submittal of the application for the renewal of the CAAPP permit. As this is not related to the proposed project, no action is taken at this time.

Company
 PQ LLC
 197045ABO
 111 Ingalls Avenue
 Joliet, 60435
 Will County

Environmental Indicators	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Lead Paint (% pre-1960s housing)	0.74	0.4	81	0.37	85	0.28	90
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Superfund Proximity (site count/km distance)	0.076	0.095	67	0.13	59	0.13	57
RMP Facility Proximity (facility count/km distance)	2.4	1.2	86	0.83	92	0.75	93
Hazardous Waste Proximity (facility count/km distance)	1.5	2.7	46	1.8	62	2.2	64
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Particulate Matter 2.5 (ug/m3)	10.5	9.96	76	8.96	94	8.74	89
Underground Storage Tanks	9.6	8	71	4.8	84	3.9	88

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#)
Subject: Quick Follow Up
Date: Tuesday, May 10, 2022 12:32:00 PM

Thanks for the message. I've been attending to revising the permit between putting out a few different fires here, so your comments will be useful to address those revisions.

From: [Mattison, Kevin](mailto:Kevin.Mattison@Illinois.gov)
To: [Smet, Robert](mailto:Robert.Smet@Illinois.gov)
Subject: RE: Suggested Monitoring Language
Date: Wednesday, May 11, 2022 1:17:04 PM

Annual RATA would be performed, which use USEPA RM during that process...

Test runs are 21 min and there are a minimum of 9 runs.

So no annual stack test is would be required.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, May 11, 2022 12:53 PM
To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Subject: RE: Suggested Monitoring Language

A follow up question has arisen – would you recommend/is it practical in any way for testing to be conducted for NOx *after* the NOx CEMS is operational?

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Sent: Wednesday, May 4, 2022 11:04 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Suggested Monitoring Language

Sure,

However, we should be prepared for a permit revision if they cannot meet the deadline with supporting documentation.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, May 4, 2022 10:51 AM
To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Subject: RE: Suggested Monitoring Language

Do you think 9 to 15 months is a happy medium?

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Sent: Wednesday, May 4, 2022 10:05 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Suggested Monitoring Language

Just to get the equipment on site and then to schedule people to do it.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, May 4, 2022 10:03 AM

To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>

Subject: RE: Suggested Monitoring Language

Why does it take so long to install and operate?

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>

Sent: Wednesday, May 4, 2022 8:54 AM

To: Smet, Robert <Robert.Smet@Illinois.gov>

Subject: RE: Suggested Monitoring Language

I've been hearing that a lot and that does not surprise me.

From: Smet, Robert <Robert.Smet@Illinois.gov>

Sent: Wednesday, May 4, 2022 8:44 AM

To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>

Subject: RE: Suggested Monitoring Language

The company says that the 6 months to a year requirement is too tight and may not be realistic due to supply chain issues; they propose 12 to 18 months. What's your opinion? I noticed below that you mentioned that delays may occur due to covid.

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>

Sent: Tuesday, April 26, 2022 10:48 AM

To: Smet, Robert <Robert.Smet@Illinois.gov>

Subject: RE: Suggested Monitoring Language

I'd say 6 mo. to a year at the most; however, there may be a delay due to COVID

From: Smet, Robert <Robert.Smet@Illinois.gov>

Sent: Tuesday, April 26, 2022 10:45 AM

To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>

Subject: RE: Suggested Monitoring Language

One more quick question. In the monitoring requirements section, where we impose the use of the NOx CEMS, they requested the timeframe within the following sentence:

"The system shall be installed and calibrated within [18-24] months after the results from the testing in Condition 5(a) are obtained."

Their proposed timeframe is way too long. What is more reasonable in your opinion?

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>

Sent: Tuesday, April 26, 2022 10:32 AM

To: Smet, Robert <Robert.Smet@Illinois.gov>

Subject: RE: Suggested Monitoring Language

No more than 60... typical language would have within 14 days for the test report being finalized but no later than 60... or something to that affect.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, April 26, 2022 10:30 AM
To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Subject: RE: Suggested Monitoring Language

Different matter -- would you propose that Final Reports of testing be submitted within 60 or 90 days after testing?

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Sent: Tuesday, April 26, 2022 10:08 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Suggested Monitoring Language

I would just use "CEMS" as it is more general and we spell out what it needs to do.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Tuesday, April 26, 2022 10:07 AM
To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Subject: RE: Suggested Monitoring Language

For the sodium silicate furnace, what would you think is more appropriate? It sound like you're saying that a CERMS is, but you also seem to be open for them to choose between the two.

Should we likewise allow for the either-or?

From: Mattison, Kevin <Kevin.Mattison@Illinois.gov>
Sent: Tuesday, April 26, 2022 10:02 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Suggested Monitoring Language

Sorry for the delay in responding, I was out of the office last week.

CEMS vs CERSMS, CERMS is more descriptive is what we want; however, CEMS is widely used.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, April 21, 2022 9:17 AM
To: Mattison, Kevin <Kevin.Mattison@Illinois.gov>

Subject: Suggested Monitoring Language

Hi Kevin,

Below is our tentative language for monitoring for the sodium silicate fusing furnace at PQ in Joliet, the source where you, Jason and I discussed requiring a CEMS rather than stack testing to determine emissions. Would you mind proofreading the language below and providing comments and suggesting changes? BTW, what is the distinction between a CEMS and a CERMS? Should we focus only on a CEMS or is it appropriate to allow for a CERMS as an alternative?

6. Monitoring Requirements

- a.
 - i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 6 months after the results from the testing in Condition 5(a) are obtained. The period in which the Permittee must install and calibrate the NO_x CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NO_x CEMS or CERMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation.
 - ii. The CEMS from Condition 6(a)(i) shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
 - iii. The Permittee shall either:
 - A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. **[Does this include calculating flow rate from some surrogate parameter, such as gas usage?]** **See USEPA Method 14** In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
 - B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
 1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B

(Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);

2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Note: The timing for the requirements in Condition 6(a)(iii)(A) and (B) is as specified in Condition 6(a)(i).

Thanks.

Bob

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From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#)
Cc: [Chloe Reece](#); [Jennie Houle \(NS\)](#); [Ken Schulte \(Joliet\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#); [Schnepp, Jason](#)
Subject: [External] FW: PQ LLC Joliet Construction Permit Waiver and Draft Permit Comments
Date: Wednesday, May 11, 2022 1:22:36 PM
Attachments: [image001.jpg](#)
[21110013 042122 \(002\) PQ comments 050622 .doc](#)
[21110013 050322+USEPA \(comments\) PQ 051122.doc](#)
Importance: High

Bob,

Attached with the draft permit comments submitted on Friday, May 6th (see below and attached), PQ is submitting ***additional*** comments (also attached) based on USEPA Region 5's comments received last Friday.

Please let us know if you have any questions. As discussed last week, we are hopeful that the draft construction permit will be submitted for Public Comment this week in order to avoid upsetting our project schedule and associated contractors committed.

Thanks,

Mark

331-444-8900

From: Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>
Sent: Friday, May 6, 2022 8:46 AM
To: Robert.Smet@Illinois.gov; jason.schnepp@illinois.gov
Cc: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Jennie Houle (NS) <Jennie.Houle@silicates.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>; Chloe Reece <CReece@trinityconsultants.com>
Subject: PQ LLC Joliet Construction Permit Waiver and Draft Permit Comments

Dear Bob,

As requested, this correspondence serves as a waiver of the IEPA 180-day review period for PQ LLC Joliet 197045ABO construction permit application and extends the deadline to June 13, 2022. Please note that as previously discussed with Mark Skowron, June 13th continues to be scheduled furnace drain date with many contractors lined-up.

PQ has reviewed IEPA's latest version of the draft construction permit for its Joliet facility. In this version, IEPA has removed, among other things, a provision proposed by PQ addressing the implementation of a NOx CEMS for the sodium silicate furnace. PQ continues to question the basis of a CEMS requirement for the furnace, and offers the following considerations:

1. The Illinois regulations have a specific regulation that addresses under what circumstances would sources very similar to PQ's sodium silicate furnace be required to install a CEMS. Under 35 IAC 217.157, glass melting furnaces with NOx PTE greater than one ton per day are required to install a CEMS, whereas such furnaces with emissions less than one ton per day are required only to perform periodic stack testing. This framework is established specifically in the context of nonattainment areas for ozone, including facilities in Will County. The Joliet furnace's NOx PTE is significantly less than one ton per day, and would only need to stack test under this provision. Given that this regulation specifically addresses appropriate means for

monitoring NOx emissions in areas which are nonattainment for ozone, we believe that following the approach in the rule makes sense in this case and does not give rise to arbitrary and otherwise legally unsupported continuous monitoring requirements in the permit. The IEPA initially seemed to take this approach in a prior draft of the permit, but then, without explanation, departed from it. We suggest returning to that framework as originally proposed.

2. As IEPA acknowledged in the latest draft of the permit, it is necessary to include a grace period to enable PQ to properly install, calibrate, and operate the CEMS. However, there must be some method of determining compliance with the NOx limits in the interim, before the CEMS is installed. It appears that IEPA intends for stack testing under Condition 5.a.i to serve as the interim method of compliance demonstration before a CEMS is implemented. However, it is fully possible that this stack testing could show emissions that are lower than the emission factor currently being used for permitting, and that the resulting actual margin of emissions below the NSR significance threshold of 25 tons/year will be greater than initially thought (and below a threshold that warrants a CEMS). PQ believes that this initial stack test serves as valuable data that should be considered before ultimately requiring a CEMS. Accordingly, we suggest that if a CEMS requirement is written into the permit, it be written in such a way that is made conditional upon the results of the initial stack testing. If the stack testing shows a result corresponding with an emissions increase less than a certain amount (e.g., 80%) of the NSR significance threshold of 25 tons/year, CEMS should not be required.
3. The area in which the facility is located (Will County) was recently proposed by the USEPA to be redesignated to attainment with the 2008 ozone NAAQS. The effect of such redesignation is that the applicable NSR significance threshold would be 40 tons/year, as opposed to 25 tons/year. It is highly likely that before a CEMS is required to be installed under the permit (within 15 months), redesignation would occur. In such case, the need to determine compliance with the 25 tons/year threshold is less acute, and stack testing would suffice given a larger margin with respect to the NSR applicability threshold.

PQ believes that these considerations firmly support either removal, or at minimum, revision of the current CEMS requirement, and we encourage IEPA to reassess its position. In the event that the IEPA rejects these considerations and continues to believe that the CEMS requirement must remain, PQ also offers the attached redlines to the draft permit. PQ provides these proposed edits not as a concession of the basis for the CEMS requirement, but as an effort to keep the permit review process moving. In particular, PQ proposes in these redlines to (1) clarify that the CEMS installation timeframe will begin from the date of initial performance testing, and to provide a potential avenue for an extension if IEPA approves one; and (2) to clarify reasonable data availability associated with operating the CEMS.

Please contact Mark Skowron (331-444-8900) or myself if you have any questions.

Thank you,
Ken Schulte
PQ LLC Joliet Site Manager
815-774-2739



Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 4-6-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

Commented [MS(1): No change to existing CAAPP Permit Limits for these pollutants.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: —Upon startup of the affected fusing furnace with new burners, This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Commented [MS(2): Per conversation with Bob Smet, existing CAAPP Limits for CO, PM, SO₂, and VOM will remain the same.

	Emission Limits
--	-----------------

Pollutant	pounds/hour	Tons/Year
NOx	----	109.6
CO	10,388.2	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	20.6
SO ₂	1.32	5.8

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of a total individual HAP being no more than 0.1 lb/hour tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5

Commented [MS(3)]: IEPA - To correspond to the 0.44 tpy total HAP limit, this should be 0.1 lb/hr total HAP.

If you are actually wanting an individual HAP tpy limit, the value needs to be updated to 0.25 tpy. Based on AP-42 natural gas combustion factors, there is one individual HAP that contributes heavily to the total HAP value.

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PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
- B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative of maximum operation ~~operating conditions~~ and the means by which the operating parameters for the emission unit and any control equipment will be determined.

Commented [CR4]: IEPA - This condition does not seem necessary, given that there are not separate limits for PM10/PM2.5.

Page 5

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a.
 - i. ~~Except as provided in Condition 6b of this permit, the Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 612 months after the performance of emission testing provided in Condition 5(-a)(-i). However, this timeframe may be extended upon written request from Permittee and approval by IEPA. after the results from the testing in Condition 5a are obtained performance of emission testing provided in Condition 5.a. initial startup of the rebuilt furnace. However, this timeframe may be extended upon written request from Permittee and approval by IEPA. The period in which the Permittee must install and calibrate the NOx CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NOx CEMS or~~

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Commented [CR5]: IEPA - Upon further review, there doesn't seem to be a reason to give a range of time (i.e., 9- 15 months). The upper limit can be listed instead.

Commented [MS(6)]: In addition, it provides another data point to help determine analyzer monitoring ranges and facilitate implementation of the CEMS.

Commented [MS(7)]: Following the Performance Test(s) would make more sense, since the performance test is the initial compliance demonstration method.

Page 6

~~CERMS shall be operated as provided in Condition 6(a)(iii) shall monitor continuously and record the hourly NOx emission concentration (parts per million) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.~~

ii. The CEMS ~~from Condition 6a~~ shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. ~~Except as provided in Condition 6b of this permit, the~~ Permittee shall either:

A. ~~Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPAan Illinois EPA approved method for calculating flow rate. In conjunction with the USEPA-Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~ ~~or~~

B. ~~Install, calibrate, certify, maintain, and operate NOx Continuous Emission Rate Monitoring System (CERMS) as follows:~~

1. ~~The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);~~

2. ~~The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);~~

3. ~~In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end~~

Commented [SR8]: How would you calculate/determine the flow rate?

Page 7

~~of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.~~

~~N: The timing for the requirements in Condition 6aiiiA and B is as specified in Condition 6ai.~~

- ~~b. i. If Will County, Illinois (or the portion of it where the affected fusing furnace is located), is redesignated to attainment with the 2008 national ambient air quality standard for ozone (8-hour average), or if the results of the initial NOx testing in Condition 5a are less than 95 of the applicable standard, the Permittee may demonstrate compliance with the NOx emission limits established in this permit for the affected fusing furnace as follows, in lieu of installing a CEMS (or CERMS):~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are less than 80 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 5 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are between 80 and 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 3 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are greater than 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated within 13 months.~~

~~The results of any NOx emissions testing shall be compared to the applicable standard and the timing of the subsequent test shall be based on Conditions 6biAC, as applicable.~~

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

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- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly, ~~seasonal~~, and annual operating hours.
 - iv. Type and quantity of fuel used monthly, ~~seasonally~~, and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NOx that is performed on the unit.
 - ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

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8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable

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cause of such deviation, the corrective actions taken, and any preventive measures taken.

b. One copy of required reports and notifications shall be sent to:

i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project ~~within 180 days of commencing operation of the modified furnace~~. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	 	23.9
De Minimis Threshold:	 	25
De Minimis?	 	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-3-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
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- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

	Emission Limits
--	-----------------

Pollutant	pounds/hour	Tons/Year
NOx	---	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely used for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 <u>or Method 3A</u>
Moisture	Method 4
PM (filterable)	Method 5

Commented [DO1]: Where short term limits are determined to be inappropriate due to substantial and unpredictable variation in production or short-term emissions, EPA policy generally expresses a preference for a 365 day rolling average. In addition, "[w]hen such a long term average is used, we believe that it is reasonable to require permit conditions which provide for interim limits that ensure compliance and enforceability during the first year. The method used to provide interim limits and the need to do so should be determined on a case by case basis, considering how close the allowable emissions would be to the applicability threshold, and how closely the enforcing agency believes monitoring is warranted for the particular source." See <https://www.epa.gov/sites/default/files/2015-07/documents/rollave.pdf>.

Commented [CR2R1]: PQ agrees that a short term limit is inappropriate. In addition, we are not aware of any regulatory requirement for expressing the tons per year limit as a daily rolling average. However, to the extent a shorter term rolling averaging basis is deemed necessary, PQ is agreeable to a NOx tons per year limit based on a 365-day rolling average.

Commented [DO3]: Is the baghouse's effect on emissions relied upon in calculating potential emissions from the process? If so, operation of the baghouse should be made enforceable as a practical matter.

Commented [CR4R3]: This equipment is currently included in the CAAPP Permit at 4.1.2(a)(ii)(A) and includes monitoring requirements: Pursuant to Sections 39.5(7)(b) and (d) of the Act, at a minimum, the Permittee shall perform observations of opacity from each emission unit in accordance with Method 9 at least once every calendar year. If observed opacity exceeds 30 percent, the Permittee shall take corrective action. Corrective action may include, but is not limited to, shut down of the affected furnace and/or maintenance and repair. If corrective action was taken the Permittee shall perform a follow-up observation of opacity in accordance with Method 9.

Commented [DO5]: We recommend this (performance) testing also address NOx emissions. The CEMS required by Condition 6 addresses emissions in between stack tests but the results of the stack testing are used to validate the CEMS data (outside of annual RATAs).

Commented [CR6R5]: Annual RATAs involve stack testing to validate the CEMS data, and use Method 7E testing for NOx. Therefore, NOx does not need to be included in 5.a.i.B.

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PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
 - i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

Commented [CR7]: As noted in our comments last week (concurrent with USEPA review), we do not think this note is necessary since we don't have separate limits for PM vs. PM10 vs. PM2.5.

Page 5

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within ~~6 to 12~~ 15 months after the initial startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall:
 - Use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow

Commented [D08]: Please address NOx monitoring for the periods before the NOx CEMS is installed and during monitor downtime.

Commented [CR9R8]: Before a CEMS is installed, PQ will use the hourly result from the test in Condition 5.a multiplied by operating hours to determine NOx emissions. PQ could also follow this approach as "data substitution" during monitor downtime lasting one hour or longer.

Commented [D010]: Recommend the CEMS be installed, calibrated and certified prior to the stack testing required by Condition 5 (i.e., not later than 180 days after re-startup of the affected fusing furnace). Alternatively, a new stack test for those pollutants (CO and PM) could be required upon installation of the CEMS.

Commented [CR11R10]: Please refer to edits submitted by PQ on Friday, May 6th at 8:47 am.:

i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the performance of emission testing provided in Condition 5(a)(i). However, this timeframe may be extended upon written request from Permittee and approval by IEPA. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.

We presume that the comment about a new stack test for CO and PM is an error, as there is no reason that installation of a NOx CEMS would impact the prior CO and PM test results for the furnace.

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method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NO_x conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. ~~A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NO_x that is performed on the unit.~~
 - ix. A log for the NO_x monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - x. Identification of time periods for which operating conditions and pollutant data were not obtained by the

Commented [D012]: Could this provision be expanded/clarified to require a daily calculation of emissions in tpy for compliance with a 365-day rolling average?

Commented [CR13R12]: As mentioned in the comment for the emissions table at 4.b.i, PQ believes a 12-month rolling average is sufficient, but is agreeable to a 365-day average on an annual basis.

Commented [D014]: What equipment is used to control NO_x emissions?

Commented [CR15R14]: This is a good point. There are low NO_x burners to prevent NO_x formation, but no air pollution control equipment. This condition (based on 35 IAC 217 recordkeeping) can be deleted as not applicable to this project.

Page 7

continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.

- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

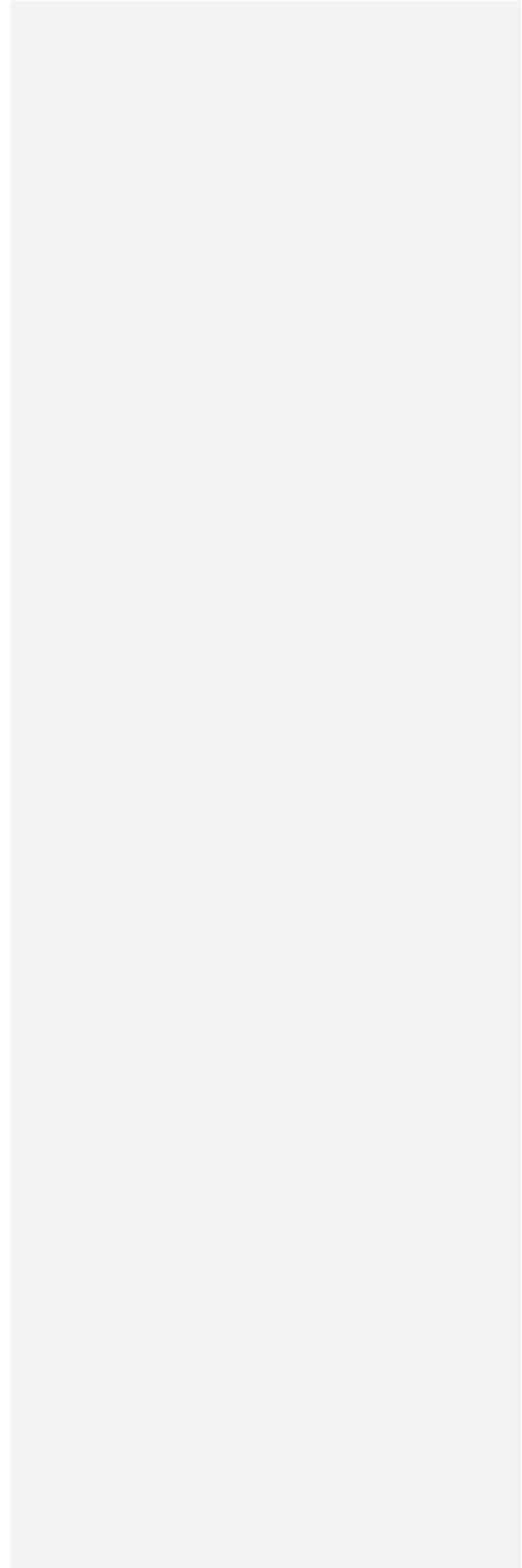
If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr

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Manager, Permit Section
Bureau of Air

WDM:RPS:tan



Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	XXXXXX	23.9
De Minimis Threshold:	XXXXXX	25
De Minimis?	XXXXXX	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan

Commented [D016]: We have concerns with the methodology used to calculate this increase. Specifically, the application and project summary do not include operating data sufficient to establish that the last two years would not yield representative data needed to calculate actual emissions (as defined at 35 IAC 203.104). The applicant has used the period 2017-2018 as the period for calculating actual emissions. While 35 IAC 203.104(a) allows the use of a different time period, the applicant is required to demonstrate to the Agency that the desired time period is more representative of normal source operation. Consistent with 35 IAC 203.104(a), we recommend that such demonstration include historical operating records for at least the last 5-10 years to establish the baseline annual utilization of the furnace and the frequency of shutdowns and breakdowns and associated repairs/maintenance.

As regards to the justification provided by the applicant, we note the following:
 -Maintenance work that is not triggered by a "catastrophic event" should not count in this evaluation since equipment breakdown and maintenance due to normal wear of equipment should be factored into the normal operation of the unit. Routine maintenance and repair should not be considered a factor in the evaluation.
 -The polar vortex event in 2019 only appears to have impacted February 2019 production. There's no evidence that this event impacted production for the rest of the year.
 -Need to see historical production data for at least the last 10 years to establish the baseline annual utilization of the furnace and the frequency of required repairs.
 -The Covid 19 pandemic (2020) established a new baseline for all facilities and there's no evidence that future production does not already account for the pandemic's effects. Consequently, without records showing a clear dip in production in 2020, it is not clear that 2020 was not a "normal" operating year.

Commented [CR17R16]: There is no regulatory basis for a 10-year lookback for purposes of determining whether of 2017 - 2018 emissions data were representative.

The production totals for 2019 and 2020 were the lowest over the last 10 years. 2020 was heavily impacted by the COVID19 Pandemic. 2019 was impacted by a Polar Vortex that froze process lines such that production could not occur. Additionally, the furnace skimmer block had a catastrophic failure significantly impacting production in November. Therefore, PQ continues to believe that data from 2019 - 2020 should not be used.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: ["Ogulei.David@epa.gov"](mailto:Ogulei.David@epa.gov)
Subject: Revised PQ Permit
Date: Thursday, May 12, 2022 9:56:00 AM
Attachments: [21110013_050322.doc](#)

Hi David,

I have attached the revised draft permit for PQ. Would you mind taking a look at it on short notice (sorry – things are rushed here!)? Perhaps we could have a call later today or tomorrow morning.

Regarding the Table at the back, I am in the process of getting the production data from PQ to support their contention that use of earlier years was appropriate.

Thanks.

Bob

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-13-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, ~~with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.~~

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. ~~These hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.~~

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Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0 ^a	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

Commented [SR1]: Once we have a CEMS, a 365-day rolling average is doable. Prior to CEMS, we propose an hourly limit (lb/hr) with compliance determined by stack test. Does this satisfy?

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a. This rate shall only apply before the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).

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ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1-25 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

~~Note: Given that this limit is based on the use of the baghouse, it cannot be considered to The baghouse associated with this process does not constitute air pollution control equipment and is solely for the purpose of industrial hygiene purposes.~~

Commented [SR2]: We received new information indicating that the emission rates reflect use of the control device, so we will make it enforceable and include appropriate monitoring (pressure drop) and recordkeeping (operating logs).

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e. i. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

ii. During operation of the NOx CEMS, compliance with annual limits established by this permit shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).

Commented [SR3]: We added this.

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5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. 1. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Page 4

2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager

Commented [SR4]: We added this. Also, test would be used to verify compliance with the new short term limit added above (pre-CEMS operation).

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Page 5

or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

Page 6

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within ~~9 to~~ 15 months after the initial re-startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. ~~At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~

Commented [SR5]: We will need to rely on the stack test prior to installation of the CEMS. We are not aware of other monitoring to verify compliance with the NOx limits. If the CEMS goes down, we would propose monthly roll since we won't have daily data. OK? (we won't be authorizing operation without the cems but if it goes down, we will need appropriate records)

Commented [SR6]: This was an artifact of an early draft that had limits in terms of lbs/ton (pre-cems draft). We propose to delete this language and require concentration and flow records that will be used to determine daily emissions.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
- ii. Calendar date of the record.
- iii. Monthly and annual operating hours.
- iv. Type and quantity of fuel used monthly and annually.
- v. Product and material throughput, as applicable.
- vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.

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- vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for ~~NOx~~ PM that is performed on the unit.
 - ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- c.
- i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

Commented [SR7]: No control for NOx but there is for PM..we will clean this up.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

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9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Chloe Reece \(CReece@trinityconsultants.com\)](mailto:CReece@trinityconsultants.com); [Mark Skowron \(Joliet\)](#)
Subject: Production Data
Date: Thursday, May 12, 2022 9:58:00 AM

Could you provide calendar year production data (2015 to 2021) to support the use of the requested earlier years in your calculations?

Thanks.

From: [Ogulei, David](#)
To: [Smet, Robert](#)
Cc: [Schnepp, Jason](#)
Subject: [External] RE: Revised PQ Permit
Date: Thursday, May 12, 2022 11:56:26 AM
Attachments: [PQ LLC - CAAPP MM.msg](#)

I haven't opened this yet but the timing is interesting.

From: Ogulei, David
Sent: Thursday, May 12, 2022 10:43 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Wolski, Daniel <Wolski.Daniel@epa.gov>; Marcus, Danny <marcus.danny@epa.gov>
Subject: RE: Revised PQ Permit

Hi Bob,

The changes look good. See the attachment for my follow-up thoughts. Please share the production data (or your review of it) when you receive it from the source. I'm concerned about the precedent it could set if there's no site-specific basis for allowing the exception.

I'm available for a call this afternoon if we need one.

David

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, May 12, 2022 9:57 AM
To: Ogulei, David <Ogulei.David@epa.gov>
Subject: Revised PQ Permit

Hi David,

I have attached the revised draft permit for PQ. Would you mind taking a look at it on short notice (sorry – things are rushed here!)? Perhaps we could have a call later today or tomorrow morning.

Regarding the Table at the back, I am in the process of getting the production data from PQ to support their contention that use of earlier years was appropriate.

Thanks.

Bob

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product privilege, or any other exemption from disclosure.

From: [Metz, Cassandra](#)
To: [Ogulei, David](#); [Marcus, Danny](#); [Wolski, Daniel](#)
Cc: [Frost, Brad](#); [Marr, Bill](#); [Reed, Michael](#); [McSweeney, Ryan](#)
Subject: PQ LLC - CAAPP MM
Date: Thursday, May 12, 2022 11:29:15 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.jpg](#)
[image004.png](#)
[96030149 DRAFT 22-05-12.pdf](#)
[96030149 SOB 22-05-12.pdf](#)

The attached proposed CAAPP Minor Modification permit, PQ LLC is being sent for review. The U.S. EPA review period is from 05/12/22 to 06/26/22. If you have questions about the permit, Ryan McSweeney is the assigned engineer.

Cassandra Metz

Office of Community Relations

(217) 785 - 7491

Cassandra.Metz@Illinois.gov



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Attention:

PQ LLC

Attn: Robert Pickens

340 East Grove Street

Utica, Illinois 61373

State of Illinois

**CLEAN AIR ACT PERMIT
PROGRAM (CAAPP) PERMIT**
[Title I and Title V Permit]

Source:

PQ LLC

340 East Grove Street

Utica, IL 61373

I.D. No.: 099833AAB

Permit No.: 96030149

Permitting Authority:

Illinois Environmental Protection Agency

Bureau of Air, Permit Section

217/785-1705



Electronic Filing: Received, Clerk's Office 11/17/2022* R 000500
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT

[Title I and Title V Permit]

Type of Application: Minor Modification (MM)
Purpose of Application: Revise Existing CAAPP Permit

ID No.: 099833AAB
Permit No.: 96030149
Statement of Basis No.: 96030149-2009

Date Application Received: March 30, 2020
Date Issued: November 10, 2020
Permit Effective Date¹: December 29, 2020

Date Revision Received: March 21, 2022
Date Revision Issued: TBD

Expiration Date: December 29, 2025
Renewal Submittal Date: 9 Months Prior to December 29, 2025

Source Name: PQ LLC
Address: 340 East Grove Street
City: Utica
County: LaSalle
ZIP Code: 61373

This permit is hereby granted to the above-designated source authorizing operation in accordance with this CAAPP permit, pursuant to the above referenced application. This source is subject to the conditions contained herein. If a conflict exists between this document and previous versions of the CAAPP permit, this document supersedes those terms and conditions of the permit for which the conflict exists. The previous permit issued December 22, 2021 is incorporated herein by reference. For further information on the source see Section 1 and for further discussion on the effectiveness of this permit see Condition 2.3(g).

If you have any questions concerning this permit, please contact Ryan F. McSweeney at 217/785-1705.

William D. Marr
 Manager, Permit Section
 Bureau of Air

WDM:RWC:RFM:tan

cc: IEPA, Permit Section
 IEPA, FOS, Region 2

¹ The permit renewal was issued prior to the expiration date of the existing CAAPP permit that was currently in effect at that time for the source. Terms and conditions of each CAAPP permit remain in effect for the full five-year term of the permit. For this reason, the renewed permit became effective on the first day following the expiration date of the then existing permit, as denoted above, unless that permitting action was appealed and subsequently stayed by the Pollution Control Board.

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Section 1 - Source Information

1. Addresses

Source

PQ LLC
340 East Grove Street
Utica, IL 61373

Owner

PQ LLC
300 Lindenwood Drive
Malvern, PA 19355

Operator

PQ LLC
340 East Grove Street
Utica, IL 61373

Permittee

The Owner and Operator of the source as identified in this table.

2. Contacts

Certified Officials

The source shall submit an Administrative Permit Amendment for any change in the Certified Officials, pursuant to Section 39.5(13) of the Act.

	<i>Name</i>	<i>Title</i>
<i>Responsible Official</i>	Michael Chan	VP & GM, Performance Chemicals - Silicates America's
<i>Delegated Authority</i>	Robert Pickens	Regional Plant Manager

Other Contacts

	<i>Name</i>	<i>Phone No.</i>	<i>Email</i>
<i>Source Contact</i>	Robert Pickens	847/662-8566	rob.pickens@pqcorp.com
<i>Technical Contact</i>	Mark J. Skowron	815/774-2762	Mark.Skowron@pqcorp.com
<i>Correspondence</i>	Robert Pickens	847/662-8566	rob.pickens@pqcorp.com
<i>Billing</i>	Margaret Martyn	815/667-4241 ext. 100	margaret.martyn@pqcorp.com

3. Single Source

The source identified in Condition 1.1 above shall be defined to include all the following additional source(s):

<i>I.D. No.</i>	<i>Permit No.</i>	<i>Single Source Name and Address</i>
N/A	N/A	N/A

Section 2 - General Permit Requirements**1. Prohibitions**

- a. It shall be unlawful for any person to violate any terms or conditions of this permit issued under Section 39.5 of the Act, to operate the CAAPP source except in compliance with this permit issued by the IEPA under Section 39.5 of the Act or to violate any other applicable requirements. All terms and conditions of this permit issued under Section 39.5 of the Act are enforceable by USEPA and citizens under the Clean Air Act, except those, if any, that are specifically designated as not being federally enforceable in this permit pursuant to Section 39.5(7)(m) of the Act. [Section 39.5(6)(a) of the Act]
- b. After the applicable CAAPP permit or renewal application submittal date, as specified in Section 39.5(5) of the Act, the source shall not operate this CAAPP source without a CAAPP permit unless the complete CAAPP permit or renewal application for such source has been timely submitted to the IEPA. [Section 39.5(6)(b) of the Act]
- c. No Owner or Operator of the CAAPP source shall cause or threaten or allow the continued operation of an emission source during malfunction or breakdown of the emission source or related air pollution control equipment if such operation would cause a violation of the standards or limitations applicable to the source, unless this CAAPP permit granted to the source provides for such operation consistent with the Act and applicable Illinois Pollution Control Board regulations. [Section 39.5(6)(c) of the Act]
- d. Pursuant to Section 39.5(7)(g) of the Act, emissions from the source are not allowed to exceed any allowances that the source lawfully holds under Title IV of the Clean Air Act or the regulations promulgated thereunder, consistent with Section 39.5(17) of the Act and applicable requirements, if any.

2. Emergency Provisions

Pursuant to Section 39.5(7)(k) of the Act, the Owner or Operator of the CAAPP source may provide an affirmative defense of emergency to an action brought for noncompliance with technology-based emission limitations under this CAAPP permit if the following conditions are met through properly signed, contemporaneous operating logs, or other relevant evidence:

- a.
 - i. An emergency occurred and the source can identify the cause(s) of the emergency.
 - ii. The source was at the time being properly operated.
 - iii. The source submitted notice of the emergency to the IEPA within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.
 - iv. During the period of the emergency the source took all reasonable steps to minimize levels of emissions that exceeded the emission limitations, standards, or requirements in this permit.
- b. For purposes of Section 39.5(7)(k) of the Act, "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, such as an act of God, that requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operation error.
- c. In any enforcement proceeding, the source seeking to establish the occurrence of an emergency has the burden of proof. This provision is in addition to any emergency or upset provision contained in any applicable requirement. This provision does not relieve

the source of any reporting obligations under existing federal or state laws or regulations.

3. General Provisions

a. Duty to Comply

The source must comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of the CAA and the Act, and is grounds for any or all of the following: enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. [Section 39.5(7)(o)(i) of the Act]

b. Need to Halt or Reduce Activity is not a Defense

It shall not be a defense for the source in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [Section 39.5(7)(o)(ii) of the Act]

c. Duty to Maintain Equipment

The source shall maintain all equipment covered under this permit in such a manner that the performance or operation of such equipment shall not cause a violation of applicable requirements. [Section 39.5(7)(a) of the Act]

d. Disposal Operations

The source shall be operated in such a manner that the disposal of air contaminants collected by the equipment operations, or activities shall not cause a violation of the Act or regulations promulgated there under. [Section 39.5(7)(a) of the Act]

e. Duty to Pay Fees

- i. The source must pay fees to the IEPA consistent with the fee schedule approved pursuant to Section 39.5(18) of the Act, and submit any information relevant thereto. [Section 39.5(7)(o)(vi) of the Act]
- ii. The IEPA shall assess annual fees based on the allowable emissions of all regulated air pollutants, except for those regulated air pollutants excluded in Section 39.5(18)(f) of the Act and insignificant activities in Section 6, at the source during the term of this permit. The amount of such fee shall be based on the information supplied by the applicant in its complete CAAPP permit application. [Section 39.5(18)(a)(ii)(A) of the Act]
- iii. Fee payment shall be made electronically at <https://magic.collectorsolutions.com/magic-ui/Login/illinois-epa> or by check or money order payable to "Illinois Environmental Protection Agency" and sent to: Fiscal Services #2, Illinois EPA, P.O. Box 19276, Springfield, IL, 62794-9276. Include on the check: ID #, Permit #, and "CAAPP Operating Permit Fees". [Section 39.5(18)(e) of the Act]

f. Obligation to Allow IEPA Surveillance

Pursuant to Sections 4(a), 39.5(7)(a), and 39.5(7)(p)(ii) of the Act, inspection and entry requirements that necessitate that, upon presentation of credentials and other documents as may be required by law and in accordance with constitutional limitations, the source shall allow the IEPA, or an authorized representative to perform the following:

- i. Enter upon the source's premises where the emission unit(s) are located or emissions-related activity is conducted, or where records must be kept under the conditions of this permit.
- ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.
- iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
- iv. Sample or monitor any substances or parameters at any location at reasonable times:
 - A. As authorized by the Clean Air Act or the Act, at reasonable times, for the purposes of assuring compliance with this CAAPP permit or applicable requirements; or
 - B. As otherwise authorized by the Act.
- v. Enter and utilize any photographic, recording, testing, monitoring, or other equipment for the purposes of preserving, testing, monitoring, or recording any activity, discharge or emission at the source authorized by this permit.

g. Effect of Permit

- i. Pursuant to Section 39.5(7)(j)(iv) of the Act, nothing in this CAAPP permit shall alter or affect the following:
 - A. The provisions of Section 303 (emergency powers) of the CAA, including USEPA's authority under that Section.
 - B. The liability of the Owner or Operator of the source for any violation of applicable requirements prior to or at the time of permit issuance.
 - C. The applicable requirements of the acid rain program consistent with Section 408(a) of the Clean Air Act.
 - D. The ability of USEPA to obtain information from the source pursuant to Section 114 (inspections, monitoring, and entry) of the Clean Air Act.
- ii. Notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, pursuant to Sections 39.5(7)(j) and (p) of the Act, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements. [35 IAC 201.122 and Section 39.5(7)(a) of the Act]

h. Severability Clause

The provisions of this permit are severable. In the event of a challenge to any portion of this permit, other portions of this permit may continue to be in effect. Should any portion of this permit be determined to be illegal or unenforceable, the validity of the other provisions shall not be affected and the rights and obligations of the source shall be construed and enforced as if this permit did not contain the particular provisions held to be invalid and the applicable requirements underlying these provisions shall remain in force. [Section 39.5(7)(i) of the Act]

i. Operational Flexibility/ Changes Requiring Prior Notification

The permittee is authorized to make physical or operational changes that contravene express permit terms without applying for or obtaining an amendment to this permit, provided that [Section 39.5(12)(a)(i) of the act]:

- a. The changes do not violate applicable requirements;
- b. The changes do not contravene federally enforceable permit terms or conditions that are monitoring (including test methods), record keeping, reporting, or compliance certification requirements;
- c. The changes do not constitute a modification under Title I of the CAA.
- d. Emissions will not exceed the emissions allowed under this permit following implementation of the physical or operational change; and
- e. The permittee provides written notice to the Illinois EPA, Division of Air Pollution Control, Permit Section, at least 7 days before commencement of change. This notice shall:
 - i. Describe the physical or operational change;
 - ii. Identify the schedule for implementing the physical or operational change;
 - iii. Provide a statement of whether or not any New Source Performance Standard (NSPS) is applicable to the physical or operational change and the reason why the NSPS does not apply;
 - iv. Provide emission calculations which demonstrate that the physical or operational change will not result in a modification; and
 - v. Provide a certification that the physical or operational change will not result in emissions greater than authorized under the Conditions of this permit.

4. Testing

- a. Tests conducted to measure composition of materials, efficiency of pollution control devices, emissions from process or control equipment, or other parameters shall be conducted using standard test methods if applicable test methods are not specified by the applicable regulations or otherwise identified in the conditions of this permit. Documentation of the test date, conditions, methodologies, calculations, and test results shall be retained pursuant to the recordkeeping procedures of this permit. Reports of any tests conducted as required by this permit or as the result of a request by the IEPA shall be submitted as specified in Condition 7.1 of this permit. [35 IAC Part 201 Subpart J and Section 39.5(7)(a) of the Act]
- b. Pursuant to Section 4(b) of the Act and 35 IAC 201.282, every emission source or air pollution control equipment shall be subject to the following testing requirements for the purpose of determining the nature and quantities of specified air contaminant emissions and for the purpose of determining ground level and ambient air concentrations of such air contaminants:
 - i. Testing by Owner or Operator: The IEPA may require the Owner or Operator of the emission source or air pollution control equipment to conduct such tests in accordance with procedures adopted by the IEPA, at such reasonable times as may be specified by the IEPA and at the expense of the Owner or Operator of the emission source or air pollution control equipment. All such tests shall be made by or under the direction of a person qualified by training and/or experience in the field of air pollution testing. The IEPA shall have the right to observe all aspects of such tests.
 - ii. Testing by the IEPA: The IEPA shall have the right to conduct such tests at any time at its own expense. Upon request of the IEPA, the Owner or Operator of the emission source or air pollution control equipment shall provide, without charge to

the IEPA, necessary holes in stacks or ducts and other safe and proper testing facilities, including scaffolding, but excluding instruments and sensing devices, as may be necessary.

5. Recordkeeping

a. Control Equipment Maintenance Records

Pursuant to Section 39.5(7)(b) of the Act, a maintenance record shall be kept on the premises for each item of air pollution control equipment. At a minimum, this record shall show the dates maintenance was performed and the nature of preventative maintenance activities.

b. Retention of Records

- i. Records of all monitoring data and support information shall be retained for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. [Section 39.5(7)(e)(ii) of the Act]
- ii. Pursuant to Section 39.5(7)(a) of the Act, other records required by this permit including any logs, plans, procedures, or instructions required to be kept by this permit shall be retained for a period of at least 5 years from the date of entry unless a different period is specified by a particular permit provision.

c. Availability of Records

- i. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall retrieve and provide paper copies, or as electronic media, any records retained in an electronic format (e.g., computer) in response to an IEPA or USEPA request during the course of a source inspection.
- ii. Pursuant to Section 39.5(7)(a) of the Act, upon written request by the IEPA for copies of records or reports required to be kept by this permit, the Permittee shall promptly submit a copy of such material to the IEPA. For this purpose, material shall be submitted to the IEPA within 30 days unless additional time is provided by the IEPA or the Permittee believes that the volume and nature of requested material would make this overly burdensome, in which case, the Permittee shall respond within 30 days with the explanation and a schedule for submittal of the requested material. (See also Condition 2.9(d))

6. Certification

a. Compliance Certification

- i. Pursuant to Section 39.5(7)(p)(v)(C) of the Act, the source shall submit annual compliance certifications by May 1 unless a different date is specified by an applicable requirement or by a particular permit condition. The annual compliance certifications shall include the following:
 - A. The identification of each term or condition of this permit that is the basis of the certification.
 - B. The compliance status.
 - C. Whether compliance was continuous or intermittent.
 - D. The method(s) used for determining the compliance status of the source, both currently and over the reporting period consistent with the conditions of this permit.

- ii. Pursuant to Section 39.5(7)(p)(v)(D) of the Act, all compliance certifications shall be submitted to the IEPA Compliance Section. Address is included in Attachment 3.
- iii. Pursuant to Section 39.5(7)(p)(i) of the Act, all compliance reports required to be submitted shall include a certification in accordance with Condition 2.6(b).
- iv. This renewed CAAPP permit (effective December 29, 2020) can first be addressed in the annual compliance certification due by May 1, 2022 for calendar year 2021.

b. Certification by a Responsible Official

Any document (including reports) required to be submitted by this permit shall contain a certification by the responsible official of the source that meets the requirements of Section 39.5(5) of the Act and applicable regulations. [Section 39.5(7)(p)(i) of the Act]. An example Certification by a Responsible Official is included in Attachment 4 of this permit.

7. Permit Shield

- a. Pursuant to Section 39.5(7)(j) of the Act, except as provided in Condition 2.7(b) below, the source has requested and has been granted a permit shield. This permit shield provides that compliance with the conditions of this permit shall be deemed compliance with applicable requirements which were applicable as of the date the proposed permit for this source was issued, provided that either the applicable requirements are specifically identified within this permit, or the IEPA, in acting on this permit application, has determined that other requirements specifically identified are not applicable to this source and this determination (or a concise summary thereof) is included in this permit. This permit shield does not extend to applicable requirements which are promulgated after 9/23/2020 (date USEPA notice started), unless this permit has been modified to reflect such new requirements.
- b. Pursuant to Section 39.5(7)(j) of the Act, this permit and the terms and conditions herein do not affect the Permittee's past and/or continuing obligation with respect to statutory or regulatory requirements governing major source construction or modification under Title I of the CAA. Further, neither the issuance of this permit nor any of the terms or conditions of the permit shall alter or affect the liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance.
- c. Pursuant to Section 39.5(7)(a) of the Act, the issuance of this permit by the IEPA does not and shall not be construed as barring, diminishing, adjudicating or in any way affecting any currently pending or future legal, administrative or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the IEPA or the USEPA may have against the applicant including, but not limited to, any enforcement action authorized pursuant to the provision of applicable federal and state law.

8. Title I Conditions

Pursuant to Sections 39(a), 39(f), and 39.5(7)(a) of the Act, as generally identified below, this CAAPP permit may contain certain conditions that relate to requirements arising from the construction or modification of emission units at this source. These requirements derive from permitting programs authorized under Title I of the Clean Air Act (CAA) and regulations thereunder, and Title X of the Illinois Environmental Protection Act (Act) and regulations implementing the same. Such requirements, including the New Source Review programs for both major (i.e., PSD and nonattainment areas) and minor sources, are implemented by the IEPA.

- a. This permit may contain conditions that reflect requirements originally established in construction permits previously issued for this source. These conditions include requirements from preconstruction permits issued pursuant to regulations approved or promulgated by USEPA under Title I of the CAA, as well as requirements contained within construction permits issued pursuant to state law authority under Title X of the Act. Accordingly, all such conditions are incorporated into this CAAPP permit by virtue of

PQ LLC
I.D. No.: 099833AAB
Permit No.: 96030149

Date Received: 3/30/2020
Date Issued: 11/10/2020
Date Effective: 12/29/2020
Date Revised: TBD

being either an "applicable Clean Air Act requirement" or an "applicable requirement" in accordance with Section 39.5 of the Act. These conditions are identifiable herein by a designation to their origin of authority.

- b. This permit may contain conditions that reflect necessary revisions to requirements established for this source in preconstruction permits previously issued under the authority of Title I of the CAA. These conditions are specifically designated herein as "TIR."
- i. Revisions to original Title I permit conditions are incorporated into this permit through the combined legal authority of Title I of the CAA and Title X of the Act. Public participation requirements and appeal rights shall be governed by Section 39.5 of the Act.
- ii. Revised Title I permit conditions shall remain in effect through this CAAPP permit, and are therefore enforceable under the same, so long as such conditions do not expire as a result of a failure to timely submit a complete renewal application or are not removed at the applicant's request.
- c. This permit may contain conditions that reflect new requirements for this source that would ordinarily derive from a preconstruction permit established under the authority of Title I of the CAA. These conditions are specifically designated herein as "TIN."
- i. The incorporation of new Title I requirements into this CAAPP permit is authorized through the combined legal authority of Title I of the CAA and Title X of the Act. Public participation requirements and appeal rights shall be governed by Section 39.5 of the Act.
- ii. Any Title I conditions that are newly incorporated shall remain in effect through this CAAPP permit, and are therefore enforceable under the same, so long as such conditions do not expire as a result of a failure to timely submit a complete renewal application or are not removed at the applicant's request.

9. Reopening and Revising Permit

a. Permit Actions

This permit may be modified, revoked, reopened and reissued, or terminated for cause in accordance with applicable provisions of Section 39.5 of the Act. The filing of a request by the source for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [Section 39.5(7)(o)(iii) of the Act]

b. Reopening and Revision

Pursuant to Section 39.5(15)(a) of the Act, this permit must be reopened and revised if any of the following occur:

- i. Additional requirements become applicable to the equipment covered by this permit and three or more years remain before expiration of this permit;
- ii. Additional requirements become applicable to the source for acid deposition under the acid rain program;
- iii. The IEPA or USEPA determines that this permit contains a material mistake or that an inaccurate statement was made in establishing the emission standards or limitations, or other terms or conditions of this permit; or
- iv. The IEPA or USEPA determines that this permit must be revised or revoked to ensure compliance with the applicable requirements.

c. Inaccurate Application

Pursuant to Sections 39.5(5)(e) and (i) of the Act, the IEPA has issued this permit based upon the information submitted by the source in the permit application referenced on page 1 of this permit. Any misinformation, false statement or misrepresentation in the application shall be grounds for revocation or reopening of this CAAPP under Section 39.5(15) of the Act.

d. Duty to Provide Information

The source shall furnish to the IEPA, within a reasonable time specified by the IEPA any information that the IEPA may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. Upon request, the source shall also furnish to the IEPA copies of records required to be kept by this permit. [Section 39.5(7)(o)(v) of the Act]

10. Emissions Trading Programs

No permit revision shall be required for increases in emissions allowed under any USEPA approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for elsewhere in this permit and that are authorized by the applicable requirement. [Section 39.5(7)(o)(vii) of the Act]

11. Permit Renewal

- a. Upon the expiration of this permit, if the source is operated, it shall be deemed to be operating without a permit unless a timely and complete CAAPP application has been submitted for renewal of this permit. However, if a timely and complete application to renew this CAAPP permit has been submitted, the terms and all conditions of the most recent issued CAAPP permit will remain in effect until the issuance of a renewal permit. [Sections 39.5(5)(1) and (o) of the Act]
- b. For purposes of permit renewal, a timely application is one that is submitted no less than 9 months prior to the date of permit expiration. [Section 39.5(5)(n) of the Act]

12. Permanent Shutdown

Pursuant to Section 39.5(7)(a) of the Act, this permit only covers emission units and control equipment while physically present at the source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shut down. This permit expires if all equipment is removed from the permitted location(s), notwithstanding the expiration date specified on this permit.

13. Startup, Shutdown, and Malfunction

Pursuant to Section 39.5(7)(a) of the Act, in the event of an action to enforce the terms or conditions of this permit, this permit does not prohibit a Permittee from invoking any affirmative defense that is provided by the applicable law or rule.

Section 3 - Source Requirements**1. Applicable Requirements**

Pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act, the Permittee shall comply with the following applicable requirements. These requirements are applicable to all emission units (including insignificant activities unless specified otherwise in this Section) at the source.

a. Fugitive Particulate Matter

i. Pursuant to 35 IAC 212.301 and 35 IAC 212.314, no person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source unless the wind speed is greater than 25 mph.

ii. Compliance Method (Fugitive Particulate Matter)

Upon request by the IEPA, the Permittee shall conduct observations at the property line of the source for visible emissions of fugitive particulate matter from the source to address compliance with 35 IAC 212.301. For this purpose, daily observations shall be conducted for a week for particular area(s) of concern at the source, as specified in the request, observations shall begin either within one day or three days of receipt of a written request from the IEPA, depending, respectively, upon whether observations will be conducted by employees of the Permittee or a third-party observer hired by the Permittee to conduct observations on its behalf. The Permittee shall keep records for these observations, including identity of the observer, the date and time of observations, the location(s) from which observations were made, and duration of any fugitive emissions event(s).

b. Ozone Depleting Substances

Pursuant to 40 CFR 82.150(b), the Permittee shall comply with the standards for recycling and emissions reduction of ozone depleting substances pursuant to 40 CFR Part 82, Subpart F, except as provided for motor vehicle air conditioners in Subpart B of 40 CFR Part 82:

- i. Pursuant to 40 CFR 82.156, persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices.
- ii. Pursuant to 40 CFR 82.158, equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment.
- iii. Pursuant to 40 CFR 82.161, persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program.
- iv. Pursuant to 40 CFR 82 Subpart B, any person performing service on a motor vehicle for consideration when this service involves the refrigerant in the motor vehicle air conditioner shall comply with 40 CFR 82 Subpart B, Servicing of Motor Vehicle Air Conditioners.
- v. Pursuant to 40 CFR 82.166, all persons shall comply with the reporting and recordkeeping requirements of 40 CFR 82.166.

c. Asbestos Demolition and Renovation

- i. Asbestos Fees. Pursuant to Section 9.13(a) of the Act, for any site for which the Owner or Operator must file an original 10-day notice of intent to renovate or

demolish pursuant to Condition 3.1(c)(ii) below and 40 CFR 61.145(b), the owner or operator shall pay to the IEPA with the filing of each 10-day notice a fee of \$150.

- ii. Pursuant to 40 CFR 61 Subpart M, Standard of Asbestos, prior to any demolition or renovation at this facility, the Permittee shall fulfill applicable notification requirements of 40 CFR 61.145(b).
- iii. Pursuant to 40 CFR 61.145(c), during demolition or renovation, the Permittee shall comply with the applicable procedures for asbestos emission control established by 40 CFR 61.145(c).

d. **Future Emission Standards**

Pursuant to Section 39.5(15)(a) of the Act, this source shall comply with any new or revised applicable future standards of 40 CFR 60, 61, 62, or 63; or 35 IAC Subtitle B after the date issued of this permit. The Permittee shall, in accordance with the applicable regulation(s), comply with the applicable requirements by the date(s) specified and shall certify compliance with the applicable requirements of such regulation(s) as part of the annual compliance certification, as required by Condition 2.6(a). This permit may also have to be revised or reopened to address such new regulations in accordance to Condition 2.9.

2. Applicable Plans and Programs

Pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act, the Permittee shall comply with the following applicable requirements. These requirements are applicable to all emission units (including insignificant activities unless specified otherwise in this Section) at the source.

a. **Fugitive PM Operating Program**

- i. Pursuant to 35 IAC 212.309, this source shall be operated under the provisions of Fugitive PM Operating Program prepared by the Permittee and submitted to the IEPA for its review. The Fugitive PM Operating Program shall be designed to significantly reduce fugitive particulate matter emissions, pursuant to 35 IAC 212.309(a). The Permittee shall comply with the Fugitive PM Operating Program and any amendments to the Fugitive PM Operating Program submitted pursuant to Condition 3.2(a)(ii). As a minimum, the Fugitive PM Operating Program shall include provisions identified in 35 IAC 212.310(a) through (g) and the following:
 - A. A detailed description of the best management practices utilized to achieve compliance with 35 IAC 212.304 through 212.308.
 - B. Estimated frequency of application of dust suppressants by location.
 - C. Such other information as may be necessary to facilitate the IEPA's review of the Fugitive PM Operating Program.
- ii. Pursuant to 35 IAC 212.312, the Fugitive PM Operating Program shall be amended from time to time by the Permittee so that the Fugitive PM Operating Program is current. Such amendments shall be consistent with the requirements set forth by this Condition 3.2(a) and shall be submitted to the IEPA within 30 days of such amendment. Any future revision to the Fugitive PM Operating Program made by the Permittee during the permit term is automatically incorporated by reference provided the revision is not expressly disapproved, in writing, by the IEPA within 30 days of receipt of the revision. In the event that the IEPA notifies the Permittee of a deficiency with any revision to the Fugitive PM Operating Program, the Permittee shall be required to revise and resubmit the Fugitive PM Operating Program within 30 days of receipt of notification to address the deficiency pursuant to Section 39.5(7)(a) of the Act.

- iii. The Fugitive PM Operating Program, as submitted by the Permittee May 2017, is incorporated herein by reference. The document constitutes the formal Fugitive PM Operating Program required under 35 IAC 212.310, addressing the control of fugitive particulate matter emissions from all plant roadways, storage piles, access areas near storage piles, and other subject operations located at the facility that are subject to 35 IAC 212.309.
- iv. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep a copy of the Fugitive PM Operating Program, any amendments or revisions to the Fugitive PM Operating Program (as required by Condition 3.2(a)), and the Permittee shall also keep a record of activities completed according to the Fugitive PM Operating Program.

b. PM₁₀ Contingency Measure Plan

Should this source become subject to 35 IAC 212.700, then the Permittee shall prepare and operate under a PM₁₀ Contingency Measure Plan reflecting the PM₁₀ emission reductions as set forth in 35 IAC 212.701 and 212.703. The Permittee shall, within 90 days after the date this source becomes subject to 35 IAC 212.700, submit a request to modify this CAAPP permit in order to include a new, appropriate PM₁₀ Contingency Measure Plan.

c. Episode Action Plan

- i. Pursuant to 35 IAC 244.141, the Permittee shall have on file with the IEPA an Episode Action Plan for reducing the levels of emissions during yellow alerts, red alerts, and emergencies, consistent with safe operating procedures. The Episode Action Plan shall contain the information specified in 35 IAC 244.144.
- ii. The Permittee shall immediately implement the appropriate steps described in the Episode Action Plan should an air pollution alert or emergency be declared, as required by 35 IAC 244.169, or as may otherwise be required under 35 IAC 244, Appendix D.
- iii. Pursuant to 35 IAC 244.143(d), if an operational change occurs at the source which invalidates the Episode Action Plan, a revised Episode Action Plan shall be submitted to the IEPA for review within 30 days of the change and is automatically incorporated by reference provided the revision is not expressly disapproved, in writing, by the IEPA within 30 days of receipt of the revision. In the event that the IEPA notifies the Permittee of a deficiency with any revision to the Episode Action Plan, the Permittee shall be required to revise and resubmit the Episode Action Plan within 30 days of receipt of notification to address the deficiency pursuant to Section 39.5(7)(a) of the Act.
- iv. The Episode Action Plan, as submitted by the Permittee on August 26, 2020 is incorporated herein by reference. The document constitutes the formal Episode Action Plan required by 35 IAC 244.142, addressing the actions that will be implemented to reduce SO₂, PM₁₀, NO₂, CO and VOM emissions from various emissions units in the event of a yellow alert, red alert or emergency issued under 35 IAC 244.161 through 244.165.
- v. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep a copy of the Episode Action Plan, any amendments or revisions to the Episode Action Plan (as required by Condition 3.2(c)), and the Permittee shall also keep a record of activities completed according to the Episode Action Plan.

d. Risk Management Plan (RMP)

Should this stationary source, as defined in 40 CFR 68.3, become subject to the federal regulations for Chemical Accident Prevention in 40 CFR Part 68, then the Permittee shall submit a compliance schedule for meeting the requirements of 40 CFR Part 68 by the date provided in 40 CFR 68.10(a); or submit a certification statement that the source is in compliance with all requirements of 40 CFR Part 68, including the registration and

submission of the Risk Management Plan, as part of the annual compliance certification required by Condition 2.6(a). This condition is imposed in this permit pursuant to 40 CFR 68.215(a)(2)(i) and (ii).

3. Title I Requirements

As of the date of issuance of this permit, there are no source-wide Title I requirements that need to be included in this Condition.

4. Synthetic Minor Limits

As of the date of issuance of this permit, there are no source-wide synthetic minor limits that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act. Addresses are included in Attachment 3. This renewed CAAPP permit (effective December 29, 2020) can first be addressed in reports for calendar year 2021 operations.

a. Prompt Reporting

- i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of the discovery of deviations from applicable requirements as follows:
 - I. Requirements in Conditions 3.1(a)(i), 3.1(b), 3.1(c), and 3.1(d).
 - II. Requirements in Conditions 3.2(a), 3.2(b), 3.2(c), and 3.2(d).
- B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- iii. The deviation reports shall contain at a minimum the following information:
 - A. Date and time of the deviation.
 - B. Emission unit(s) and/or operation involved.
 - C. The duration of the event.
 - D. Probable cause of the deviation.
 - E. Corrective actions or preventative measures taken.
- iv. All deviation reports required in this Permit shall be identified, summarized, and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

b. Semiannual Reporting

- i. Pursuant to Section 39.5(7)(f)(i) of the Act, the Permittee shall submit a Semi-Annual Monitoring Report to the Illinois EPA, Air Compliance Section, summarizing required monitoring and identifying all instances of deviation from the permit, every six months as follows, unless more frequent reporting is required elsewhere in this Permit.

<u>Monitoring Period</u>	<u>Report Due Date</u>
January through June	September 1
July through December	March 31

- ii. The Semiannual Monitoring Report must be certified by a Responsible Official consistent with Condition 2.6(b).

Note: Required monitoring includes all applicable monitoring, testing, recordkeeping, and reporting requirements. This may include monitoring requirements not addressed within the Compliance Method Sections of this Permit.

Note: The semiannual reporting requirements fulfill the requirements of 35 IAC 201.530(e).

c. Annual Emissions Reporting

Pursuant to 35 IAC Part 254, the Source shall submit an Annual Emission Report to the Air Quality Planning Section, due by May 1 of the year following the calendar year in which the emissions took place. All records and calculations upon which the verified and reported data are based must be retained by the source.

Section 4 - Emission Unit Requirements

4.1 Fuel Combustion Units

1. Emission Units and Operations

<i>Emission Units</i>	<i>Pollutants Being Regulated</i>	<i>Original Construction Date</i>	<i>Modification/ Reconstruction Date</i>	<i>Air Pollution Control Devices or Measures</i>	<i>Monitoring Devices</i>
PBR Boiler 12.8 mmBtu/hr Natural Gas Fired ¹	PM(Opacity), CO	2022	N/A	None	None

1 This boiler's construction was authorized by the Permit by Rule requirements in 35 IAC 201 Subparts M and N (AP#22030022).

2. Applicable Requirements

For the emission units in Condition 4.2.1 above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 IAC 212.122, except as provided in 35 IAC 212.123(b).

ii. Compliance Method (Opacity Requirements)

Monitoring

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, at a minimum, the Permittee shall perform observations for visible emissions from each emission unit in accordance with Method 22 for visible emissions at least once every calendar year. If visible emissions are observed, the Permittee shall take corrective action within 4 hours of such observation. Corrective action may include, but is not limited to, shut down of the affected boiler and/or maintenance and repair. If corrective action was taken the Permittee shall perform a follow-up observation for visible emissions in accordance with Method 22. If visible emissions continue, then measurements of opacity in accordance with Method 9 shall be conducted within 7 days

B. Condition 7.1 shall not apply to Method 22 observations conducted on the emission unit. Conditions 7.1(a) and 7.1(b) shall not apply to Method 9 observations.

Recordkeeping

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for each observation for visible emissions conducted in accordance with Method 22 and Method 9. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation.

- b. i. **Carbon Monoxide Requirements (CO)**
- A. Pursuant to 35 IAC 216.121, no person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from any fuel combustion emission source with actual heat input greater than 2.9 MW (10 mmbtu/hr) to exceed 200 ppm, corrected to 50 percent excess air.
- ii. **Compliance Method (CO Requirements)**
- Recordkeeping
- A. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records of CO emissions (ppm) corrected to 50 percent excess air from each boiler, with supporting calculations.
- Note: Condition 4.2.2(d)(ii)(A)(V) requires periodic CO concentration measurements.
- c. i. **Operational and Production Requirements**
- A. Pursuant to Section 39.5(7)(a) of the Act, pipeline quality natural gas shall be the only fuel fired in the PBR Boiler.
- B. Pursuant to 35 IAC 201.600(a)(1), the PBR boiler must have a maximum design heat input capacity of less than or equal to 50 MMBtu/hr.
- C. Pursuant to 35 IAC 201.600(d), the emissions from the PBR boiler consist entirely of the products of fuel combustion.
- ii. **Compliance Method (Operational and Production Requirements)**
- Recordkeeping
- A. Pursuant to 35 IAC 201.635(a) and (c)-(e), the Permittee of the PBR boiler must maintain records containing the following information:
- I. The maximum design heat input capacity of the boiler, in MMBtu/hr, with supporting documentation.
- II. The quantity of each fuel used per month and per year.
- III. The hours of operation, in hours/month and hours/year.
- IV. Emissions of PM, PM10, PM2.5, NOx, CO, and VOM, in tons/month and tons/year, with supporting calculations.
- Note: Condition 4.2.2(c)(ii)(A)(II) fulfills the requirements of 40 CFR 60.48c(g)(2).
- d. i. **Work Practice Requirements**
- A. Pursuant to 40 CFR 60.11(d), at all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate PBR Boiler including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Illinois EPA which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

ii. Compliance Method (Work Practice Requirements)

Monitoring

- A. Pursuant to Section 39.5(7)(b) and (d), the Permittee shall comply with the following tune-up requirements for the boilers and conduct such tune-ups at least every 36 months or in accordance with the schedules established in the manufacturer's specifications:
- I. As applicable, inspect the burner, and clean or replace any components of the burner as necessary (the Permittee may delay the burner inspection until the next scheduled unit shutdown, but each burner shall be inspected at least once every 36 months).
 - II. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available.
 - III. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly.
 - IV. Optimize total emissions of carbon monoxide. This optimization should be consistent with the manufacturer's specifications, if available.
 - V. Measure the concentrations in the effluent stream of carbon monoxide in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made).

Recordkeeping Requirements

- B. Pursuant to 35 IAC 201.635(b), the Permittee shall maintain an inspection, maintenance, and repair log with dates and the nature of those activities for the PBR boiler.

3. Non-Applicability Determinations

- a. The PBR boiler is not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR Part 63 Subpart DDDDD because this source is an area source for HAPs, pursuant to 40 CFR 60.2.
- b. The PBR boiler is not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers Area Sources, 40 CFR Part 63 Subpart JJJJJJ, because the boiler is natural gas-fired only, pursuant to 40 CFR 63.11195(e).
- c. The PBR boiler is not subject to 35 IAC 201.635(f), because the PBR boiler does not have the capability to burn refinery fuel gas, butane, or propane.
- d. The PBR boiler is not subject to 35 IAC 214.301, because the boiler is a fuel combustion emission unit and does not meet the definition of Process Emission Units as specified in 35 IAC 211.5190.
- e. The PBR boiler is not subject to 35 IAC 215.301, because the boiler is a fuel combustion emission unit as specified in 35 IAC 215.303.

- f. The PBR boiler is not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources for all pollutants, because the boiler does not use an add-on control device to achieve compliance with an emission limitation or standard.

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act. Addresses are included in Attachment 3.

a. Prompt Reporting

- i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of the discovery of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:
- I. Requirements in Conditions 4.2.2(a)(i), 4.2.2(b)(i), 4.2.2(c)(i), and 4.2.2(d)(i).
- B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- Note: The prompt Reporting requirements fulfill the requirements of 35 IAC 201.530(c).
- ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- iii. The deviation reports shall contain at a minimum the following information:
- A. Date and time of the deviation.
- B. Emission unit(s) and/or operation involved.
- C. The duration of the event.
- D. Probable cause of the deviation.
- E. Corrective actions or preventative measures taken.

4.2 Process Heater

1. Emission Units and Operations

<i>Emission Units</i>	<i>Pollutants Being Regulated</i>	<i>Original Construction Date</i>	<i>Modification/ Reconstruction Date</i>	<i>Air Pollution Control Devices or Measures</i>	<i>Monitoring Devices</i>
Metso Air Heater HTRX-11 15.0 mmBtu/hr Natural Gas fired	PM, SO ₂ , VOM, CO, and NO _x	2014	N/A	Ducon Scrubber SB-401	None

2. Applicable Requirements

For the emission units in Condition 4.3.1 above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 IAC 212.122, except as provided in 35 IAC 212.123(b).

ii. Compliance Method (Opacity Requirements)

Monitoring

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, at a minimum, the Permittee shall perform observations for visible emissions from each emission unit in accordance with Method 22 at least once every calendar year. If visible emissions are observed, the Permittee shall take corrective action within 4 hours of such observation. Corrective action may include, but is not limited to, shut down of the affected boiler and/or maintenance and repair. If corrective action was taken the Permittee shall perform a follow-up observation for visible emissions in accordance with Method 22. If visible emissions continue, then measurements of opacity in accordance with Method 9 shall be conducted within 7 days. The requirements of Section 7.1 of this permit do not apply to these observations. .

Recordkeeping

B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for each observation for visible emissions conducted. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation.

C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for all opacity measurements made in accordance with USEPA Method 9.

b. i. Particulate Matter Requirements (PM)

A. Pursuant to Construction Permit #13120027 and Section 39.5(7)(a) of the Act, emissions of PM from the process heater shall not exceed 0.50 tons/year.
[T1]

ii. Compliance Method (PM Requirements)

Monitoring

- A. Pursuant to Construction Permit #13120027, compliance with this annual limit shall be determined from a running total of 12 months of data, i.e., from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

Recordkeeping

- B. Pursuant to Construction Permit #13120027, the Permittee shall maintain the following records:
- I. PM emission data for the process heater (tons/month and tons/year), with supporting calculations.

c. i. Sulfur Dioxide Requirements (SO₂)

- A. Pursuant to 35 IAC 214.301, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2000 ppm.
- B. Pursuant to Construction Permit #13120027 and Section 39.5(7)(a) of the Act, emissions of SO₂ from the process heater shall not exceed 0.50 tons/year. [T1]

ii. Compliance Method (SO₂ Requirements)

Monitoring

- A. Pursuant to Construction Permit #13120027, compliance with this annual limit shall be determined from a running total of 12 months of data, i.e., from the sum of the data for the current month plus the preceding 11 months (running 12 month total). [T1]
- B. The monitoring requirements sufficient to meet 39.5(7)(d)(ii) of the Act are addressed by the operational and production requirements in Condition 4.3.2(g)(i).

Recordkeeping

- C. Pursuant to Construction Permit #13120027, the Permittee shall maintain the following records:
- I. SO₂ emission data for the process heater (tons/month and tons/year), with supporting calculations.

d. i. Volatile Organic Material Requirements (VOM)

- A. Pursuant to Construction Permit #13120027 and Section 39.5(7)(a) of the Act, emissions of VOM from the process heater shall not exceed 0.50 tons/year. [T1]

ii. Compliance Method (VOM Requirements)

Monitoring

- A. Pursuant to Construction Permit #13120027, compliance with this annual limit shall be determined from a running total of 12 months of data, i.e., from the sum of the data for the current month plus the preceding 11 months (running 12 month total). [T1]

Recordkeeping

B. Pursuant to Construction Permit 13120027, the Permittee shall maintain the following records:

I. VOM emission data for the process heater (tons/month and tons/year), with supporting calculations.

e. i. **Carbon Monoxide Requirements (CO)**

A. Pursuant to Construction Permit #13120027, emissions of CO from the process heater shall not exceed 1.24 lbs/hour and 5.41 tons/year. [T1]

ii. Compliance Method (CO Requirements)

Monitoring

A. Pursuant to Construction Permit #13120027, compliance with this annual limit shall be determined from a running total of 12 months of data, i.e., from the sum of the data for the current month plus the preceding 11 months (running 12 month total). [T1]

Recordkeeping

B. Pursuant to Construction Permit #13120027, the Permittee shall maintain the following records:

I. A file containing the maximum CO emission rate of the process heater (pounds/hour), with supporting data and calculations.

II. CO emission data for the process heater (tons/month and tons/year), with supporting calculations.

f. i. **Nitrogen Oxide Requirements (NO_x)**

A. Pursuant to Construction Permit #13120027, emissions of NO_x from the process heater shall not exceed 1.47 lbs/hour and 6.44 tons/year. [T1]

ii. Compliance Method (NO_x Requirements)

Monitoring

A. Pursuant to Construction Permit #13120027, compliance with this annual limit shall be determined from a running total of 12 months of data, i.e., from the sum of the data for the current month plus the preceding 11 months (running 12 month total). [T1]

Recordkeeping

B. Pursuant to Construction Permit #13120027, the Permittee shall maintain the following records:

I. A file containing the maximum NO_x emission rate of the process heater (pounds/hour), with supporting data and calculations. [T1]

II. NO_x emission data for the process heater (tons/month and tons/year), with supporting calculations.

g. i. **Operational and Production Requirements**

A. Pursuant to Construction Permit #13120027, the process heater shall be fired only with pipeline quality natural gas. [T1]

- B. Pursuant to Construction Permit #13120027, the rated heat input capacity of the process heater shall not exceed 15 mmBtu/hour. [T1]
- ii. Compliance Method (Operational and Production Requirements)

Recordkeeping

- A. Pursuant to Construction Permit #13120027, the Permittee shall maintain records of the type of fuel fired in the process heater. [T1]
- B. Pursuant to Construction Permit #13120027, the Permittee shall maintain a file containing a record of the maximum design heat input capacity of the process heater, mmBtu/hr, with supporting documentation. [T1]

3. Non-Applicability Determinations

- a. The process heater is not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR Part 63 Subpart DDDDD because this facility is an area source for HAPs.
- b. The process heater is not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers Area Sources, 40 CFR Part 63 Subpart JJJJJJ, because pursuant to 63.11193, only non-gas fired boilers are subject to Subpart JJJJJJ.
- c. The process heater is not subject to the New Source Performance Standards (NSPS) for Small Industrial Steam Generating Units, 40 CFR Part 60 Subpart Dc, because the process heater is not a subject unit per the definitions in 40 CFR 60.41c.
- d. The process heater is not subject to 35 IAC 216.121 because it does not meet the definition of a fuel combustion emission unit.
- e. The process heater is not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources for all pollutants, because the process heater does not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act. Addresses are included in Attachment 3.

a. Prompt Reporting

- i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of the discovery of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:
- I. Requirements in Conditions 4.3.2(a)(i), 4.3.2(b)(i), 4.3.2(c)(i), 4.3.2(d)(i), 4.3.2(e)(i), 4.3.2(f)(i), and 4.3.2(g)(i).
- B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).

- ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- iii. The deviation reports shall contain at a minimum the following information:
 - A. Date and time of the deviation.
 - B. Emission unit(s) and/or operation involved.
 - C. The duration of the event.
 - D. Probable cause of the deviation.
 - E. Corrective actions or preventative measures taken.

4.3 Metasilicate Manufacturing Process Units

1. Emission Units and Operations

<i>Emission Units</i>	<i>Pollutants Being Regulated</i>	<i>Original Construction Date</i>	<i>Modification/ Reconstruction Date</i>	<i>Air Pollution Control Devices or Measures</i>	<i>Monitoring Devices</i>
Anhydrous Drying Kiln D-300	PM	1968	N/A	To Dryer Wet Scrubber (WS-314) which then vents through Metso Wet Wash Demister (DM-300)	Hydrometer for Wet Scrubber
Pentahydrate Kiln CY-200	PM	1968	N/A	To Pentahydrate Wet Scrubber (WS-214) which then vents through Metso Wet Wash Demister (DM-300)	Hydrometer for Wet Scrubber
Bagging & Bulk Loading (for both Anhydrous and Pentahydrate) M-08A	PM	1968	N/A	Cyclone then to Pentahydrate Wet Scrubber (WS-214) which then vents through Metso Wet Wash Demister (DM-300)	Hydrometer for Wet Scrubber
Bagging & Bulk loading M-08B	PM	1968	N/A	Dust Collector (BH-974)	None
Discharge Screw/Elevator MA-10	PM	1968	N/A	South Baghouse (BH-001) then to Ducon Scrubber (SB-401)	None

2. Applicable Requirements

For the emission units in Condition 4.4.1 above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

A. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 IAC 212.122, except as provided in 35 IAC 212.123(b).

ii. Compliance Method (Opacity Requirements)

Monitoring

A. Pursuant to Sections 39.5(7)(b) and (d) of the Act, at a minimum, the Permittee shall perform observations for visible emissions from each emission unit in accordance with Method 22 at least once every calendar year. If visible emissions are observed a Method 9 observation of opacity will be performed. If observed opacity exceeds 30 percent, the Permittee shall take corrective action. Corrective action may include, but is not limited to, shut down of the affected emission unit and/or maintenance and repair. If corrective action was taken the Permittee shall perform a follow-up observation of opacity in accordance with Method 9. The requirements of Section 7.1 of this permit do not apply to these observations.

B. Pursuant to Sections 39.5(7)(b) and (d) of the Act, the Permittee shall perform observations for visible emissions from the Metso Wet Wash Demister (DM-300) in accordance with Method 22 for visible emissions on a daily

basis. If visible emissions are observed, the Permittee shall take corrective action within 4 hours of such observation. Corrective action may include, but is not limited to, shut down of the affected emission unit and/or maintenance and repair. If corrective action was taken the Permittee shall perform a follow-up observation of opacity in accordance with Method 9. The requirements of Section 7.1 of this permit do not apply to these observations.

Recordkeeping

- C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for each observation for visible emissions conducted. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation.
- D. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for all opacity measurements made in accordance with USEPA Method 9.

b. i. Particulate Matter Requirements (PM)

- A. Pursuant to 35 IAC 212.322, no person shall cause or allow the emission of PM into the atmosphere in any one hour period from any process emission unit for which construction or modification commenced prior to April 14, 1972, which, either alone or in combination with the emission of PM from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.322(c). (See also Permit Section 7.2(b)).
- B. Pursuant to Construction Permit #03060075, PM emissions from the dust collector BH-974 shall not exceed 0.2 lb/hr and 0.7 tons/year. [T1]

ii. Compliance Method (PM Requirements)

Monitoring

- A. Pursuant to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, the Pentahydrate Kiln CY-200 and Anhydrous Drying Kiln D-300 are subject to 40 CFR Part 64. The Permittee shall comply with the monitoring requirements of the CAM Plan described in Condition 7.3 and Table 7.3.1, pursuant to 40 CFR Part 64 as submitted in the Permittee's CAM plan application. At all times, the Owner or Operator shall maintain the monitoring, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment, pursuant to 40 CFR 64.7(a) and (b).
- B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall perform quarterly inspections of the scrubber and mist eliminator.
- C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall perform semi-annual inspections of the dust collectors.
- D. Pursuant to Section 39.5(7)(b) of the Act, compliance with annual limitations, including annual emission limits shall be determined from a running total of 12 months of data.

Recordkeeping

- E. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep the following records related to PM emissions from each emission unit:
- I. A file containing the method used by the Permittee to determine emissions of PM, with supporting documentation.
- F. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep the following records:
- I. Process weight rate data for each emission unit for calculation of the allowable PM emission rate.
- II. Records of dust collector, scrubber and mist eliminator inspections.
- III. Monthly and annual aggregate PM emissions (tons/month, tons/year) from the emission units with supporting calculations.

3. Non-Applicability Determinations

- a. The Bagging & Bulk Loading (M-08A and M-08B) and Discharge Screw/Elevator (MA-10) are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because these emission units do not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act. Addresses are included in Attachment 3.

a. Prompt Reporting

- i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of the discovery of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:
- I. Requirements in Conditions 4.4.2(a)(i), and 4.4.2(b)(i).
- B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- iii. The deviation reports shall contain at a minimum the following information:
- A. Date and time of the deviation.
- B. Emission unit(s) and/or operation involved.
- C. The duration of the event.

- D. Probable cause of the deviation.
- E. Corrective actions or preventative measures taken.

4.4 Epsom Salt Manufacturing Process Units

1. Emission Units and Operations

<i>Emission Units</i>	<i>Pollutants Being Regulated</i>	<i>Original Construction Date</i>	<i>Modification/ Reconstruction Date</i>	<i>Air Pollution Control Devices or Measures</i>	<i>Monitoring Devices</i>
Reactor Vessel T-152	PM	1989	N/A	T-179 Mist Eliminator	None
Crystallizer T-157	PM	1989	2014	Demister Pad	None
Fluid Bed Dryer/Cooler D-503	PM	1989	N/A	BH-204 Baghouse	None
Bulk Loading ES-22	PM	1989	N/A	BH-206 Baghouse then to AF-206 Filter	None
Product Silo/Packaging Induction Valve T-159	PM	1989	N/A	BH-208 Baghouse	None
Magnesium Oxide (MgO) Storage Silo T-901	PM	1989	N/A	BH-901 Baghouse	None
Magnesium Oxide Transport System from Silo to Bin T-913 (Slaker)	PM	1989	N/A	FA-161 Dust Collector	None
Reactor Tank T-902	PM	1989	N/A	DM-903 Mist Eliminator	None

2. Applicable Requirements

For the emission units in Condition 4.5.1 above, the Permittee shall comply with the following applicable requirements pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act.

a. i. Opacity Requirements

- A. Pursuant to 40 CFR 60.732(b), emissions from the Fluid Bed Dryer/Cooler D-503 controlled by baghouse BH-204 shall not exhibit greater than 10 percent opacity.
- B. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 IAC 212.122, except as provided in 35 IAC 212.123(b).

ii. Compliance Method (Opacity Requirements)

Monitoring

- A. I. Pursuant to Sections 39.5(7)(b) and (d) of the Act, at a minimum, the Permittee shall perform observations for visible emissions from Reactor Vessel T-152, Reactor Tank T-902, Crystallizer T-157, Product Silo/Packaging Induction Valve T-159, Magnesium Oxide (MgO) Storage Silo T-901, and Magnesium Oxide Transport System from Silo to Bin T-913 (Slaker) in accordance with Method 22 at least once annually. If visible emissions are observed a Method 9 observation of opacity will be performed. If the observed opacity exceeds 30 percent, the Permittee shall take corrective action. Corrective action may include, but is not limited to, shut down of the affected emission unit and/or maintenance and repair. If corrective action was taken the Permittee shall perform a follow-up observation for visible emissions in accordance with Method 22. The requirements of Section 7.1 of this permit do not apply to these observations.

Recordkeeping

- B. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for each observation for visible emissions conducted. These records shall include, at a minimum: date and time the observation was performed, name(s) of observing personnel, identification of which equipment was observed, whether or not the equipment was running properly, the findings of the observation including the presence of any visible emissions, and a description of any corrective action taken including if the corrective action took place within 4 hours of the observation.
- C. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep records for all opacity measurements made in accordance with USEPA Method 9.

b. i. Particulate Matter Requirements (PM)

- A. Pursuant to 35 IAC 212.321, no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c). (See also Permit Section 7.2(a)).
- B. Pursuant to 40 CFR 60.732(a), PM emissions from the Fluid Bed Dryer/Cooler D-503 controlled by baghouse BH-204 shall not exceed 0.025 grains per dry standard cubic foot (gr/dscf).
- C. Pursuant to Operating Permit #96030149, PM emissions of the Fluid Bed Dryer/Cooler D-503 shall not exceed 0.2 tons/year. This limit is necessary to exempt this emission unit from the 40 CFR Subpart UUU NSPS monitoring requirements as detailed in the exemption issued by USEPA on January 10, 1997 in Document Control Number 9700071. Previous emission testing has demonstrated an emission rate well below 1 ton/year. [T1R]
- D. Pursuant to Construction Permit #95050010, PM emissions from the Reactor and Silo Bin Vent controlled by BH-208 shall not exceed 0.82 tons/year. [T1R]
- E. Pursuant to Construction Permit #02080010, PM emissions from the Magnesium Oxide Transport System T-913 controlled by Dust Collector FA-161 shall not exceed 0.01 tons/year. [T1R]
- F. Pursuant to Construction Permit #13120027, emissions of PM from the magnesium oxide storage silo T-901 shall not exceed 0.137 lbs/hr and 0.6 tons/year. [T1]
- G. Pursuant to Construction Permit #13120027, total emissions of PM from the Epsom salt process emission units other than the MgOH storage silo shall not exceed 0.25 lbs/hr and 1.1 tons/year. [T1]

ii. Compliance Method (PM Requirements)

Monitoring

- A. Pursuant to Section 39.5(7)(b) of the Act, compliance with annual limitations, including annual emission limits shall be determined from a running total of 12 months of data.

Testing

- B. Pursuant to Section 39.5(7)(b) and (d) of the Act, within 12 months after the effective date of this Permit, the emissions of PM from Baghouse BH-208 and BH-901 shall be measured by an approved testing service as follows:

- I. These tests shall be conducted during operating conditions which are representative of normal operation under the circumstances which would produce the greatest emissions. Operating conditions during the test shall be recorded.
 - II. PM emission measurements shall be made in accordance with 40 CFR 60, Appendix A, and Method 5.
 - III. If the test results are less than 75% of the applicable PM emission limit, no further testing is required. If the test results are greater than 75% of the applicable PM emission limit, testing shall be repeated within five years.
- C. The Permittee shall comply with all the requirements of Section 7.1.

Recordkeeping

- D. Pursuant to Construction Permit #13120027, the Permittee shall maintain the following records for the magnesium oxide storage silo T-901:
- I. A file containing the maximum emission rate of the magnesium oxide storage silo T-901 (pounds/hour) with supporting data and calculations.
 - II. Operating data for the magnesium oxide storage silo T-901.
 - III. PM emission data for the magnesium oxide storage silo T-901 (tons/month, tons/year) with supporting calculations.
- E. Pursuant to Construction Permit #02080010 and Section 39.5(7)(b) of the Act, the Permittee shall maintain records of the annual PM emissions for the Magnesium Oxide Transport System.
- F. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep the following records related to PM emissions from each emission unit:
- I. A file containing the method used by the Permittee to determine emissions of PM, with supporting documentation.
- G. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall keep the following records:
- I. Process weight rate data for each emission unit for calculation of the allowable PM emission rate.
 - II. Monthly and annual aggregate PM emissions (tons/month, tons/year) from the emission units with supporting calculations.

c. i. Sulfur Dioxide Requirements (SO₂)

- A. Pursuant to 35 IAC 214.303, no person using sulfuric acid shall cause or allow the emission of sulfuric acid and/or sulfur trioxide from all other similar emission sources at a plant or premises to exceed:
- I. 0.10 lbs/hr for sulfuric acid usage less than 1300 tons/yr;
 - II. 0.50 lbs/ton for sulfuric acid usage greater than 1300 tons/yr.
- B. Pursuant to Construction Permit #13120027, emissions of sulfuric acid mist from the Reactor Vessel T-152 in the Epsom salt process shall not exceed 0.112 pounds/hour and 0.49 tons/year.. [T1]

- C. Pursuant to Construction Permit #13120027, emissions of sulfuric acid mist from the Reactor Tank T-902 in the Epsom salt process shall not exceed 0.96 pounds/hour and 4.21 tons/year. [T1]
- D. Pursuant to Construction Permit #13120027, total emissions of sulfuric acid mist from emission units in the Epsom salt process other than the Reactor Vessel T-152 and Reactor Tank T-902 shall not exceed 0.25 lbs/hr and 1.1 tons/year. [T1]
- E. Pursuant to Construction Permit #89060059, emissions of SO₂ from the Reactor Vessel T-152 shall not exceed 525 lbs/month and 3.10 tons/year. [T1]
- F. Pursuant to Construction Permit #13120027, total emissions of SO₂ from emission units in the Epsom salt process shall not exceed 0.25 lbs/hr and 1.1 tons/year. [T1]

ii. Compliance Method (SO₂ Requirements)

Monitoring

- A. Pursuant to Section 39.5(7)(b) of the Act, compliance with annual limitations, including annual emission limits shall be determined from a running total of 12 months of data.

Recordkeeping

- B. Pursuant to Construction Permit #13120027, the Permittee shall maintain the following records for the Reactor Vessel T-152:
 - I. A file containing the maximum emission rate of the Reactor Vessel T-152(pounds/hour) with supporting data and calculations.
 - II. Operating data for the Reactor Vessel T-152.
 - III. Sulfuric acid mist and SO₂ emission data for the Reactor Vessel T-152 (tons/month, tons/year) with supporting calculations.
- C. Pursuant to Construction Permit #13120027, the Permittee shall maintain the following records for the Reactor Tank T-902:
 - I. A file containing the maximum emission rate of the Reactor Tank T-902(pounds/hour) with supporting data and calculations.
 - II. Operating data for the Reactor Tank T-902.
 - III. Sulfuric acid mist and SO₂ emission data for the Reactor Tank T-902 (tons/month, tons/year) with supporting calculations.
- D. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of the SO₂ emissions from the Reactor Vessel T-152 (lbs/month, tons/year) with supporting data and calculations.
- E. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of the total SO₂ emissions from the Epsom salt process with supporting data and calculations.

d. i. Operational and Production Requirements

- A. Pursuant to Construction Permit #13120027, the production of the Epsom salt process shall not exceed 5,100 tons/month and 45,000 tons/year. [T1]

- B. Pursuant to Construction Permit #13120027, usage of magnesium hydroxide by the Epsom salt process in Reactor Vessel T-152 shall not exceed 6.25 tons/hour and 54,750 tons/year. [T1]
 - C. Pursuant to Construction Permit #13120027, usage of sulfuric acid by the Epsom salt process shall not exceed 2,815 tons/month and 25,000 tons/year. [T1]
 - D. Pursuant to Construction Permit #02080010, the throughput of the magnesium oxide for the magnesium oxide transport system shall not exceed 5 tons/hour and 43,800 tons/year. [T1]
 - E. Pursuant to Construction Permit #02080010, the permittee shall maintain and operate the Magnesium Oxide Transport System in a manner consistent with good air pollution control practice for minimizing emissions. [T1]
- ii. Compliance Method (Operational and Production Requirements)

Monitoring

- A. Pursuant to Section 39.5(7)(b) of the Act, compliance with annual limitations, including annual operational and production limits shall be determined from a running total of 12 months of data.

Recordkeeping

- B. Pursuant to Construction Permit #13120027, the Permittee shall maintain records of the production of the Epsom salt process (tons/month and tons/year).
- C. Pursuant to Construction Permit #02080010, the Permittee shall keep a file with the following records for the Magnesium Oxide Transport System:
 - I. Amount of Magnesium Oxide used every year.
 - II. The Permittee shall maintain logs of inspections, maintenance and repairs for the Magnesium Oxide Transport System to demonstrate good air pollution control practice.
- D. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of the usage of magnesium hydroxide by the Epsom salt process in the Reactor Vessel T-152 in tons/hour and tons/year.
- E. Pursuant to Section 39.5(7)(b) of the Act, the Permittee shall maintain records of the usage of sulfuric acid by the Epsom salt process in tons/month and tons/year.

3. Non-Applicability Determinations

- a. The Epsom salt manufacturing process is not subject to the New Source Performance Standards (NSPS) for Nonmetallic Mineral Processing Plants, 40 CFR Part 60 Subpart 000, because the list of affected minerals in 40 CFR 60.671 does not include any magnesium compounds.
- b. The Fluid Bed Dryer Cooler is not subject to monitoring requirements for the New Source Performance Standards (NSPS) for Calciners and Dryers in Mineral Industries, 40 CFR Part 60 Subpart UUU, because the source has taken a PM emission limit on this emission unit not to exceed 11 tons/yr. This exemption was issued by the USEPA on January 10, 1997 in Document Control Number 9700071. Previous emission testing has demonstrated an emission rate well below 1 ton/year.
- c. The Epsom Salt Manufacturing Process Units are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources, because these emission units

do not have potential pre-control device emissions of the applicable regulated air pollutant that equals or exceeds major source threshold levels.

4. Other Requirements

As of the date of issuance of this permit, there are no other requirements that need to be included in this Condition.

5. Reporting Requirements

The Permittee shall submit the following information pursuant to Section 39.5(7)(f) of the Act. Addresses are included in Attachment 3.

a. Prompt Reporting

- i. A. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the IEPA, Air Compliance Section, within 30 days of the discovery of deviations from applicable requirements as follows unless a different period is specified by a particular permit provision, i.e., NSPS or NESHAP requirement:
 - I. Requirements in Conditions 4.5.2(a)(i), 4.5.2(b)(i), 4.5.2(c)(i), and 4.5.2(d)(i).
- B. All such deviations shall be summarized and reported as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- ii. The Permittee shall notify the IEPA, Air Compliance Section, of all other deviations as part of the Semiannual Monitoring Report required by Condition 3.5(b).
- iii. The deviation reports shall contain at a minimum the following information:
 - A. Date and time of the deviation.
 - B. Emission unit(s) and/or operation involved.
 - C. The duration of the event.
 - D. Probable cause of the deviation.
 - E. Corrective actions or preventative measures taken.

Section 5 - Additional Title I Requirements

This Section is reserved for Title I requirements not specified in Sections 3 or 4. As of the date of issuance of this permit, there are no Title I requirements that need to be separately addressed in this Section.

Section 6 - Insignificant Activities Requirements

1. Insignificant Activities Subject to Specific Regulations

Pursuant to 35 IAC 201.210 and 201.211, the following activities at the source constitute insignificant activities. Pursuant to Sections 9.1(d) and 39.5(6)(a) of the Act, the insignificant activities are subject to specific standards promulgated pursuant to Sections 111, 112, 165, or 173 of the Clean Air Act. The Permittee shall comply with the following applicable requirements:

<i>Insignificant Activity</i>	<i>Number of Units</i>	<i>Insignificant Activity Category</i>
7.9 mmBtu/hr Natural Gas Fired Boilers (Boiler #1 and #2)	2	35 IAC 201.210(a)(1) and 201.211
Gas turbines and stationary reciprocating internal combustion engines between 1118 and 112 kW (1500 and 150 horsepower).	1	35 IAC 201.210(a)(16)

a. Applicable Requirements

Pursuant to Sections 39.5(7)(a), 39.5(7)(b), and 39.5(7)(d) of the Act, the Permittee shall comply with the following applicable requirements in addition to the applicable requirements in Condition 6.4:

i. National Emission Standards for Hazardous Air Pollutants (NESHAP)

- A. National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40 CFR 63 Subpart ZZZZ)
 - I. The engines shall meet the applicable emission limitations requirements of 40 CFR 63.6603.
 - II. The engines shall meet the applicable monitoring, installation, collection, operation, and maintenance requirements in 40 CFR 63.6625(f) and (h).
 - III. The engines shall meet the applicable compliance demonstration requirements in 40 CFR 63.6640(f).
 - IV. The engines shall meet the applicable record keeping requirements in 40 CFR 63.6655(f).

b. i. Title I Requirements (Construction Permit #06090053) [T1]

- A. Pursuant to Construction Permit #06090053, emissions from Boilers #1 and #2 shall not exceed the following limits. [T1R]

Pollutant	(Lbs/Hour) (Each)	(Tons/Year) (Total)
NO _x	0.8	7.0
CO	0.7	6.0
VOM	0.1	0.9
PM/PM ₁₀	0.1	0.9
SO ₂	0.1	0.9
Individual HAP ¹	0.05	0.5
Total HAP	0.1	0.9

- 1. Individual HAP such as Formaldehyde, Benzene, Toluene, etc.

Note: These emission limits were revised in the CAAPP Permit dated TBD.

B. Pursuant to Construction Permit #06090053, pipeline quality natural gas shall be the only fuel fired in the boilers. [T1R]

ii. Compliance Method (Construction Permit #06090053) [T1]

Compliance Procedure

A. Pursuant to Construction Permit #06090053, compliance with the annual limitations shall be determined from a running total of 12 months of data. [T1]

Recordkeeping

B. Pursuant to Construction Permit #06090053, the Permittee shall maintain the following records for Boilers #1 and #2: [T1R]

I. Monthly and annual emissions of NOx, CO, PM/PM10, VOM, SO2, and HAP emissions (tons/month and tons/year) with supporting data or calculations.

II. Total natural gas usage (scf/month and scf/year).

III. Records of the maximum design heat input capacity of each affected boiler, mmBtu/hour, with supporting documentation.

Note: These recordkeeping requirements were revised in the CAAPP Permit dated TBD.

Note: Boilers #1 and #2 are not subject to 40 CFR 60 Subpart Dc, 40 CFR 63 Subpart DDDDD, and 40 CFR Subpart JJJJJJ.

2. Insignificant Activities in 35 IAC 201.210(a)

In addition to any insignificant activities identified in Condition 6.1, the following additional activities at the source constitute insignificant activities pursuant to 35 IAC 201.210 and 201.211:

<i>Insignificant Activity</i>	<i>Number of Units</i>	<i>Insignificant Activity Category</i>
8.1 mmBtu/hr Natural Gas Fired Boiler (Boiler #3)	1	35 IAC 201.210(a)(1) and 201.211
Material discharge/transfer points in sodium silicate production	16	35 IAC 201.210(a)(2) or (a)(3)
Enclosed De-Agglomerator - SS14	1	35 IAC 201.210(a)(2) or (a)(3)
Anhydrous Liquor Make-up Tank - M02		35 IAC 201.210(a)(2) or (a)(3)
Material discharge/transfer points in metasilicate production	20	35 IAC 201.210(a)(2) or (a)(3)
Metasilicate product unloading for bagging/bulk loading - MA19	1	35 IAC 201.210(a)(2) or (a)(3)
Metasilicate product bagging/bulk loading - MP16	1	35 IAC 201.210(a)(2) or (a)(3)
Caustic solution unloading to storage tank for Epsom salt production	1	35 IAC 201.210(a)(2) or (a)(3)
#3 Mammoth Dissolver - KL600	1	35 IAC 201.210(a)(2) or (a)(3)
Mg(OH)2 Tank - ES01	1	35 IAC 201.210(a)(2) or (a)(3)
93% H2SO4 tank - ES02	1	35 IAC 201.210(a)(2) or (a)(3)
Water vapor emitting units in Epsom salt production	11	35 IAC 201.210(a)(2) or (a)(3)
Material discharge/transfer points in Epsom salt production	9	35 IAC 201.210(a)(2) or (a)(3)
Bagging of Epsom salt product - ES25	1	35 IAC 201.210(a)(2) or (a)(3)
Bulk loading of Epsom salt product - ES23	1	35 IAC 201.210(a)(2) or (a)(3)

PQ LLC
 I.D. No.: 099833AAB
 Permit No.: 96030149

Date Received: 3/30/2020
 Date Issued: 11/10/2020
 Date Effective: 12/29/2020
 Date Revised: TBD

<i>Insignificant Activity</i>	<i>Number of Units</i>	<i>Insignificant Activity Category</i>
Material discharges/transfer points of raw materials - ESL01	1	35 IAC 201.210(a)(2) or (a)(3)
Material discharge/transfer points in liquid Epsom salt production - ESL01	1	35 IAC 201.210(a)(2) or (a)(3)
Filter Cake Dumpster - ESL12	1	35 IAC 201.210(a)(2) or (a)(3)
Miscellaneous plant storage tanks	30	35 IAC 201.210(a)(2) or (a)(3)
Direct combustion units for comfort heating	20	35 IAC 201.210(a)(4)
Pentahydrate Liquor Tank - M03	1	35 IAC 201.210(a)(8)
Evaporator Tank - M04	1	35 IAC 201.210(a)(8)
Anhydrous Holding Tank - M07	1	35 IAC 201.210(a)(8)
MgO Slurry Tanks - ESL04	1	35 IAC 201.210(a)(8)
Heel Water Tank - ESL06	1	35 IAC 201.210(a)(8)
Filter Feed Tank - ESL07	1	35 IAC 201.210(a)(8)
Cake Wash Tank - ESL08	1	35 IAC 201.210(a)(8)
Filter Press - ESL09	1	35 IAC 201.210(a)(8)
Filter Hold Tank - ESL10	1	35 IAC 201.210(a)(8)
Sodium Silicate Settling Tank	1	35 IAC 201.210(a)(8)
Sodium Silicate Production Storage Tanks	32	35 IAC 201.210(a)(8)
Plant Fuel Oil Tanks	5	35 IAC 201.210 (a) (11)
Any size storage tanks containing exclusively soaps, detergents, surfactants, waxes, glycerin, vegetable oils, greases, animal fats, sweetener, corn syrup, aqueous salt solutions, or aqueous caustic solutions where an organic solvent has not been mixed. (Caustic Tanks M01 and ES30)	2	35 IAC 201.210(a)(17)
Caustic solution unloading to storage tank for Epsom salt production	1	35 IAC 201.210(a)(18)

3. Insignificant Activities in 35 IAC 201.210(b)

Pursuant to 35 IAC 201.210, the source has identified insignificant activities as listed in 35 IAC 201.210(b)(1) through (28) as being present at the source. The source is not required to individually list the activities.

4. Applicable Requirements

Insignificant activities in Conditions 6.1 and 6.2 are subject to the following general regulatory limits notwithstanding status as insignificant activities. The Permittee shall comply with the following requirements, as applicable:

- a. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 IAC 212.122, except as provided in 35 IAC 212.123(b).
- b. Pursuant to 35 IAC 212.321 or 212.322 (see Conditions 7.2(a) and (b)), no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units at a source or premises, exceed the allowable emission rates specified 35 IAC 212.321 or 212.322 and 35 IAC Part 266.
- c. i. Pursuant to 35 IAC 214.301, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2,000 ppm, except as provided in 35 IAC Part 214.

- d. Pursuant to 35 IAC 214.303 with the exception of fuel combustion emission sources and acid manufacturing, no person using sulfuric acid shall cause or allow the emission of sulfuric acid and/or sulfur trioxide from all other similar emission sources at a plant or premises to exceed:
- i. 45.4 grams in any one hour period for sulfuric acid usage less than 1180 Mg/yr (100 percent acid basis) (0.10 lbs/hr up to 1300 T/yr); or
 - ii. 250 grams per metric ton of acid used for sulfuric acid usage greater than or equal to 1180 Mg/yr (100 percent acid basis) (0.50 lbs/T over 1300 T/yr).
- e. Pursuant to 35 IAC 215.301, no person shall cause or allow the discharge of more than 8 lbs/hr of organic material into the atmosphere from any emission source, except as provided in 35 IAC 215.302, 215.303, 215.304 and the following exception: If no odor nuisance exists the limitation of 35 IAC 215 Subpart K shall apply only to photochemically reactive material.
- f. Pursuant to 35 IAC 215.122(b), no person shall cause or allow the loading of any organic material into any stationary tank having a storage capacity of greater than 250 gal, unless such tank is equipped with a permanent submerged loading pipe, submerged fill, or an equivalent device approved by the IEPA according to 35 IAC Part 201 or unless such tank is a pressure tank as described in 35 IAC 215.121(a) or is fitted with a recovery system as described in 35 IAC 215.121(b)(2). Exception as provided in 35 IAC 215.122(c): If no odor nuisance exists the limitations of 35 IAC 215.122 shall only apply to the loading of volatile organic liquid with a vapor pressure of 2.5 psia or greater at 70°F.

5. Compliance Method

Pursuant to Section 39.5(7)(b) of the Act, the source shall maintain records of the following items for the insignificant activities in Conditions 6.1 and 6.2:

- a. List of all insignificant activities, including insignificant activities added as specified in Condition 6.6, the categories the insignificant activities fall under, and supporting calculations as needed for any insignificant activities listed in 35 IAC 201.210(a)(1) through (3).
- b. Potential to emit emission calculations before any air pollution control device for any insignificant activities listed in 35 IAC 201.210(a)(1) through (3).

6. Notification Requirements for Insignificant Activities

The source shall notify the IEPA accordingly to the addition of insignificant activities:

Notification 7 Days in Advance

- i. Pursuant to 35 IAC 201.212(b), for the addition of an insignificant activity that would be categorized under 35 IAC 201.210(a)(1) and 201.211 and is not currently identified in Conditions 6.1 or 6.2, a notification to the IEPA Permit Section 7 days in advance of the addition of the insignificant activity is required. Addresses are included in Attachment 3. The notification shall include the following pursuant to 35 IAC 201.211(b):
 - A. A description of the emission unit including the function and expected operating schedule of the unit.
 - B. A description of any air pollution control equipment or control measures associated with the emission unit.
 - C. The emissions of regulated air pollutants in lb/hr and ton/yr.
 - D. The means by which emissions were determined or estimated.

- E. The estimated number of such emission units at the source.
- F. Other information upon which the applicant relies to support treatment of such emission unit as an insignificant activity.
 - ii. Pursuant to 35 IAC 201.212(b), for the addition of an insignificant activity that would be categorized under 35 IAC 201.210(a)(2) through 201.210(a)(18) and is not currently identified in Conditions 6.1 or 6.2, a notification to the IEPA Permit Section 7 days in advance of the addition of the insignificant activity is required. Addresses are included in Attachment 3.
 - iii. Pursuant to Sections 39.5(12)(a)(i)(b) and 39.5(12)(b)(iii) of the Act, the permit shield described in Section 39.5(7)(j) of the Act (see Condition 2.7) shall not apply to any addition of an insignificant activity noted above.

b. Notification Required at Renewal

Pursuant to 35 IAC 201.212(a) and 35 IAC 201.146(kkk), for the addition of an insignificant activity that would be categorized under 35 IAC 201.210(a) and is currently identified in Conditions 6.1 or 6.2, a notification is not required until the renewal of this permit.

c. Notification Not Required

Pursuant to 35 IAC 201.212(c) and 35 IAC 201.146(kkk), for the addition of an insignificant activity that would be categorized under 35 IAC 201.210(b) as describe in Condition 6.3, a notification is not required.

Section 7 - Other Requirements**1. Testing**

- a. Pursuant to Section 39.5(7)(a) of the Act, a written test protocol shall be submitted at least sixty (60) days prior to the actual date of testing, unless it is required otherwise in applicable state or federal statutes. The IEPA may at the discretion of the Compliance Section Manager (or designee) accept protocol less than 60 days prior to testing provided it does not interfere with the IEPA's ability to review and comment on the protocol and does not deviate from the applicable state or federal statutes. The protocol shall be submitted to the IEPA, Compliance Section and IEPA, Stack Test Specialist for its review. Addresses are included in Attachment 3. This protocol shall describe the specific procedures for testing, including as a minimum:
- i. The name and identification of the emission unit(s) being tested.
 - ii. Purpose of the test, i.e., permit condition requirement, IEPA or USEPA requesting test.
 - iii. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - iv. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - v. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations.
 - vi. The test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods. Include if emission tests averaging of 35 IAC 283 will be used.
 - vii. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with detailed justification. This shall be included as a waiver of the test procedures. If a waiver has already been obtained by the IEPA or USEPA, then the waiver shall be submitted.
 - viii. Any proposed use of an alternative test method, with detailed justification. This shall be included as a waiver of the test procedures. If a waiver has already been obtained by the IEPA or USEPA, then the waiver shall be submitted.
 - ix. Sampling of materials, QA/QC procedures, inspections, etc.
- b. The IEPA, Compliance Section shall be notified prior to these tests to enable the IEPA to observe these tests pursuant to Section 39.5(7)(a) of the Act as follows:
- i. Notification of the expected date of testing shall be submitted in writing a minimum of thirty (30) days prior to the expected test date, unless it is required otherwise in applicable state or federal statutes.
 - ii. Notification of the actual date and expected time of testing shall be submitted in writing a minimum of five (5) working days prior to the actual date of the test. The IEPA may at its discretion of the Compliance Section Manager (or designee) accept notifications with shorter advance notice provided such notifications will not interfere with the IEPA's ability to observe testing.
- c. Copies of the Final Report(s) for these tests shall be submitted to the IEPA, Compliance Section within fourteen (14) days after the test results are compiled and finalized but no later than ninety (90) days after completion of the test, unless it is required

otherwise in applicable state or federal statutes or the IEPA may at the discretion of the Compliance Section Manager (or designee) an alternative date is agreed upon in advance pursuant to Section 39.5(7)(a) of the Act. The Final Report shall include as a minimum:

- i. General information including emission unit(s) tested.
 - ii. A summary of results.
 - iii. Discussion of conditions during each test run (malfunction/breakdown, startup/shutdown, abnormal processing, etc.).
 - iv. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.
 - v. Detailed description of test conditions, including:
 - A. Process information, i.e., mode(s) of operation, process rate, e.g. fuel or raw material consumption.
 - B. Control equipment information, i.e., equipment condition and operating parameters during testing.
 - C. A discussion of any preparatory actions taken, i.e., inspections, maintenance and repair.
 - vi. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.
 - vii. An explanation of any discrepancies among individual tests or anomalous data.
 - viii. Results of the sampling of materials, QA/QC procedures, inspections, etc.
 - ix. Discussion of whether protocol was followed and description of any changes to the protocol if any occurred.
 - x. Demonstration of compliance showing whether test results are in compliance with applicable state or federal statutes.
- d. Copies of all test reports and other test related documentation shall be kept on site as required by Condition 2.5(b) pursuant to Section 39.5(7)(e)(ii) of the Act.

2. PM Process Weight Rate Requirements

a. New Process Emission Units - 35 IAC 212.321

New Process Emission Units For Which Construction or Modification Commenced On or After April 14, 1972 [35 IAC 212.321].

- i. No person shall cause or allow the emission of PM into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of PM from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c). See Condition 7.2(a)(iii) below. [35 IAC 212.321(a)]
- ii. Interpolated and extrapolated values of the data in 35 IAC 212.321(c) shall be determined by using the equation [35 IAC 212.321(b)]:

$$E = A(P)^B$$

Where:

P = Process weight rate (T/hr)
E = Allowable emission rate (lbs/hr)

A. Process weight rates of less than 450 T/hr:

A = 2.54
B = 0.53

B. Process weight rates greater than or equal to 450 T/hr:

A = 24.8
B = 0.16

iii. Limits for New Process Emission Units [35 IAC 212.321(c)]:

<u>P</u> <u>(T/hr)</u>	<u>E</u> <u>(lbs/hr)</u>	<u>P</u> <u>(T/hr)</u>	<u>E</u> <u>(lbs/hr)</u>
0.05	0.55	25.00	14.00
0.10	0.77	30.00	15.60
0.20	1.10	35.00	17.00
0.30	1.35	40.00	18.20
0.40	1.58	45.00	19.20
0.50	1.75	50.00	20.50
0.75	2.40	100.00	29.50
1.00	2.60	150.00	37.00
2.00	3.70	200.00	43.00
3.00	4.60	250.00	48.50
4.00	5.35	300.00	53.00
5.00	6.00	350.00	58.00
10.00	8.70	400.00	62.00
15.00	10.80	450.00	66.00
20.00	12.50	500.00	67.00

b. Existing Process Emission Units - 35 IAC 212.322

Existing Process Emission Units For Which Construction or Modification Commenced Prior to April 14, 1972 [35 IAC 212.322].

- i. No person shall cause or allow the emission of PM into the atmosphere in any one hour period from any process emission unit for which construction or modification

commenced prior to April 14, 1972, which, either alone or in combination with the emission of PM from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.322(c)). See Condition 7.2(b)(iii) below. [35 IAC 212.322(a)]

- ii. Interpolated and extrapolated values of the data in 35 IAC 212.322(c) shall be determined by using the equation [35 IAC 212.322(b)]:

$$E = C + A(P)^B$$

Where:

P = Process weight rate (T/hr)
E = Allowable emission rate (lbs/hr)

- A. Process weight rates of less than 30 T/hr:

A = 4.10
B = 0.67
C = 0

- B. Process weight rates greater than or equal to 30 T/hr:

A = 55.0
B = 0.11
C = -40.0

- iii. Limits for Existing Process Emission Units [35 IAC 212.322(c)]:

<u>P</u> <u>(T/hr)</u>	<u>E</u> <u>(lbs/hr)</u>	<u>P</u> <u>(T/hr)</u>	<u>E</u> <u>(lbs/hr)</u>
0.05	0.55	25.00	35.40
0.10	0.87	30.00	40.00
0.2	1.40	35.00	41.30
0.30	1.83	40.00	42.50
0.40	2.22	45.00	43.60
0.50	2.58	50.00	44.60
0.75	3.38	100.00	51.20
1.00	4.10	150.00	55.40
2.00	6.52	200.00	58.60
3.00	8.56	250.00	61.00
4.00	10.40	300.00	63.10
5.00	12.00	350.00	64.90
10.00	19.20	400.00	66.20
15.00	25.20	450.00	67.70
20.00	30.50	500.00	69.00

3. Compliance Assurance Monitoring (CAM) Requirements**a. CAM Provisions****i. Proper Maintenance**

Pursuant to 40 CFR 64.7(b), at all times, the source shall maintain the monitoring, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.

ii. Continued Operation

Pursuant to 40 CFR 64.7(c), except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the source shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit (PSEU) is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of 40 CFR Part 64, including data averages and calculations, or fulfilling a minimum data availability requirement, if applicable. The source shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

iii. Response to Excursions or Exceedances

A. Pursuant to 40 CFR 64.7(d)(1), upon detecting an excursion or exceedance, the source shall restore operation of the PSEU (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Such actions may include initial inspection and evaluation, recording that operations returned to normal without operator action (such as through response by a computerized distribution control system), or any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.

B. Pursuant to 40 CFR 64.7(d)(2), determination of whether the source has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include but is not limited to, monitoring results, review of operation and maintenance procedures and records, and inspection of the control device.

b. Monitoring - Monitoring

Pursuant to 40 CFR 64.7(a), the Permittee shall comply with the monitoring requirements of the CAM Plans as described in 7.3(f) below, pursuant to 40 CFR Part 64 as submitted in the source's CAM plan application.

c. Monitoring - Recordkeeping

Pursuant to 40 CFR 64.9(b)(1), the Permittee shall maintain records of the monitoring data, monitor performance data, corrective actions taken, monitoring equipment

maintenance, and other supporting information related to the monitoring requirements established for CAM.

d. Monitoring - Reporting

Pursuant to Sections 39.5(7)(b) and (f) of the Act, the source shall submit the following reporting requirements:

i. Semiannual Reporting

As part of the required Semiannual Monitoring Reports, the source shall submit a CAM report including the following at a minimum:

- A. Summary information on the number, duration, and cause of excursions or exceedances, and the corrective actions taken pursuant to 40 CFR 64.6(c)(3) and 64.9(a)(2)(i).
- B. Summary information on the number, duration, and cause for monitoring equipment downtime incidents, other than downtime associated with calibration checks pursuant to 40 CFR 64.6(c)(3) and 64.9(a)(2)(ii).

e. CAM Plans

The following tables contain the CAM Plans in this CAAPP permit:

Table	Emission Unit Section	PSEU Designation	Pollutant
7.3.1	4.4	Anhydrous Drying Kiln D-300	PM
7.3.1	4.4	Pentahydrate Kiln CY- 200	PM

Table 7.3.1 - CAM Plan

Emission Unit Section:	4.4
PSEU Designation:	D-300/CY-200
Pollutant:	PM

Indicators:	#1) Scrubbant Specific Gravity	Method 22 at DM-300
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General Criteria

The Monitoring Approach Used to Measure the Indicators:	Test the specific gravity of the scrubbant liquid by hydrometer	Method 22 visible emissions
The Indicator Range Which Provides a Reasonable Assurance of Compliance:	30 Baume maximum (Range 0-30 Be)	No visible emissions
Quality Improvement Plan (QIP) Threshold Levels:	More than 9 excursions in a six month reporting period.	More than 9 excursions in a six month reporting period.

General Criteria

The Specifications for Obtaining Representative Data:	To be representative an established safe job procedure (SJP) is followed	No visible emissions at Demister (DM-300) outlet
Verification Procedures to Confirm the Operational Status of the Monitoring:	N/A	N/A
Quality Assurance and Quality Control (QA/QC) Practices that Ensure the Validity of the Data:	Hydrometers are inspected, damaged/broken hydrometers are replaced	Follow method 22 practices
The Monitoring Frequency:	At least once every 24 hours period of operation	At least once every 24 hours period of operation, if weather conditions permit

<p>The Data Collection Procedures That Will Be Used:</p>	<p>log sheet</p>	<p>log sheet</p>
<p>The Data Averaging Period for Determining Whether an Excursion or Exceedance Has Occurred:</p>	<p>N/A</p>	<p>N/A</p>

Section 8 - State Only Requirements**1. Permitted Emissions for Fees**

- a. The annual emissions from the source solely for purposes of "Duty to Pay Fees" of Condition 2.3(e), not considering insignificant activities as addressed by Section 6, shall not exceed the following: [Section 39.5(18)(a)(ii) of the Act]

<i>Pollutant</i>		<i>Tons/Year</i>
Volatile Organic Material	(VOM)	0.8
Sulfur Dioxide	(SO ₂)	4.73
Particulate Matter	(PM)	34.83
Nitrogen Oxides	(NO _x)	11.94
HAP, not included in VOM or PM	(HAP)	
Total		52.30

- b. The overall source emissions shall be determined by adding emissions of the above pollutants from all emission units (not including insignificant activities) on a calendar year basis. The Permittee shall maintain records of annual emissions for fee purposes. [Section 39.5(18)(a)(ii) of the Act]

2. NO_x RACT Requirements

- a. This source is not subject to the NO_x RACT requirements because it is not located in the geographic areas specified in the 35 IAC 217.150(a)(1)(A)(i) for applicability.

Attachment 1 - List of Emission Units at This Source

<i>Section</i>	<i>Emission Units</i>	<i>Description</i>
4.1	#3 Sodium Silicate Furnace	21.2 mmBtu/hr with waste heat boiler natural gas fired (FU-500)
4.1	Soda Ash Silo (T-131) and Silica Sand Silo (T-143)	Sodium Silicate Raw Material Silos
4.2	PBR Boiler	Boiler 12.81 mmBtu/hr Natural Gas fired
4.3	Metso Air Heater	Drying heater 15.0 mmBtu/hr Natural Gas fired
4.4	Anhydrous Drying Kiln	Drying kiln used to dry the anhydrous metasilicate product
4.4	Pentahydrate Kiln	Drying kiln used to dry the pentahydrate metasilicate product
4.4	Bagging and Bulk Loading M-08A	Bagging and bulk loading of the metasilicate products
4.4	Bagging and Bulk Loading M-08B	Bagging and bulk loading of the metasilicate products
4.4	Discharge Screw/Elevator	Material transfer
4.5	Reactor Vessel	Reactor vessel for the production of Epsom salts
4.5	Crystallization Condenser	Dries the Epsom salts to form crystalline Epsom salt
4.5	Fluid Bed Dryer/Cooler	Dries the Epsom salts
4.5	Bulk Loading	Bulk loading of the Epsom salt product
4.5	Product Silo/Packaging Induction Valve	Storage of the Epsom salt product
4.5	Magnesium Oxide Storage Silo	Storage of Magnesium Oxide, raw material for Epsom salt process
4.5	Magnesium Oxide Transport System from Silo to Bin	Raw material transport for Epsom salt process
4.5	Reactor Tank	Reactor tank for production of liquid Epsom salt

Attachment 2 - Acronyms and Abbreviations

acfm	Actual cubic feet per minute
ACMA	Alternative Compliance Market Account
Act	Illinois Environmental Protection Act [415 ILCS 5/1 et seq.]
AP-42	Compilation of Air Pollutant Emission Factors, Volume 1, Stationary Point and Other Sources (and Supplements A through F), USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711
ATU	Allotment trading unit
BACT	Best Available Control Technology
BAT	Best Available Technology
Btu	British Thermal Units
CAA	Clean Air Act [42 U.S.C. Section 7401 et seq.]
CAAPP	Clean Air Act Permit Program
CAIR	Clean Air Interstate Rule
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CISWI	Commercial Industrial Solid Waste Incinerator
CO	Carbon monoxide
CO ₂	Carbon dioxide
COMS	Continuous Opacity Monitoring System
CPMS	Continuous Parameter Monitoring System
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
GHG	Green house gas
GACT	Generally Acceptable Control Technology
gr	Grains
HAP	Hazardous air pollutant
Hg	Mercury
HMIWI	Hospital medical infectious waste incinerator
hp	Horsepower
hr	Hour
H ₂ S	Hydrogen sulfide
I.D. No.	Identification number of source, assigned by IEPA
IAC	Illinois Administrative Code
ILCS	Illinois Compiled Statutes
IEPA	Illinois Environmental Protection Agency
kw	Kilowatts
LAER	Lowest Achievable Emission Rate
lbs	Pound
m	Meter
MACT	Maximum Achievable Control Technology

PQ LLC
I.D. No.: 099833AAB
Permit No.: 96030149

Date Received: 3/30/2020
Date Issued: 11/10/2020
Date Effective: 12/29/2020
Date Revised: TBD

M	Thousand
MM	Million
mos	Month
MSDS	Material Safety Data Sheet
MSSCAM	Major Stationary Sources Construction and Modification (Non-attainment New Source Review)
MW	Megawatts
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	Nitrogen oxides
NSPS	New Source Performance Standards
NSR	New Source Review
PB	Lead
PEMS	Predictive Emissions Monitoring System
PM	Particulate matter
PM ₁₀	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns as measured by applicable test or monitoring methods
PM _{2.5}	Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns as measured by applicable test or monitoring methods
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
PSD	Prevention of Significant Deterioration
PSEU	Pollutant-Specific Emission Unit
psia	Pounds per square inch absolute
PTE	Potential to emit
RACT	Reasonable Available Control Technology
RMP	Risk Management Plan
scf	Standard cubic feet
SCR	Selective catalytic reduction
SIP	State Implementation Plan
SO ₂	Sulfur dioxide
T1	Title I - identifies Title I conditions that have been carried over from an existing permit
T1N	Title I New - identifies Title I conditions that are being established in this permit
T1R	Title I Revised - identifies Title I conditions that have been carried over from an existing permit and subsequently revised in this permit
USEPA	United States Environmental Protection Agency
VOM	Volatile organic material

Attachment 3 - Contact and Reporting Addresses

<p style="text-align: center;">IEPA Compliance Section</p> <p style="text-align: center;">IEPA Stack Test Specialist</p> <p style="text-align: center;">IEPA Air Quality Planning Section</p> <p style="text-align: center;">IEPA Air Regional Field Operations Regional Office #2</p> <p style="text-align: center;">IEPA Permit Section</p>	<p>Illinois EPA, Bureau of Air Compliance & Enforcement Section (MC 40) 1021 North Grand Avenue East P.O. Box 19276 Springfield, Illinois 62794-9276</p> <p>Phone No.: 217/782-2113</p> <p>Illinois EPA, Bureau of Air Compliance Section Source Monitoring - Third Floor 9511 Harrison Street Des Plaines, Illinois 60016</p> <p>Phone No.: 847/294-4000</p> <p>Illinois EPA, Bureau of Air Air Quality Planning Section (MC 39) 1021 North Grand Avenue East P.O. Box 19276 Springfield, Illinois 62794-9276</p> <p>Phone No.: 217/782-2113</p> <p>Illinois EPA, Bureau of Air Regional Office #2 412 SW Washington Street, Suite D Peoria, Illinois 61602</p> <p>Phone No.: 309/671-3022</p> <p>Illinois EPA, Bureau of Air Permit Section (MC 11) 1021 North Grand Avenue East P.O. Box 19506 Springfield, Illinois 62794-9506</p> <p>Phone No.: 217/785-1705</p>
<p style="text-align: center;">USEPA Region 5 - Air Branch</p>	<p>USEPA (AR - 17J) Air and Radiation Division 77 West Jackson Boulevard Chicago, Illinois 60604</p> <p>Phone No.: 312/353-2000</p>

Attachment 4 - Example Certification by a Responsible Official

SIGNATURE BLOCK

NOTE: THIS CERTIFICATION MUST BE SIGNED BY A RESPONSIBLE OFFICIAL. APPLICATIONS WITHOUT A SIGNED CERTIFICATION WILL BE DEEMED AS INCOMPLETE.

I CERTIFY UNDER PENALTY OF LAW THAT, BASED ON INFORMATION AND BELIEF FORMED AFTER REASONABLE INQUIRY, THE STATEMENTS AND INFORMATION CONTAINED IN THIS APPLICATION ARE TRUE, ACCURATE AND COMPLETE. ANY PERSON WHO KNOWINGLY MAKES A FALSE, FICTITIOUS, OR FRAUDULENT MATERIAL STATEMENT, ORALLY OR IN WRITING, TO THE ILLINOIS EPA COMMITS A CLASS 4 FELONY. A SECOND OR SUBSEQUENT OFFENSE AFTER CONVICTION IS A CLASS 3 FELONY. (415 ILCS 5/44(H))

AUTHORIZED SIGNATURE:

BY:

AUTHORIZED SIGNATURE

TITLE OF SIGNATORY

_____/_____/_____

TYPED OR PRINTED NAME OF SIGNATORY

DATE

Summary of Changes

PQ LLC

I.D. No.: 099833AAB

Permit No.: 96030149

Application Received: March 21, 2022

Administrative Change(s)

There are no associated Administrative Changes with this Minor Modification request.

Minor Permit Modification(s)

Pursuant to Section 39.5(14)(a) of the Act, the following permit modification(s) qualify as a minor modification:

The source is removing the Sodium Silicate Manufacturing Process that formerly was Section 4.1 of the CAAPP permit.

The source is adding a temporary rental Permit by Rule boiler due to an unexpected failure of other boilers at the source.

Insignificant boilers that were mistakenly permitted as significant boilers were moved to the insignificant activities in section 6.

A Title 1 Revision (T1R) was made to remove the oil mode from Construction Permit #06090053. The previous CAAPP used 39.5(7)(a) of the Act to only allow natural gas usage, but the T1R makes the change permanent.

Streamlining Discussion

The source requested and has been granted streamlining of applicable rules.

35 IAC 201.530(e) Submit any monitoring information required by the PBR as part of the Semi-Annual Monitoring Report required by the source's CAAPP permit. This is already covered in Condition 3.5(b).

40 CFR 60c(g)(2) The owner or operator of an affected facility that combusts only natural gas or fuels not subject to an emissions standard (excluding opacity) may elect to record and maintain records of the amount of each fuel combusted during each calendar month. This is already covered by Condition 4.2.2(c)(ii)(A)(II).

35 IAC 201.530(c) Except as otherwise provided 35 IAC 201 Subpart M or 35 IAC 201 Subpart N, submit a written report of any deviations from the applicable emission standards, emission limitations, operational restrictions, qualifying criteria, work practice requirements, or control equipment operating parameter limitations set forth in 35 IAC 201 Subpart M and the 35 IAC 201 Subpart N. The report must be submitted to the Illinois EPA within 30 days after the date the deviation occurred and must describe the deviation (including the date, time, and duration of the deviation), identify the specific requirement from which the deviation occurred and the total amount of excess emissions during the deviation, and describe the probable cause of the deviation and any corrective actions or preventive measures that have been or will be taken. This requirement is already covered in Condition 4.2.5(a).

35 IAC 201.530(b) Notify the Illinois EPA of the emission unit's actual start-up date no later than 30 days after that date, unless an earlier date is specified in the applicable PBR. This requirement is already covered in a more stringent requirement in 40 CFR 60.48c(c) which requires notice in 15 days.

RFM:96030149:tan

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Cc: [Jennie Houle \(NS\)](#); [Ken Schulte \(Joliet\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#); [Schnepp, Jason](#)
Subject: RE: Production Data
Date: Thursday, May 12, 2022 12:51:00 PM

I can understand the justification for why 2020 was out, but while production was down in 2019, why can't its emissions data be used with that of 2018?

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Thursday, May 12, 2022 11:58 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>; Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>
Cc: Jennie Houle (NS) <Jennie.Houle@silicates.com>; Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>
Subject: [External] RE: Production Data

Bob,

Please see the table below:

2021 should not apply since it was after the permit application submittal date. There needs to be cutoff for permit review purposes, and that cutoff should be the application date (in line with the federal rules). Also, 2021 production was again impacted by Covid19 and emergency repairs to the furnace side walls.

Thanks,

Mark

331-444-8900

Joliet Production

Year	Annual Glass Production (lb)	Glass Production (Metric Tons)
2015	70,883,769	32,152
2016	64,923,289	29,449
2017	71,115,440	32,257
2018	70,956,000	32,185
2019	60,212,453	27,312
2020	50,875,900	23,077
2021	59,111,111	26,813

From: Smet, Robert <Robert.Smet@Illinois.gov>

Sent: Thursday, May 12, 2022 9:59 AM

To: Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pgcorp.com>

Subject: Production Data

This Message Is From an External Sender

[Report Suspicious](#)

This message came from outside your organization.

Could you provide calendar year production data (2015 to 2021) to support the use of the requested earlier years in your calculations?

Thanks.

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From: [Paige Pryse](#)
To: [Smet, Robert](#)
Subject: [External] Automatic reply: Production Data
Date: Thursday, May 12, 2022 12:51:38 PM

I am out of the office until May 17th at 8 a.m. I will be checking my emails periodically and can be reached by cell phone at 502-262-2239 if you have an urgent need which cannot wait until my return.

Thank you.

Paige Pryse

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Cc: [Jennie Houle \(NS\)](#); [Ken Schulte \(Joliet\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#); [Schnepp, Jason](#)
Subject: [External] RE: Production Data
Date: Thursday, May 12, 2022 1:00:06 PM

Bob,

I believe as noted in the original application (and yesterday's comment balloon on page 9), 2019 was impacted by a [rare] Polar Vortex event that froze process lines such that production could not occur. Additionally, the furnace skimmer block had a catastrophic failure significantly impacting production in November. Overall, it was not a normal, representative year.

Thanks,

Mark

331-444-8900

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, May 12, 2022 12:51 PM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>
Cc: Jennie Houle (NS) <Jennie.Houle@silicates.com>; Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>; Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Subject: RE: Production Data

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Sent: Thursday, May 12, 2022 11:58 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>; Chloe Reece (<CReece@trinityconsultants.com>
<CReece@trinityconsultants.com>
Cc: Jennie Houle (NS) <Jennie.Houle@silicates.com>; Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>
Subject: [External] RE: Production Data

Bob,

Please see the table below:

2021 should not apply since it was after the permit application submittal date. There needs to be cutoff for permit review purposes, and that cutoff should be the application date (in line with the federal rules). Also, 2021 production was again impacted by Covid19 and emergency repairs to the

furnace side walls.

Thanks,
Mark
331-444-8900

Joliet Production

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Sent: Thursday, May 12, 2022 9:59 AM

To: Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>; Mark Skowron (Joliet) <Mark.Skowron@pgcorp.com>

Subject: Production Data

This Message Is From an External Sender

[Report Suspicious](#)

This message came from outside your organization.

Could you provide calendar year production data (2015 to 2021) to support the use of the requested earlier years in your calculations?

Thanks.

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From: [Smet, Robert](#)
To: [Ogulei, David](#)
Cc: [Wolski, Daniel](#); [Marcus, Danny](#); [Schnepp, Jason](#)
Subject: RE: Revised PQ Permit
Date: Thursday, May 12, 2022 1:07:00 PM

Here's what they provided.

Joliet Production

Year	Annual Glass Production (lb)	Glass Production (Metric Tons)
2015	70,883,769	32,152
2016	64,923,289	29,449
2017	71,115,440	32,257
2018	70,956,000	32,185
2019	60,212,453	27,312
2020	50,875,900	23,077
2021	59,111,111	26,813

2019 was impacted by a Polar Vortex event that froze process lines such that production could not occur. Additionally, the furnace skimmer block had a catastrophic failure significantly impacting production in November. [A skimmer block is a refractory block that holds back glass surface impurities, positioned at the forehearth entry and adjacent to the refiner (distributor/working end)]

I can understand why 2020 is out (b/c covid) and the 2021 data determination predated the application (November of last year). 2021 was also a covid year.

I don't see a reason not to accept the use of 2018 and 2019.

From: Ogulei, David <Ogulei.David@epa.gov>
Sent: Thursday, May 12, 2022 10:43 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Cc: Wolski, Daniel <Wolski.Daniel@epa.gov>; Marcus, Danny <marcus.danny@epa.gov>
Subject: [External] RE: Revised PQ Permit

Hi Bob,

The changes look good. See the attachment for my follow-up thoughts. Please share the production data (or your review of it) when you receive it from the source. I'm concerned about the precedent it could set if there's no site-specific basis for allowing the exception.

I'm available for a call this afternoon if we need one.

David

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, May 12, 2022 9:57 AM
To: Ogulei, David <Ogulei.David@epa.gov>
Subject: Revised PQ Permit

Hi David,

I have attached the revised draft permit for PQ. Would you mind taking a look at it on short notice (sorry – things are rushed here!)? Perhaps we could have a call later today or tomorrow morning.

Regarding the Table at the back, I am in the process of getting the production data from PQ to support their contention that use of earlier years was appropriate.

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Subject: Version Before Public Comment
Date: Thursday, May 12, 2022 3:18:00 PM
Attachments: [21110013_050322.doc](#)

Hi Mark & Chloe,

The attached is the version we revised based on your comments and those from Region 5.

We plan to initiate public notice and comment tomorrow.

Thanks.

Bob

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-13-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, ~~with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.~~

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. ~~These hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.~~

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Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

Commented [SR1]: Once we have a CEMS, a 365-day rolling average is doable. Prior to CEMS, we propose an hourly limit (lb/hr) with compliance determined by stack test. Does this satisfy?

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a. ~~This rate limit shall only apply whenever the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).~~

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ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1-25 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed ~~and controlled by baghouse [?], i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.~~

Commented [SR2]: What is the baghouse's designation?

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~~Note: Given that this limit is based on the use of the baghouse, it cannot be considered to be The baghouse associated with this process does not constitute air pollution control equipment and is solely for the purpose of industrial hygiene purposes.~~

Commented [SR3]: We received new information indicating that the emission rates reflect use of the control device, so we will make it enforceable and include appropriate monitoring (pressure drop) and recordkeeping (operating logs).

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e. i. ~~Except as provided by Condition 4(e)(ii), Compliance~~ compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

~~ii. When During operation of the NOx CEMS is in operation, compliance with annual NOx limits established by this permit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).~~

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5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for ~~CO~~, NOx, CO, PM and PM₁₀/PM_{2.5} emissions.

Page 4

B. 1. This testing for NOx, ~~NOx~~, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

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Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

~~* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.~~

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

Page 5

- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
 - A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records

Page 6

of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within ~~9 to~~ 15 months after the initial ~~re~~-startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. ~~At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall monitor compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors as approved in writing by the Illinois EPA.

Commented [SR4]: We will need to rely on the stack test prior to installation of the CEMS. We are not aware of other monitoring to verify compliance with the NOx limits. If the CEMS goes down, we would propose monthly roll since we won't have daily data. OK? (we won't be authorizing operation without the cems but if it goes down, we will need appropriate records)

Commented [SJ5]: While not applicable, this seems consistent with 40 CFR 60.13(e).

Commented [SR6]: This was an artifact of an early draft that had limits in terms of lbs/ton (pre-cems draft). We propose to delete this language and require concentration and flow records that will be used to determine daily emissions.

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7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

Page 7

- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - ~~viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for that is performed on the unit.~~
 - ~~viii.~~ viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
 - ~~x. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for PM that is performed on the unit.~~
 - ~~xi. The Permittee shall measure and maintain records for the pressure drop across the Baghouse XYZ once per operating day.~~
- c.
- i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for

Page 8

purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Subject: Timing
Date: Friday, May 13, 2022 8:20:00 AM

How soon do you think you will have your comments to me this morning? I want to give the draft permit and project summary to our Community Relations unit as soon as I am able. Thanks.

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece](#)
Subject: RE: Timing
Date: Friday, May 13, 2022 8:34:00 AM

My apologies. If nothing else, just figured you'd want to see it before it goes out but it also gives you a chance to target something you would otherwise ask about during the comment period (which we want to avoid).

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Friday, May 13, 2022 8:31 AM
To: Chloe Reece <CReece@trinityconsultants.com>; Smet, Robert <Robert.Smet@Illinois.gov>
Subject: [External] RE: Timing

Same...

From: Chloe Reece <CReece@trinityconsultants.com>
Sent: Friday, May 13, 2022 8:27 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>; Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Subject: RE: Timing

This Message Is From an External Sender

[Report Suspicious](#)

This message came from outside your organization.

Bob –

Sorry, it wasn't apparent to me from your message yesterday that we could still comment on the version you sent around 3:15 PM.

I will look at it now.

- Chloe

Chloe Reece
Principal Consultant

P 630.495.1470
1801 S Meyers Rd – Suite 350, Oakbrook Terrace, IL 60181
Email: creece@trinityconsultants.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, May 13, 2022 8:20 AM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Chloe Reece <CReece@trinityconsultants.com>
Subject: Timing

How soon do you think you will have your comments to me this morning? I want to give the draft

permit and project summary to our Community Relations unit as soon as I am able. Thanks.

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

From: [Metz, Cassandra](#)
To: [Smet, Robert](#)
Subject: RE: Reminder
Date: Friday, May 13, 2022 10:27:32 AM
Attachments: [image001.png](#)
[image007.png](#)
[image008.jpg](#)
[image009.png](#)
[image003.png](#)

Haha. Thank you. As soon as you send the draft permit I'll post it online and send the email.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, May 13, 2022 9:25 AM
To: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Subject: RE: Reminder

Simultaneous emails! Here's the mailing address:

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

From: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Sent: Friday, May 13, 2022 9:24 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Reminder

Good morning. Just waiting on your draft permit and project summary so I can post online. I've already printed the notice. If you'll be working on it for a few more hours, can you send me the mailing address for the facility? That way I can at least get it out with the rest of the mail.

Cassie

Cassandra Metz
Community Relations Coordinator
Associate Director's Office
(217)785-7491



From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, May 11, 2022 2:22 PM
To: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Subject: Reminder

Please be alert to our need to initiate the public notice and comment period for a draft permit on Friday.

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Cc: [Jennie Houle \(NS\)](#); [Ken Schulte \(Joliet\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#)
Subject: [External] RE: Timing
Date: Friday, May 13, 2022 11:25:13 AM
Attachments: [21110013 051322 \(comments before PN\) PQ comments.doc](#)

Bob,

We made a couple of minor edits. Please see the attachment:

Thanks,

Mark

331-444-8900

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Friday, May 13, 2022 8:20 AM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>
Subject: Timing

This Message Is From an External Sender

[Report Suspicious](#)

This message came from outside your organization.

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Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-13-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued ~~June 14, 2022~~ ~~(December 31, 2020)~~ the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, ~~with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.~~

Commented [CR1]: Apparently this date got changed at some point and we missed it. It should be December 31, 2020 (i.e., the date that was listed in an earlier draft of the permit, which we confirmed is the correct CAAPP issuance date).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. ~~These hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A) 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.~~

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0 31.4	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

Commented [SR2]: Once we have a CEMS, a 365-day rolling average is doable. Prior to CEMS, we propose an hourly limit (lb/hr) with compliance determined by stack test. Does this satisfy?

Commented [CR3R2]: PQ would like the same hourly limit that is in the current permit until the performance test is done and the CEMS is installed. The 25 lb/hr value does not offer any operational flexibility on a short-term basis. Consistent with the other pollutants (e.g., CO, the short term limits remain the same.)

a. ~~This rate limit shall only apply whenever the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).~~

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1-25 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed ~~and controlled by a baghouse [2],~~ i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Commented [SR4]: What is the baghouse's designation?

Commented [CR5R4]: This baghouse does not have an ID number.

Formatted: Highlight

~~Note: Given that this limit is based on the use of the baghouse, it cannot be considered to be the baghouse associated with this process does not constitute air pollution control equipment and is solely for the purpose of industrial hygiene purposes.~~

Commented [SR6]: We received new information indicating that the emission rates reflect use of the control device, so we will make it enforceable and include appropriate monitoring (pressure drop) and recordkeeping (operating logs).

e. i. Except as provided by Condition 4(e)(ii), ~~Compliance~~ compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

ii. ~~When During operation of the NOx CEMS is in operation, compliance with annual NOx limits established by this permit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).~~

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for ~~CO~~, NOx, CO, PM and PM₁₀/PM_{2.5} emissions.

Page 4

B. 1. This testing for NOx, NOx, CO, PM and PM10/PM2.5 shall also be conducted at least once every five years thereafter.

2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

Commented [CR7]: Every 5 year testing of NOx should not be necessary once the CEMS is installed and RATAs are being performed, and Condition B.2 requires annual testing in the event that the CEMS is delayed. Please remove NOx here.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or Method 3A
Moisture	Method 4
PM (filterable)	Method 5
PM10/PM2.5 (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

Commented [CR8]: PQ's typical stack testing firm suggested the permit also should allow Method 3A.

* Testing for filterable PM10/PM2.5 need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM10/PM2.5.

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

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- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
 - A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records

Page 6

of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within ~~9 to~~ 15 months after the initial ~~re~~-startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. ~~At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall monitor/demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors as approved in writing by the Illinois EPA.

Commented [SR9]: We will need to rely on the stack test prior to installation of the CEMS. We are not aware of other monitoring to verify compliance with the NOx limits. If the CEMS goes down, we would propose monthly roll since we won't have daily data. OK? (we won't be authorizing operation without the cems but if it goes down, we will need appropriate records)

Commented [SJ10]: While not applicable, this seems consistent with 40 CFR 60.13(e).

Commented [SR11]: This was an artifact of an early draft that had limits in terms of lbs/ton (pre-cems draft). We propose to delete this language and require concentration and flow records that will be used to determine daily emissions.

Commented [CR12R11]: OK

Commented [CR13]: Does this mean use the lb/hr x hrs of operation to gap fill for the annual emissions limit?

Or does this also require a lbs/ton factor derived from the stack test x short-term production to show compliance with the lb/hr?

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

Page 7

- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. ~~A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for that is performed on the unit.~~
 - ~~viii.~~ viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
 - x. A log of all maintenance and inspections related to performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
 - xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse XYZ once per operating dayweek during periods that the feed system is operating.
- c.
 - i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for

Commented [CR14]: We suggest weekly monitoring, since this unit does not have emissions high enough to be subject to CAM. We also cleaned up the wording since it does not have an ID number.

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purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	 	23.9
De Minimis Threshold:	 	25
De Minimis?	 	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Metz, Cassandra](#)
Subject: Here's the Draft Permit
Date: Friday, May 13, 2022 11:45:00 AM
Attachments: [21110013 050322 to Cassie.doc](#)

Date Issued line is highlighted.

Thanks in advance.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued: DRAFT 5-13-2022

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NO _x	25.0 ^a	109.6
CO	8.20	35.9

VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

- a. This limit shall only apply when the NO_x CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).
- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
- e.
 - i. Except as provided by Condition 4(e)(ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
 - ii. When the NO_x CEMS is in operation, compliance with annual NO_x limit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).

5. Emission Testing

- a.
 - i.
 - A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NO_x, CO, PM and PM₁₀/PM_{2.5} emissions.
 - B.
 - 1. This testing for NO_x, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
 - 2. Testing for NO_x shall also be conducted at least once a year until the NO_x CEMS required under Condition 6 has been installed and is operational.

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Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.

Page 5

- B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NO_x CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.

Page 6

- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
 - iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- b. During periods when the NO_x CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NO_x conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log for the NO_x monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.

Page 7

- ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
- xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
 - i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

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Page 8

application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

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2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Metz, Cassandra](#)
To: [Hart, Kristin L - DNR](#); [J Brush](#); [Kendall Hale](#); [Morse, James \(EEC\)](#); [Rex Lane](#); [Sarah Piziali](#)
Cc: [Frost, Brad](#)
Subject: PQ LLC 197045ABO 21110013
Date: Friday, May 13, 2022 11:53:49 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.jpg](#)
[image004.png](#)
[PN New Construction Permit.pdf](#)
[image005.png](#)

PQ LLC has applied for a draft Construction permit. Attached is the public notice. The Illinois EPA will accept public comments from 05/13/2022 to 06/12/2022. The draft permit and other documents are available on our website <http://bit.ly/2SiUSql>.

ID No.: 197045ABO
Permit No.: 21110013
Source: PQ LLC

Cassandra Metz
Community Relations Coordinator
Associate Director's Office
(217)785-7491



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Illinois Environmental Protection Agency

Notice of Public Comment Period
Proposed Issuance of a Construction Permit
PQ LLC in Joliet

PQ LLC (PQ) has applied to the Illinois EPA Bureau of Air for a construction permit for a rebuild of its sodium silicate fusing furnace, and for other associated equipment at its sodium silicate manufacturing plant located at 111 Ingalls Avenue in Joliet. The key changes that PQ is proposing are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production. The project is not considered major for purposes of the state's rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. The source is not a major source under Illinois' rules for the Prevention of Significant Deterioration, 35 IAC Part 204.

Based on its review of the application, the Illinois EPA has made a preliminary determination that this project will comply with the applicable air pollution control regulations and has prepared a draft permit for public review.

The Illinois EPA is accepting comments prior to making a final decision on this application. Comments must be received by 11:59 PM on June 12, 2022. If sufficient interest is expressed in this matter, a hearing or other informational meeting may be held. Comments, questions and requests for information should be directed to Cassandra Metz, Office of Community Relations, Illinois EPA, PO Box 19506, Springfield, Illinois 62794-9506, phone 217/785-7491, TDD 866/273-5488, Cassandra.Metz@Illinois.gov.

The repositories for these documents and the application will be made available at the Illinois EPA's offices at 9511 Harrison Street, Des Plaines, 847/294-4000 and 1021 N. Grand Ave. East, Springfield, 217/785-7491 (please call ahead to assure that someone will be available to assist you). The draft permit and other documents may also be viewed at <http://bit.ly/2SiUSql>. Copies of the documents will be made available upon request to the contact listed above.

The facility is located in an area of Environmental Justice concern. More information concerning Environmental Justice may be found at <https://www2.illinois.gov/epa/topics/environmental-justice/Pages/default.aspx>.

From: [Smet, Robert](#)
To: [Smet, Robert](#)
Subject: PQ Readiness

From: [Smet, Robert](#)
To: [Metz, Cassandra](#)
Subject: RE: PQ LLC 197045ABO 21110013
Date: Thursday, June 2, 2022 9:35:00 AM
Attachments: [image001.png](#)
[image002.png](#)
[image004.png](#)
[image005.jpg](#)
[image006.png](#)

Good to know. Thanks.

From: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Sent: Thursday, June 2, 2022 9:29 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: PQ LLC 197045ABO 21110013

They go out in emails, snail mail, and get posted on our website and Twitter. I think we were doing newspaper notices for PSD construction permits up until October or something and then Brad told me US EPA said we could just post online or in a newsletter.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, June 2, 2022 9:20 AM
To: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Subject: RE: PQ LLC 197045ABO 21110013

Where did it get noticed?

From: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Sent: Thursday, June 2, 2022 8:43 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: PQ LLC 197045ABO 21110013

It did not get into a newspaper.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Wednesday, June 1, 2022 4:41 PM
To: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Subject: RE: PQ LLC 197045ABO 21110013

Quick question -- in what newspaper was this public notice published in?

From: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Sent: Friday, May 13, 2022 11:54 AM
To: Hart, Kristin L - DNR <Kristin.Hart@wisconsin.gov>; J Brush <JBRUSH@idem.in.gov>; Kendall Hale <kendall.hale@dnr.mo.gov>; Morse, James (EEC) <James.Morse@ky.gov>; Rex Lane <laner@michigan.gov>; Sarah Piziali <Sarah.Piziali@dnr.iowa.gov>

Cc: Frost, Brad <Brad.Frost@Illinois.gov>

Subject: PQ LLC 197045ABO 21110013

PQ LLC has applied for a draft Construction permit. Attached is the public notice. The Illinois EPA will accept public comments from 05/13/2022 to 06/12/2022. The draft permit and other documents are available on our website <http://bit.ly/2SiUSql>.

ID No.: 197045ABO

Permit No.: 21110013

Source: PQ LLC

Cassandra Metz

Community Relations Coordinator

Associate Director's Office

(217)785-7491



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From: DoNotReply.EJRequest@illinois.gov
To: [Metz, Cassandra](#); [Frost, Brad](#); [Pressnall, Chris](#); Cynthia.Sanchez@illinois.gov; [Herr, Alane](#); [Smet, Robert](#)
Subject: EJ Release Requested for PQ Corp | 197045ABO | 21110013 | Air
Date: Monday, June 6, 2022 9:25:49 AM

Permit section review is complete for (PQ Corp).

EJ release is needed.

From: DoNotReply.EJRequest@illinois.gov
To: [Metz, Cassandra](#); [Frost, Brad](#); [Pressnall, Chris](#); Cynthia.Sanchez@illinois.gov; [Herr, Alane](#); [Smet, Robert](#)
Subject: Outreach Status Change for PQ Corp | 197045ABO | 21110013 | Air
Date: Monday, June 6, 2022 9:33:37 AM

The EJ source (PQ Corp) has moved forward in the outreach process on 06/06/2022.

The status has changed from *Outreach In Progress* to *Complete - With Outreach*.

From: [Mark Skowron \(Joliet\)](#)
To: [Smet, Robert](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Cc: [Ken Schulte \(Joliet\)](#); [Jennie Houle \(NS\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#)
Subject: [External] RE: Version Before Public Comment - PQ LLC Joliet Construction Permit
Date: Thursday, June 9, 2022 11:40:07 AM
Attachments: [image003.jpg](#)

Bob,

We're just checking-in. Have any Public Comments been received? Are we still on schedule to have the permit issued on Monday, June 13th?

Thanks,

Mark

Mark J. Skowron

EHS Liaison

331-444-8900

hse_pq_sig



www.PQCorp.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, May 12, 2022 3:18 PM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>
Subject: Version Before Public Comment

This Message Is From an External Sender

This message came from outside your organization.

[Report Suspicious](#)

Hi Mark & Chloe,

The attached is the version we revised based on your comments and those from Region 5.

We plan to initiate public notice and comment tomorrow.

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Metz, Cassandra](#)
Subject: Quick Question
Date: Thursday, June 9, 2022 1:47:00 PM

I doubt that we have but I will still ask -- have we received any comments re PQ's construction permit whose PN ends on Sunday?

From: [Smet, Robert](#)
To: [Mark Skowron \(Joliet\)](#); [Chloe Reece \(CReece@trinityconsultants.com\)](#)
Cc: [Ken Schulte \(Joliet\)](#); [Jennie Houle \(NS\)](#); [Lou Henderson\(VF\)](#); [Paige Pryse](#)
Subject: RE: Version Before Public Comment - PQ LLC Joliet Construction Permit
Date: Thursday, June 9, 2022 1:53:00 PM
Attachments: [image001.jpg](#)

None have been received to this point. We are still on track to issue on Monday.

From: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>
Sent: Thursday, June 9, 2022 11:40 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>; Chloe Reece (CReece@trinityconsultants.com) <CReece@trinityconsultants.com>
Cc: Ken Schulte (Joliet) <Ken.Schulte@pqcorp.com>; Jennie Houle (NS) <Jennie.Houle@silicates.com>; Lou Henderson(VF) <lou.henderson@pqcorp.com>; Paige Pryse <Paige.Pryse@pqcorp.com>
Subject: [External] RE: Version Before Public Comment - PQ LLC Joliet Construction Permit

Bob,

We're just checking-in. Have any Public Comments been received? Are we still on schedule to have the permit issued on Monday, June 13th?

Thanks,
Mark

Mark J. Skowron
EHS Liaison
331-444-8900

hse_pq_sig



www.PQCorp.com

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, May 12, 2022 3:18 PM
To: Mark Skowron (Joliet) <Mark.Skowron@pqcorp.com>; Chloe Reece (<CReece@trinityconsultants.com>) <CReece@trinityconsultants.com>
Subject: Version Before Public Comment

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Hi Mark & Chloe,

The attached is the version we revised based on your comments and those from Region 5.

We plan to initiate public notice and comment tomorrow.

Thanks.

Bob

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From: [Smet, Robert](#)
To: [Smet, Robert](#)
Subject: Canceled: PQ Readiness
Importance: High

From: [Metz, Cassandra](#)
To: [Smet, Robert](#)
Subject: RE: Quick Question
Date: Monday, June 13, 2022 8:53:52 AM
Attachments: [Mailing List - PQ LLC.xlsx](#)
[image001.png](#)
[image003.png](#)
[image004.jpg](#)
[image005.png](#)
[image006.png](#)

We did not receive any comments for the PQ LLC construction permit (197045ABO). Please include the attached mailing list.

Cassandra Metz
Community Relations Coordinator
Associate Director's Office
(217)785-7491



From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Monday, June 13, 2022 8:48 AM
To: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Subject: RE: Quick Question

Can you send me an official response, for the records. Thanks.

From: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Sent: Friday, June 10, 2022 1:04 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Quick Question

Nothing yet...

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, June 9, 2022 1:53 PM
To: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Subject: RE: Quick Question

Thanks.

From: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Sent: Thursday, June 9, 2022 1:51 PM
To: Smet, Robert <Robert.Smet@Illinois.gov>
Subject: RE: Quick Question

I have not received any comments. If something comes in tomorrow/Monday, I'll definitely let you

know!

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Thursday, June 9, 2022 1:48 PM
To: Metz, Cassandra <Cassandra.Metz@Illinois.gov>
Subject: Quick Question

I doubt that we have but I will still ask -- have we received any comments re PQ's construction permit whose PN ends on Sunday?

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First Name	Last Name	Address	City	State	ZIP
American Lung Association of IL-IA	John DeRosa	3000 Kelly Lane	Springfield	IL	62711
HeplerBroom LLC	LaDonna Driver	4340 Acer Grove Dr.	Springfield	IL	62711
PQ LLC	Attn: Ken Schulte	111 Ingalls Avenue	Joliet	IL	60435
Congressman	Bill Foster	2711 E. New York Street, Suite 204	Aurora	IL	60502
American Environmental Corporation	Attn: Greg R. Michaud, Manage	3700 W. Grand Ave, Suite A	Springfield	IL	62711
Mayor	Bob O'Dekirk	150 W. Jefferson St.	Joliet	IL	60432
Mayor	Sam Wyke	79 Moen Ave.	Rockdale	IL	60436
County Board Chairman	Mimi Cowan	302 North Chicago Street	Joliet	IL	60432
County Clerk	Lauren Staley Ferry	302 North Chicago Street	Joliet	IL	60432
County State's Attorney	James W. Glasgow	57 N. Ottawa St	Joliet	IL	60432
Citizens Against Ruining the Environment	Attn: Wendy Vlasak	15021 High Rd.	Lockport	IL	60441
Theresa Udziela		13105 Silver Fox Dr.	Lemont	IL	60439
AFL-CIO	Tim Drea	534 S. 2nd St., Suite 200	Springfield	IL	62701

Emails

Duckworth contact	Chicago Office	Peter_Danos@duckworth.senate.gov
Brian Urbaszewski		burbaszewski@lungchicago.org
		CaroleCARE@aol.com
Keith Harley		kharley@kentlaw.iit.edu
Marvin Pickering		marvinpickering@sbcglobal.net
Ellen Rendulich		emrrealty@comcast.net
Illinois State Senator	John Connor	senatorconnor@gmail.com
Illinois State Representative	Lawrence Walsh, Jr.	statereplarrywalshjr@gmail.com
City Clerk	Christa Desiderio	cityclerk@joliet.gov
American Environmental Corporation	Ken Runkle	krunkle@aecspfd.com
Mayor of Crest Hill	Raymond Soliman	rsoliman@cityofcresthill.com
Clerk of Crest Hill	Christine Vershay-Hall	chall@cityofcresthill.com
Clerk of Rockdale	Frank Sennyey	sennyey@rockdaleillinois.org
Source:	111 Ingalls Ave, Joliet	

--	--	--

Municipalities within three miles of the source: Crest Hill, Rockdale

From: [Smet, Robert](#)
To: [Nation, Trent](#)
Subject: Please Format & Go Final
Date: Monday, June 13, 2022 9:31:00 AM
Attachments: [21110013 061322 Master After Comment.doc](#)

Thanks in advance.

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203.
- i. For NO_x, this is because the increase in emissions for NO_x of the affected fusing furnace is not significant. In particular, the increase in NO_x emissions is 24.1 tons, which is below the significant emissions rate of 40 tons/year for purposes of MSSCAM.
- ii. For VOM, this is because the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

* This limit shall only apply when the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
 - d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
 - e.
 - i. Except as provided by Condition 4(e)(ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
 - ii. When the NOx CEMS is in operation, compliance with annual NOx limit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).
5. Emission Testing
- a.
 - i.
 - A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NOx, CO, PM and PM₁₀/PM_{2.5} emissions.
 - B.
 - 1. This testing for NOx, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
 - 2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required

Page 4

under Condition 6 has been installed and is operational.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

Page 5

- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the

Page 6

exception of monitor malfunctions and short-term calibration issues.

- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- a. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.

Page 7

- viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
- ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
- xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
 - i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

Page 8

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Nation, Trent](#)
To: [Smet, Robert](#)
Subject: RE: Please Format & Go Final
Date: Monday, June 13, 2022 9:51:28 AM
Attachments: [21110013.doc](#)

This is done and printed.

From: Smet, Robert <Robert.Smet@Illinois.gov>
Sent: Monday, June 13, 2022 9:31 AM
To: Nation, Trent <Trent.Nation@Illinois.gov>
Subject: Please Format & Go Final

Thanks in advance.

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC

Attn: Ken Schulte

111 Ingalls Avenue

Joliet, Illinois 60435

Application No.: 21110013I.D. No.: 197045ABOApplicant's Designation:Date Received: November 8, 2021Subject: Fusing Furnace #2 Rebuild ProjectDate Issued:Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203.
- i. For NO_x, this is because the increase in emissions for NO_x of the affected fusing furnace is not significant. In particular, the increase in NO_x emissions is 24.1 tons, which is below the significant emissions rate of 40 tons/year for purposes of MSSCAM.
- ii. For VOM, this is because the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

* This limit shall only apply when the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
 - c. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
 - d.
 - i. Except as provided by Condition 4(e)(ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
 - ii. When the NOx CEMS is in operation, compliance with annual NOx limit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).
5. Emission Testing
- a.
 - i.
 - A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NOx, CO, PM and PM₁₀/PM_{2.5} emissions.
 - B.
 - 1. This testing for NOx, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
 - 2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
- B. The specific conditions under which testing will be performed, including a discussion of why these

conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NO_x CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13,

Page 6

40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.

Page 7

- x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
- xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
 - i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

Page 8

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

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2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
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 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
- 6.
- a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Schnepp, Jason](#)
To: [Walton, Marlisha M.](#)
Cc: [Smet, Robert](#); [Barrientos, Ana L.](#)
Subject: FW: Weekly reports 6/13/22
Date: Monday, June 13, 2022 9:56:01 AM

Forgot to include **Marlisha** on the first email.

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Schnepp, Jason
Sent: Monday, June 13, 2022 9:55 AM
To: Smet, Robert <Robert.Smet@Illinois.gov>; Barrientos, Ana L. <Ana.Barrientos@Illinois.gov>
Subject: FW: Weekly reports 6/13/22

Smet – PQ
Ana – Rivian, Lion

PS – **Marlisha**, we are planning to issue PQ and Lion today. We need to hold these entries for the weekly report until I sign the permits.

Jason Schnepp
Manager, CAAPP Construction Unit
217-524-3724

From: Walton, Marlisha M. <Marlisha.Walton@Illinois.gov>
Sent: Monday, June 13, 2022 9:47 AM
To: Bernoteit, Bob <Bob.Bernoteit@Illinois.gov>; Schnepp, Jason <Jason.Schnepp@Illinois.gov>
Cc: Edwards, Danielle <Danielle.Edwards2@Illinois.gov>
Subject: Weekly reports 6/13/22

Hi Jason and Bob,

Do you have anything to add to the weekly report?

Filmquest Group, Inc. (Bolingbrook, Will County):

On June 9, 2022, the Bureau of Air Permit Section issued a Federally Enforceable State Operating Permit (FESOP) for a rotogravure coater with a 3natural gas-fired drying oven and one solvent parts washer to Filmquest Group, Inc. Filmquest Group, Inc. manufactures polyethylene terephthalate film packaging products. The purpose of the FESOP was to limit the source's emissions to avoid being subject to the Clean Air Act Permit Program (CAAPP), 35 Ill. Adm. Code Part 203 (Nonattainment New Source Review) and the control requirements under 35 Ill. Adm. Code Part 218 Subpart H (Printing and Publishing). This FESOP was processed under an expedited review within the

timeframe provided in the contractual agreement.

*Office Coordinator
Illinois Environmental Protection Agency
Bureau of Air*

State of Illinois - CONFIDENTIALITY NOTICE: The information contained in this communication is confidential, may be attorney-client privileged or attorney work product, may constitute inside information or internal deliberative staff communication, and is intended only for the use of the addressee. Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify the sender immediately by return e-mail and destroy this communication and all copies thereof, including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

From: [Smet, Robert](#)
To: [Ken Schulte \(Joliet\)](#); [Mark Skowron \(Joliet\)](#)
Cc: [Chloe Reece \(CRreece@trinityconsultants.com\)](mailto:CRreece@trinityconsultants.com)
Subject: Issued Permit
Date: Monday, June 13, 2022 11:21:00 AM
Attachments: [PQ Final.pdf](#)

See attached. We received no comments during the comment period. We removed the Attachment and changed Condition 3(a).

**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC

Attn: Ken Schulte

111 Ingalls Avenue

Joliet, Illinois 60435

Application No.: 21110013I.D. No.: 197045ABOApplicant's Designation:Date Received: November 8, 2021Subject: Fusing Furnace #2 Rebuild ProjectDate Issued: JUN 13 2022Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203.
 - i. For NO_x, this is because the increase in emissions for NO_x of the affected fusing furnace is not significant. In particular, the increase in NO_x emissions is 24.1 tons, which is below the significant emissions rate of 40 tons/year for purposes of MSSCAM.
 - ii. For VOM, this is because the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g) (i) (B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g) (i) (C) of the CAAPP Permit.
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 - i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f) (i) (A) and 4.1.2(c) (i) (B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
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* This limit shall only apply when the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
- c. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
- d. i. Except as provided by Condition 4(e) (ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
- ii. When the NOx CEMS is in operation, compliance with annual NOx limit in Condition 4(b) (i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NOx, CO, PM and PM₁₀/PM_{2.5} emissions.
- B. 1. This testing for NOx, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
- 2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

Note: Ongoing compliance for NO_x is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
- B. The specific conditions under which testing will be performed, including a discussion of why these

conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NO_x CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13,

Page 6

40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.

Page 7

- x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
 - xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
- i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

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If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr SMS

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

From: [Smet, Robert](#)
To: [Metz, Cassandra](#)
Cc: [Schnepp, Jason](#)
Subject: PQ
Date: Monday, June 13, 2022 1:29:00 PM
Attachments: [PQ Final.pdf](#)

Here's PQ which got issued today so.

**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC

Attn: Ken Schulte

111 Ingalls Avenue

Joliet, Illinois 60435

Application No.: 21110013I.D. No.: 197045ABOApplicant's Designation:Date Received: November 8, 2021Subject: Fusing Furnace #2 Rebuild ProjectDate Issued: JUN 13 2022Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

2125 S. First Street, Champaign, IL 61820 (217) 278-5800
1101 Eastport Plaza Dr., Suite 100, Collinsville, IL 62234 (618) 346-5120
9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000
595 S. State Street, Elgin, IL 60123 (847) 608-3131

2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203.
 - i. For NO_x, this is because the increase in emissions for NO_x of the affected fusing furnace is not significant. In particular, the increase in NO_x emissions is 24.1 tons, which is below the significant emissions rate of 40 tons/year for purposes of MSSCAM.
 - ii. For VOM, this is because the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g) (i) (B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g) (i) (C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f) (i) (A) and 4.1.2(c) (i) (B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

* This limit shall only apply when the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
- c. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
- d.
 - i. Except as provided by Condition 4(e) (ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
 - ii. When the NOx CEMS is in operation, compliance with annual NOx limit in Condition 4(b) (i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).

5. Emission Testing

- a.
 - i.
 - A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NOx, CO, PM and PM₁₀/PM_{2.5} emissions.
 - B.
 - 1. This testing for NOx, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
 - 2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

Note: Ongoing compliance for NO_x is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
- B. The specific conditions under which testing will be performed, including a discussion of why these

conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NO_x CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13,

Page 6

40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.

Page 7

- x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
 - xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
- i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

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Page 8

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr SMS

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statues and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.



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STATE OF ILLINOIS

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Environmental Protection Agency
BUREAU OF AIR

PQ LLC
111 Ingalls Avenue
Joliet, Illinois 60435
Tel: (815) 727-3651
Fax: (815) 774-2804

October 29, 2021

Mr. Bill Marr
Manager, Permit Section
Division of Air Pollution Control (MC 11)
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794

Re: Construction Permit Application – Furnace Rebuild Project
PQ LLC – Joliet Plant
CAAPP Permit No. 96030053 | Facility ID 197045ABO

Dear Mr. Marr:

PQ LLC (formerly PQ Corporation) is submitting this construction permit application to rebuild portions of the existing sodium silicate manufacturing furnace (Fusing Furnace #2) at its facility located in Joliet, Illinois (Joliet Plant).

Furnace rebuilds are required to maintain the furnace due to degradation of the furnace refractory, normal wear-and-tear, and fouling of the furnace flues. The project at the Joliet Plant is expected to include replacing burners and associated burner control systems, changes to firing configuration, and increasing furnace volume. The project is expected to increase the solid glass production rate above current actual rates.

Enclosed are two (2) copies of the permit application and the application fee check. Should you have any questions regarding this application, please contact me at 815-774-2739 or PQ HSE Specialist Mark Skowron at 331-444-8900 / mark.skowron@pqcorp.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Schulte", is written over a faint, illegible background.

Ken Schulte
Site Manager

Enclosures: Construction Permit Application (2 copies)
Application Fee Check

cc: Mark J. Skowron, PQ Lead HSE Specialist [electronic copy]
Chloe Reece, Trinity Consultants [electronic copy]

CONSTRUCTION PERMIT APPLICATION

Furnace Rebuild Project

PQ LLC (formerly PQ Corporation) / Joliet Plant

Prepared By:

TRINITY CONSULTANTS

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October 2021

Project 211401.0095



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1. INTRODUCTION

PQ LLC (formerly PQ Corporation) (PQ) operates a sodium silicate and silica gel manufacturing facility located in Joliet, Illinois (Joliet Plant). PQ operates its Joliet Plant under Illinois Environmental Protection Agency (Illinois EPA) facility identification number 197045ABO and Clean Air Act Permit Program (CAAPP) Permit No. 96030053, which was renewed on December 31, 2020.

PQ is proposing to rebuild portions of the existing sodium silicate manufacturing furnace (Fusing Furnace #2) at the Joliet Plant. Fusing Furnace #2 is a 32 MMBTU/hr direct-fired natural gas regenerative furnace that is currently permitted to produce the equivalent of 138.8 metric tons (MT) of solid sodium silicate 'glass' per day. (In the facility's CAAPP permit, Condition 4.1.2.g.i.c limits the production rate to 12,750 lbs/hour and 55,845 tons/year.)¹ The facility is not requesting an increase to its current permitted throughput limitations. In fact, as discussed later in this application, to ensure the project does not trigger major source permitting, PQ is proposing to reduce the permitted production limits.

Furnace rebuilds are required to maintain the furnace due to degradation of the furnace refractory, normal wear-and-tear, and fouling of the furnace flues. The project at the Joliet Plant is expected to include replacing burners and associated burner control systems, changes to firing configuration, and increasing furnace volume. The project is expected to increase actual solid glass production rate to 48,281 tons/year (daily rate of 120 MT of solid sodium silicate ('glass') per day), which is still less than the permitted production limit as mentioned above.²

The Joliet Plant is located in Will County, which is designated as "attainment" for all criteria air pollutants except for ozone, for which the area is classified as a "serious nonattainment" area. The Joliet Plant's potential to emit (PTE) for volatile organic material (VOM), a precursor of ozone, is less than the "serious nonattainment" major source threshold of 50 tons per year (tpy). The facility's PTE for nitrogen oxides (NO_x), which is also an ozone precursor, is above the "serious nonattainment" major source threshold of 50 tpy. For purposes of Prevention of Significant Deterioration (PSD), the Joliet Plant is an existing minor source for all PSD pollutants. The Joliet Plant is also an area (non-major) source of Hazardous Air Pollutants (HAPs).

The proposed project emissions increase for NO_x will not be considered a major modification pursuant to the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21. The proposed project is also not a major modification pursuant to Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203, because the proposed project emissions increase for NO_x will be less than the 25 tpy de minimis threshold when other net emissions increases are included. Additional discussion is provided in Section 4 of this application. No changes to the facility's source status are anticipated from this project.

The sodium silicate manufacturing furnace (Fusing Furnace #2) is not subject to NO_x RACT requirements since it produces sodium silicate, and not glass and therefore does not meet the definition of a "Glass Melting Furnace" pursuant to 35 IAC 211.2625.

¹ One short ton (U.S. units) is equivalent to 0.907 metric ton(nes).

² Note that, due to periodic 'material surges' that may develop within the furnace, the product conveyor (downstream of the furnace) will be rated for instantaneous speeds equivalent to 150 MT/day. This instantaneous rating is recommended for safety reasons. For example, if a momentary furnace 'surge' occurs during normal operation, the operator must be able to increase the speed of the conveyor to avoid a spill.

There will be downstream modifications that will not debottleneck the furnace throughput or associated air emissions. The existing slat conveyor used for transferring sodium silicate from the furnace to the dissolvers will be replaced with a traditional mold conveyor. Additionally, the existing hopper/feeder system that supplies all three dissolvers with solid sodium silicate currently utilizes one main feeder. This feeder is located at the center of the three dissolvers and requires manual rotation to the desired dissolver. To eliminate the manual operation (safety improvement), PQ plans to replace the existing system with a hopper that will allow each dissolver to have its own dedicated feeder.

Included in this construction permit application are a plot plan and process flow diagrams and corresponding process description (Section 2), a summary of the project emissions and calculation methodology for the construction permit application (Section 3), and a discussion of the federal and state regulatory applicability for the project (Section 4). The application also includes the required CAAPP permit forms in Appendix A. Emission rate calculations are included in Appendix B in support of other information presented in the application.

2. PROCESS DESCRIPTION AND FACILITY DIAGRAMS

2.1 Process Description

The three active manufacturing areas at the Joliet Plant are the Sodium Silicate Manufacturing, Hydrogel Process, and Xerogel (i.e., Micronized Silica Gel) Process. The facility also includes three boilers, a warehouse and maintenance shop area (with parts washer and chemical storage totes), and ancillary equipment like an emergency generator engine (and associated diesel storage tank), cooling tower, and unloading/loading/storage activities. The only manufacturing area affected by this project is the Sodium Silicate Manufacturing area. The process description for this area is provided as follows.

2.1.1 Sodium Silicate Manufacturing

Soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired soda ash to silica sand ratio is obtained. From the mixer, the mixture of soda ash and silica sand is transported via bucket elevator and screw conveyor to Fusing Furnace #2. Any dust generated from the silos, weigh bin and mixer (collectively referred to in the current CAAPP permit as "Fusing Feed") is captured by a shared Micropul Feed Baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000 °F. The furnace is natural gas fired and has a rated heat input capacity of 32 million Btu per hour (MMBtu/hr). PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers (T-103, T-104 or T-105), or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through several intermediate tanks (T-106, T-107, T-113 and T-116), can be filtered (using filter aid or similar dry raw materials added through insignificant activity bag dump stations at T-110 and T-111) and then on to final liquid product storage (T-118, T-119, T-120, T-123 and T-124). This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (an insignificant activity).

As noted in Section 1 of this application, PQ plans to make modifications to the furnace as part of a periodic furnace rebuild project. The project is expected to increase the production rate achieved in the furnace compared to past actual production. No new emission units will be added.

Figure 2-1 provides the plot plan of the Joliet Plant and Figure 2-2 is the process flow diagram of the Sodium Silicate Manufacturing process. Figures 2-3 and 2-4 provide the existing and proposed layouts of Fusing Furnace #2.

Figure 2-1. Plot Plan

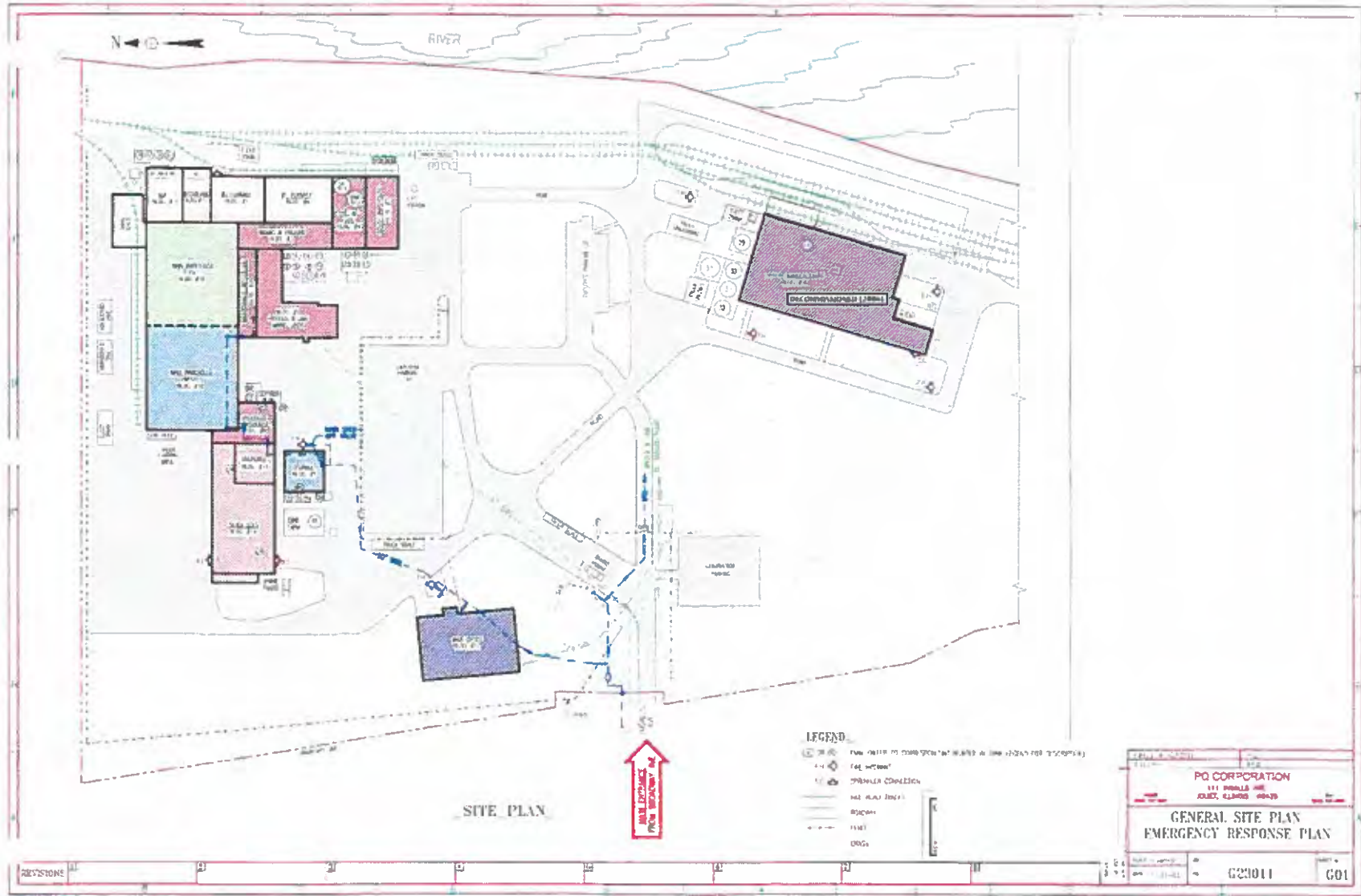


Figure 2-2. Process Flow Diagram for Sodium Silicate Manufacturing

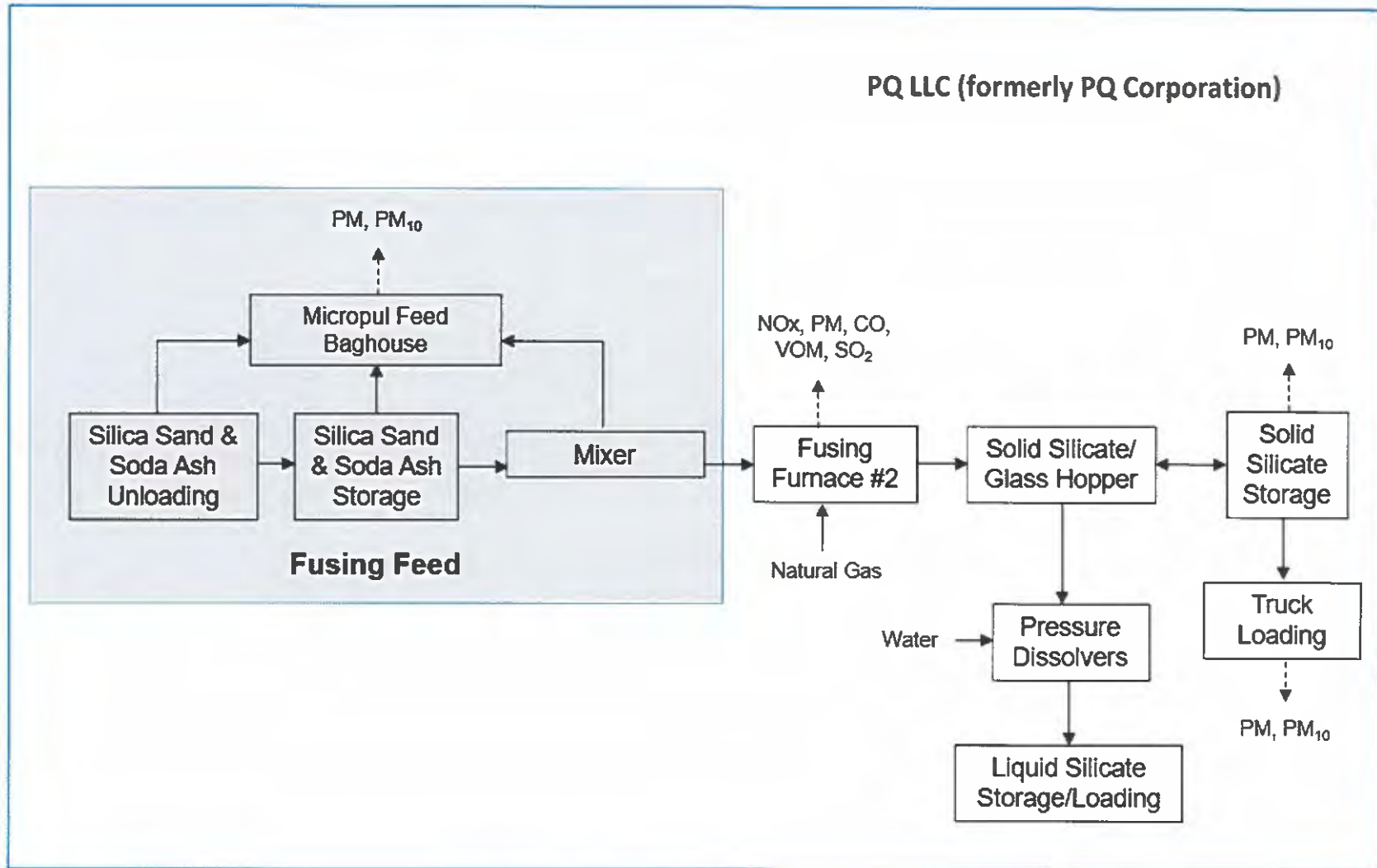


Figure 2-3. Existing Furnace Layout

Sodium Silicate Furnace Flow Diagram - Existing Before 2022 Rebuild

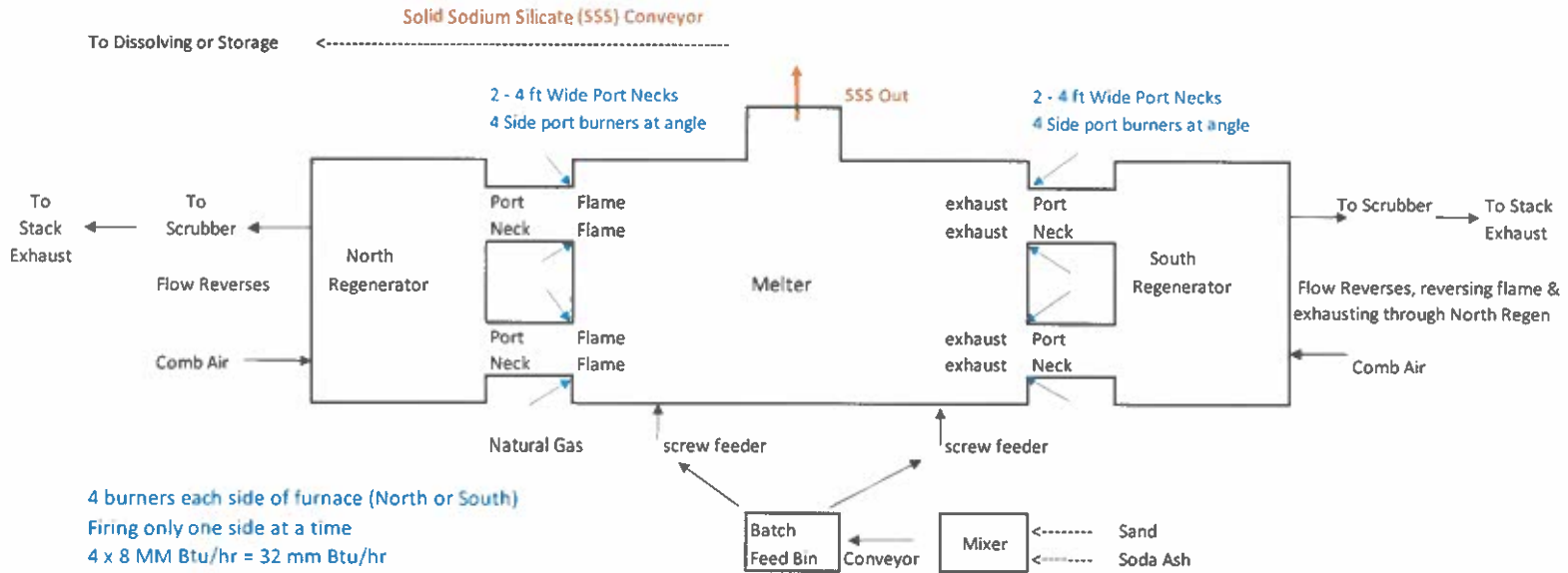
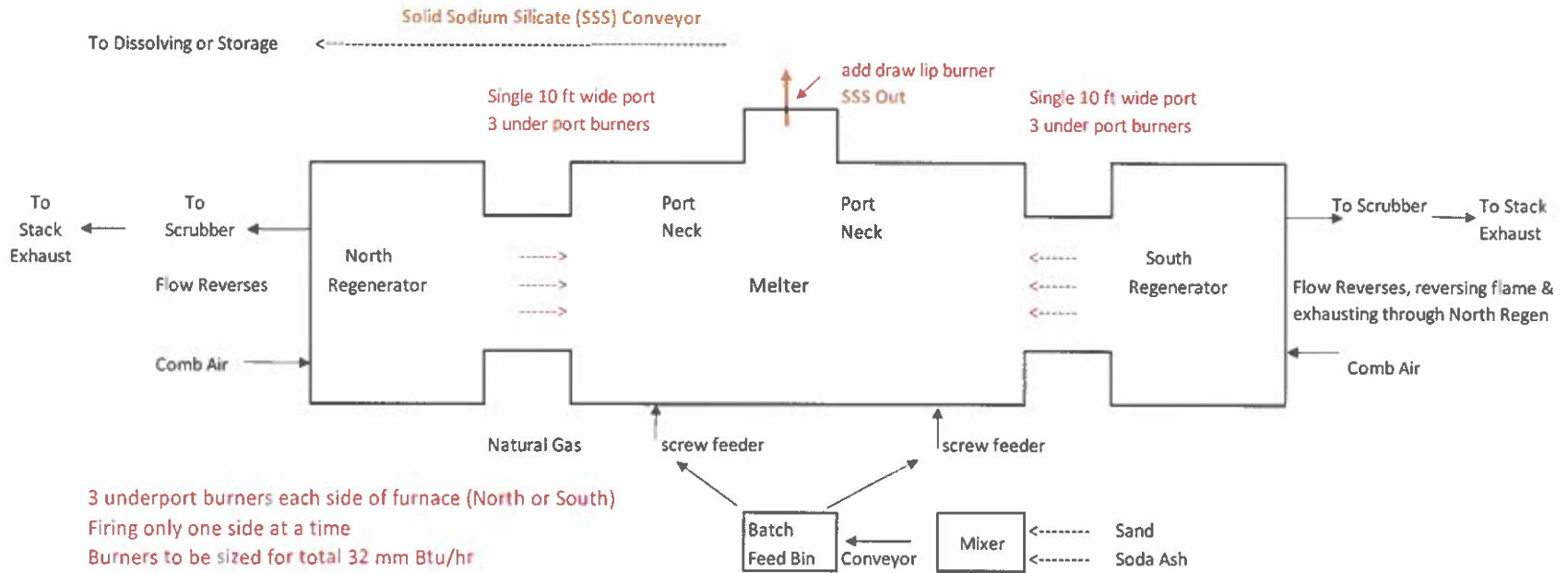


Figure 2-4. Proposed Furnace Layout

Sodium Silicate Furnace Flow Diagram - Changes to Furnace at 2022 Rebuild



3. PROJECT EMISSIONS

This section describes in detail the methods used to calculate emissions from the furnace rebuild project. As described previously in this application, no new emission units are being installed. The furnace modification will only result in additional utilization of existing plant capacity, leading to an increase in actual emissions.

3.1 Potential To Emit Methods

The potential emissions associated with the furnace after the rebuild were calculated based on an annual production capacity of 48,281 tons of solid sodium silicate 'glass' per year. The emission factor for carbon monoxide (CO) was obtained from 2008 stack test data and factors for NO_x and particulate matter (PM) from 2016 stack test data for the Joliet Plant furnace. Emission factors for VOM and sulfur dioxide (SO₂) are from United States Environmental Protection Agency (US EPA) published AP-42 emission factors found in Chapter 11.15 (Glass Manufacturing), Table 11.15-1 with a 20 percent safety factor added. Calculations are provided in Appendix B.

The potential emissions for all of the upstream and downstream equipment affected by the change in actual production capacity of the furnace were also calculated, and the methodology is described as follows. Calculations are provided in Appendix B.

- ▶ **Fusing Feed:** Emissions associated with unloading soda ash and sand from railcar or truck and transferring into silos are calculated based on the feed rates of these raw materials. The feed rates were adjusted to the expected furnace production capacity of 48,281 tons of solid sodium silicate 'glass' per year. The emissions from the unloading operations are controlled by a baghouse with a 99 percent control efficiency. An emission factor from AP-42 Chapter 8.12 (Sodium Carbonate), Table 8.12-2 for "controlled filterable PM emissions for soda ash storage/loading and unloading" was conservatively used to estimate emissions from both soda ash and sand unloading operations.³
- ▶ **Solid Sodium Silicate Bunker Transfers and Rail Car Loading:** Emissions associated with transfer of solid sodium silicate are calculated based on the maximum production rate of solid sodium silicate from the rebuilt furnace and emission factors from AP-42 Chapter 11.19.2 (Crushed Stone Processing and Pulverized Mineral Processing), Table 11.19.2-2 for "Crushed Stone Processing Operations". PQ's calculations account for up to five transfers / drop points (once into the bunker, once from bunker to bunker, once outdoors near the rail loading conveyor, once onto the conveyor, and once into a railcar.)
- ▶ **Tanks T-110 and T-111:** Emissions associated with dumping filter aid or similar dry material into tanks T-110 and T-111, which are used to filter intermediate dissolved sodium silicate 'glass,' are calculated based on maximum expected usage rate of the dry materials at the new expected furnace annual production rate. The emission factor is calculated from AP-42 Chapter 13.2.4 (Aggregate Handling and Storage Piles), Equation 1.

The following table summarizes the annual PTE of each of these emission units. The table also includes proposed monthly emission limits, set at one tenth of the annual limits. Fusing Furnace #2 currently has annual and hourly emission limits, which were established in Construction Permit No. 09090029. PQ is proposing to replace the hourly limits with monthly limits instead.

³ There is also an AP-42 section with emission factors for sand and gravel processing, with an emission factor that is less than the soda ash processing emission factor.

Table 3-1. Summary of Proposed Emission Limits

Emission Units	NOx	CO	PM10	VOM	SO2
Fusing Furnace #2	109.63 tpy 10.96 tons/mo	45.48 tpy 4.55 tons/mo	13.40 tpy 1.34 tons/mo	5.79 tpy 0.58 tons/mo	5.79 tpy 0.58 tons/mo
Fusing Feed	--	--	0.12 tpy	--	--
SSS Transfers	--	--	0.65 tpy	--	--
T-110 & T-111	--	--	< 0.01 tpy	--	--

PQ also proposes to replace the current Fusing Furnace #2 production limits of 12,750 lbs/hour and 55,845 tons/year with new limits of 48,281 tons/year and 4,828 tons/month.

3.2 Project Emissions Increase Calculations

Baseline actual emissions (for Fusing Furnace #2 and Fusing Feed) were determined from actual facility emissions from the two most recent and representative years, 2017 and 2018, as reported from the facility's Annual Emissions Report (AER). Per USEPA's 1990 draft document, "New Source Review Workshop Manual - Prevention of Significant Deterioration and Nonattainment Area Permitting,"⁴ Section III.B.3 - Creditable Contemporaneous Emissions Changes, "In certain limited situations where the applicant adequately demonstrates that the prior 2 years is not representative of normal source operation, a different (2 year) time period may be used upon a determination by the reviewing agency that it is more representative of normal source operation. Normal source operations may be affected by strikes, retooling, major industrial accidents and other catastrophic occurrences." As described below, the two most recent calendar years (2019 and 2020) do not represent normal source operation of Fusing Furnace #2 at the Joliet Plant due to the following reasons:

- ▶ Year 2019: In late January 2019, the Chicago area saw extreme cold weather (a "polar vortex" event) which resulted in some piping that froze and then cracked, causing equipment downtime. This affected furnace production in February 2019, because the third-party personnel and materials needed to make the repairs were not immediately available. This was followed by, in the second quarter of 2019, maintenance work on the conveyor used to transport sodium silicate from the furnace -- without which the furnace cannot operate. Finally, in the fourth quarter, another mechanical part internal to the furnace (the skimmer block) failed and needed to be repaired. Given that three out of the four quarters in 2019 had either weather-related equipment downtime or maintenance and repair, the production was much lower than normal, and this year was not representative of normal operations.
- ▶ Year 2020: Starting in March 2020, COVID-19 caused low customer demand and PQ had to decrease production at the Joliet Plant accordingly. The Joliet Plant production is mostly tied to one large customer, whose business was also negatively impacted by COVID-19, and the Joliet Plant has limited inventory space for product storage. Additionally, there was significant downtime due to routine maintenance and repair of the furnace slat conveyor and furnace skimmer block. Therefore, 2020 also was not representative of the facility's normal operations.

The baseline emissions for filter aid dumps into T-110/111, and for solid sodium silicate transfers, are not required to be in the AER because these are CAAPP permit insignificant activities. The baseline emissions for dry material dumping into tanks T-110 and T-111 were estimated based on actual filter aid usage in 2017

⁴ This document can be found at <https://www.epa.gov/sites/default/files/2015-07/documents/1990wman.pdf>

and 2018. The baseline actual emissions for sodium silicate transfers were estimated by multiplying the potential emissions calculated for these activities per Section 3.1 of this application by the ratio of the actual glass production rates in 2017 and 2018 (35,558 tons of solid glass in 2017 and 35,478 tons of solid glass in 2018) and the proposed annual glass production limit (48,281 tons of solid glass per year). The actual glass production rates have been documented by the Joliet Plant in the AER.

Project emissions increases were calculated as the difference between the average baseline actual emissions and the new potential emission rates calculated for after the project is completed. Because PQ is changing the emission calculation methodology for the storage and loading of fusing feed, the emission difference between the proposed limits and baseline actuals for this activity have not been accounted for (since they are not comparable). The proposed new emissions are accounted for without subtracting any baseline emissions. The project emissions results are summarized in the following table. Detailed emission calculations are included in Appendix B.

Table 3-2. Summary of Project Emissions Increases

Category	Emission Unit	PM	PM₁₀	PM_{2.5}	SO₂	NO_x	VOM	CO
2017 Actual Emissions	Furnace	8.79	8.79	8.79	5.17	86.28	5.17	32.60
	Fusing Feed	0.56	0.47	0.47				
	SSS Transfers	0.38	0.38	0.38				
	T-110 & T-111	<0.001	<0.001	<0.001				
2018 Actual Emissions	Furnace	8.64	8.64	8.64	5.08	84.79	5.08	32.04
	Fusing Feed	0.55	0.46	0.46				
	SSS Transfers	0.38	0.38	0.38				
	T-110 & T-111	<0.001	<0.001	<0.001				
Baseline Actual Emissions	Furnace	8.72	8.72	8.72	5.12	85.54	5.12	32.32
	Fusing Feed	0.55	0.47	0.47				
	SSS Transfers	0.38	0.38	0.38				
	T-110 & T-111	<0.001	<0.001	<0.001				
	Baseline Totals	9.65	9.57	9.57	5.12	85.54	5.12	32.32
Proposed New Emission Limits	Furnace	13.40	13.40	13.40	5.79	109.63	5.79	45.48
	Fusing Feed	0.12	0.12	0.12	--	--	--	--
	SSS Transfers	0.65	0.65	0.65	--	--	--	--
	T-110 & T-111	0.0006	0.0006	0.0006	--	--	--	--
	Combined PTE	14.17	14.17	14.17	5.79	109.63	5.79	45.48
Project Emissions Increase		5.07	5.07	5.07	0.67	24.09	0.67	13.16
PSD Threshold		N/A	250	250	250	N/A	N/A	250
NNSR Threshold		N/A	N/A	N/A	N/A	25	50	N/A
Below Threshold?		N/A	Yes	Yes	Yes	Yes	Yes	Yes

This table shows that none of the project emissions increases are greater than the threshold that would trigger major New Source Review permitting. This is discussed in more detail in Section 4 of this application.

Because the Joliet Plant is a major source of NO_x emissions in a serious ozone nonattainment area, pursuant to 35 IAC 203.207(d), the increase in NO_x emissions shown in Table 3-2 must be "aggregated with all other net increases in emissions from the source over any period of five consecutive calendar years that includes the year in which such increase occurred." The only other project at the Joliet Plant from 2017-2021 (the five-year period that includes when this application is being submitted) that impacted NO_x emissions is the addition of a 2.2 MMBTU/hr natural gas-fired heater to replace a 4.5 MMBTU/hr heater in 2019 in the warehouse area of the facility. Table 3-3 below shows the NO_x emissions increase for the proposed furnace rebuild project, summed with the PTE of the 2019 new heater and subtracting the average of the actual emissions reported for the prior heater for 2017 and 2018 (the two years before the heater was removed). The table also shows that there have been no other construction projects with NO_x emissions during the five-year aggregation period.

Table 3-3. Five-Year NO_x History for Joliet Plant

Year	Project Description	NO_x Emissions Increase (TPY)
2021	Furnace #2 Rebuild (See Table 3-2 above)	24.09
2020	None	--
2019	Add New 2.2 MMBtu/hr Heater	0.94
	Remove 4.5 MMBtu/hr Heater	-1.13
2018	None	--
2017	None	--
Increases Over 5 years		23.90
Allowable Increase Over 5 Years		25

4. REGULATORY APPLICABILITY

This section of the construction permit application describes the applicability or non-applicability of relevant state and federal air quality rules for the proposed project.

4.1 State Regulatory Applicability

The following paragraphs address the applicability of specific state requirements in Title 35 of the Illinois Administrative Code (35 IAC) to the proposed project.

4.1.1 35 IAC 203 - Non-Attainment New Source Review (NNSR)

The Joliet Plant is located in Will County, which is classified as serious non-attainment for ozone pursuant to 40 CFR 81.314. VOM and NO_x are precursors to ozone and are evaluated against 35 IAC Part 203 rule applicability thresholds. The Joliet Plant is an existing minor source of VOM emissions. Per 35 IAC 203.206(c), a physical change at an existing minor source triggers NNSR only if the change would constitute a major stationary source by itself (i.e., if the project emissions increase is at least 50 tpy, in the case of a serious ozone nonattainment area). The Joliet Plant is also an existing major source of NO_x emissions. Per 35 IAC 203.207(d), a change at a major stationary source located in a serious nonattainment is considered *de minimis* if the net emissions increase does not exceed 25 tons when aggregated with all other net increases in emissions from the source over five consecutive years.

As shown in Table 3-2 of this application, the project VOM emissions increase is less than 50 tpy. As shown in Table 3-3 of this application, the NO_x emissions increase is less than the 25 tpy *de minimis* threshold when other net emissions increase from 2017-2021 are included. Therefore, the proposed project is not subject to NNSR.

4.1.2 35 IAC 212.123 – Visible Emissions Limitations

Pursuant to 35 IAC 212.123(a), no emission unit at the Joliet Plant shall emit smoke or particulate matter with opacity greater than 30 percent into the atmosphere, except as provided in 35 IAC 212.123(b) and 212.124. The Fusing Furnace #2 and its associated emission units are currently subject to this rule and will continue to comply.

4.1.3 35 IAC 212.301 – Fugitive Particulate Matter

Pursuant to 35 IAC 212.301, no process shall have an emission of fugitive particulate matter that is visible by an observer looking generally toward the zenith at a point beyond the property line of the Joliet Plant. PQ will continue to comply with this regulation.

4.1.4 35 IAC 212.321/322 – Process Emission Units

35 IAC 212.321 and 35 IAC 212.322 prohibit the emission of particulate matter into the atmosphere in any one-hour period from process emission units. PQ will continue to comply with this regulation. The Fusing Feed silos, Solid Sodium Silicate transfer points, and dry material additions into T-110 and T-111 all have very low particulate matter emission rates that will easily comply with this rule. Compliance information for Fusing Furnace #2 is as follows:

- ▶ Short-term production rate (process weight rate): 120 MT/day, equivalent to 5.51 short (English) tons/hour

- ▶ Allowable PM emission rate, based on 212.321(b)(1) equation: $E = 2.54 \times (5.51)^{0.534} = 6.32$ lb/hr PM emissions
- ▶ Calculated PM emission rate, based on stack test emission factor described in Section 3 and Appendix B of this application: $(5.51 \text{ tons/hour}) \times (0.56 \text{ lb/ton}) = 3.06$ lb/hr PM emissions

4.1.5 35 IAC 214.301 – Process Emission Sources

35 IAC 214.301 limits the emission of sulfur dioxide into the atmosphere from any process emission source to 2000 ppm. PQ will continue to comply with this regulation. Fusing Furnace #2 fires natural gas in its burners.

4.1.6 35 IAC 216, Subpart B – Fuel Combustion Emission Sources

Fusing Furnace #2 is not subject to the CO emission limit in 35 IAC 216.121 because the furnace is not a "fuel combustion emission unit" as defined by 35 IAC 211.2470.

4.1.7 35 IAC 217, Subpart F – Process Heaters

The requirements of 35 IAC 217.180 through 186 apply to process heaters. Pursuant to 35 IAC 211.5195, the definition of "process heater" is as follows: "Process heater means, for purposes of Part 217, an enclosed combustion device that burns gaseous or liquid fuels only and that indirectly transfers heat to a process fluid or a heat transfer medium other than water." The sodium silicate manufacturing furnace is a direct-fired heater. As such, it does not meet the definition of "process heater" and is not subject to the listed Subpart F requirements.

4.1.8 35 IAC 217, Subpart G – Glass Melting Furnaces

Pursuant to 35 IAC 211.2625, a "Glass Melting Furnace" means a unit comprising a refractory vessel in which raw materials are charged and melted at high temperatures to produce molten glass. The sodium silicate manufacturing furnace (Fusing Furnace #2) produces sodium silicate, not glass, and is therefore not subject to this Subpart.

4.1.9 35 IAC 218.301 – Use of Organic Material

Pursuant to 35 IAC 218.301, no emission unit may release organic emissions over 8 lb/hr in the Chicago ozone nonattainment area, unless a control device is used to reduce hydrocarbons by at least 85% per 35 IAC 218.302(a), except as provided in 35 IAC 218.302, 218.303, or 218.304 and the following exemption: if no odor nuisance exists the limitation of 35 IAC 218 Subpart G applies only to photochemically reactive material. Fusing Furnace #2 at the Joliet Plant is currently subject to and will continue to comply with this regulation.

4.2 Federal Regulatory Applicability

4.2.1 Prevention of Significant Deterioration (PSD)

The applicability of the PSD program is evaluated for proposed construction and modification projects that result in an emission increase of a criteria pollutant for which the area is in attainment with the National Ambient Air Quality Standards (NAAQS). The Joliet Plant is located in Will County, which is designated as "attainment" or "unclassifiable" for all criteria pollutants except ozone.

The Joliet Plant does not qualify as one of the 28 listed source categories in 40 CFR 52.21(b)(1)(i)(a) with a 100 tpy "major" source PSD/NSR threshold and therefore has a 250 tpy PSD major source threshold. The Joliet Plant is classified as an existing minor source with respect to the PSD program because the Joliet Plant does not have the potential to emit 250 tpy of any PSD pollutant. As such, emissions resulting from the proposed project are evaluated versus the PSD major source threshold of 250 tpy per pollutant to determine whether the project is in itself major.

As shown in Table 3-2 of this application, the emissions increase of the PSD pollutants (PM_{2.5}, PM₁₀, SO₂, and CO) from the proposed project are less than the 250 tpy major source threshold. Therefore, the project is not subject to PSD review.

4.2.2 New Source Performance Standards (NSPS)

The NSPS rules, located in 40 CFR Part 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions. Fusing Furnace #2 will be undergoing a rebuild (modification) and, therefore, is potentially subject to an NSPS rule.

4.2.2.1 40 CFR 60, Subpart CC, Glass Manufacturing Plants

The provisions of this subpart apply to each glass melting furnace that commenced construction, reconstruction or modification on or after June 15, 1979.

Per the Joliet Plant's current CAAPP permit (see Condition 4.1.3.a), the furnace is not subject to Subpart CC because it produces sodium silicate rather than one of the types of glass described in Subpart CC. This will continue to be the case after the proposed furnace rebuild project.

4.2.3 National Emission Standards for Hazardous Air Pollutants (NESHAP)

The Joliet Plant is an existing area source with respect to HAP emissions. The proposed furnace rebuild will not increase potential HAP emission rates, and therefore will not cause the facility to become a major HAP source. Therefore, the facility will remain an area source for HAPs after the proposed project. In addition, no NESHAP area source standard applies to the proposed furnace rebuild. Specifically:

4.2.3.1 40 CFR Part 63, Subpart SSSSSS, National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources

This subpart applies to each glass manufacturing facility that is an area source of HAP emissions and uses one or more continuous furnaces to produce glass that contains compounds of one or more glass manufacturing metal HAP, as defined in §63 .11459, as raw materials in a glass manufacturing batch formulation.

Because it manufactures sodium silicate rather than glass, the installation is not defined as a glass manufacturing plant; therefore, this subpart does not apply to the furnace.

4.2.3.2 40 CFR Part 63, Subparts DDDDD and JJJJJ, Industrial, Commercial, Institutional Boilers and Process Heaters

As noted in the current CAAPP permit for the Joliet Plant, Fusing Furnace #2 is not subject to the major source or area source NESHAPs for boilers and/or process heaters. The furnace is exempt from Subpart

DDDDD because the Joliet Plant is not a major source of HAP emissions. The furnace is exempt from Subpart JJJJJ because the furnace is not a "boiler" as defined in that subpart.

APPENDIX A. APPLICATION FORMS

The following CAAPP forms are included in this section of the Construction Permit application:

- ▶ 197-FEE – Fee Determination for Construction Permit Application
- ▶ 199-CAAPP – Construction Permit Application for a Proposed Project at a CAAPP Source
- ▶ 220-CAAPP – Process Emission Unit Data and Information
- ▶ 260-CAAPP – Air Pollution Control Equipment Data and Information
- ▶ 260i-CAAPP – Supplemental Form Air Pollution Control Equipment NOx Control

THE STATE OF TEXAS
COUNTY OF []

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office at the City of [] this [] day of [] 2022.



Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY			
ID Number: _____	Permit #: _____		
<input type="checkbox"/> Complete	<input type="checkbox"/> Incomplete	Date Complete: _____	
Check Number: _____	Account Name: _____		

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

RECEIVED
STATE OF ILLINOIS
NOV 08 2021

Source Information

- | | |
|---|---|
| 1. Source Name: <u>PQ LLC (formerly PQ Corporation)</u> | |
| 2. Project Name: <u>Furnace Rebuild</u> | 3. Source ID # (if applicable) <u>197045ABO</u> |
| 4. Contact Name: <u>Mark J. Skowron</u> | 5. Contact Phone #: <u>331-444-8900</u> |

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal	\$0.00	+	Section 2, 3 or 4 Subtotal	\$3,000.00	=	\$3,000.00
						Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:

- **Major Source** is a source that is required to obtain a CAAPP permit.
- **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g., FESOP).
- **Non-Major Source** is a source that is not a major or synthetic minor source.

- Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.
- Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.
- New major or synthetic minor source. Proceed to Section 4. \$0.00
- New non-major source. Proceed to Section 3. Section 1 Subtotal
- AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee.** If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

- Addition or replacement of control devices on permitted units.
- Pilot projects/trial burns by a permitted unit
- Land remediation projects
- Revisions related to methodology or timing for emission testing
- Minor administrative-type change to a permit

RECEIVED
STATE OF ILLINOIS

NOV 08 2021

Illinois Environmental Protection Agency
Division Of Air Pollution Control – Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Environmental Protection Agency
BUREAU OF AIR

Construction Permit Application for a Proposed Project at a CAAPP Source	For Illinois EPA use only
	ID No.:
	Appl. No.:
	Date Rec'd:
	Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project
1. Working Name of Proposed Project: Furnace Rebuild
2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If Yes, provide BOA ID Number: <u>197045ABO</u>
3. Does this application request a revision to an existing construction permit issued by the BOA? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide Permit Number: _____
4. Brief Description of Proposed Project: The facility is proposing to rebuild its sodium silicate furnace in early 2022. The project includes replacing burners and associated control systems, changes to firing configuration, and increasing furnace volume. The project is expected to increase production rate above the furnace's current capacity but the production rate will still be less than the permitted production limit.

Source Information		
1. Source name:* PQ LLC (formerly PQ Corporation)		
2. Source street address:* 111 Ingalls Avenue		
3. City: Joliet	4. County: Will	5. Zip code:* 60435
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER		
6. Is the source located within city limits? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, provide Township Name: _____		
7. Description of source and product(s) produced: Inorganic Chemicals: Sodium silicate	8. Primary Classification Code of source: SIC: _____ or NAICS: <u>325180</u>	
9. Latitude (DD:MM:SS.SSSS): 41:32:50.0000	10. Longitude (DD:MM:SS.SSSS): 88:05:00.0000	

* Is information different than previous information? Yes No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant	
1. Who is the applicant? <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Operator	2. All correspondence to: (check one) <input checked="" type="checkbox"/> Source <input type="checkbox"/> Owner <input type="checkbox"/> Operator
3. Applicant's FEIN: 230972750	4. Attention name and/or title for written correspondence: Ken Schulte

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: PQ LLC (formerly PQ Corporation)		
2. Address: 300 Lindenwood Drive		
3. City: Malvern	4. State: PA	5. Zip code: 19355

* Is this information idifferent than previous information? Yes No

If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name		
2. Address:		
3. City:	4. State:	5. Zip code:

* Is this information different than previous information? Yes No

If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) <input checked="" type="checkbox"/> Applicant's contact <input type="checkbox"/> Consultant	
2. Applicant's technical contact person for application: Mark J. Skowron	
3. Contact person's telephone number(s): 331-444-8900	4. Contact person's e-mail address: Mark.Skowron@pqcorp.com
5. Consultant for application: Trinity Consultants (Chloe Reece)	
6. Consultant's telephone number(s): 630-495-1470	7. Consultant's e-mail address: creece@trinityconsultants.com


Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER	
1. Address for billing Site Fees for the source: <input type="checkbox"/> Source <input type="checkbox"/> Other (provide below):	
2. Contact person for Site Fees:	3. Contact person's telephone number:
4. Address for Annual Emission Report for the source: <input type="checkbox"/> Source <input type="checkbox"/> Other (provide below):	
5. Contact person for Annual Emission Report:	6. Contact person's telephone number:

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A* * Source not major <input type="checkbox"/> Project not major <input type="checkbox"/>
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY:		<i>Americus Silicates</i>
AUTHORIZED	SIGNATURE	VP & GM, Performance Chemicals
	Michael Chan	TITLE OF SIGNATORY
	TYPED OR PRINTED NAME OF SIGNATORY	<i>10/27/2021</i>
		DATE



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
 DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
 P.O. BOX 19506
 SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE	
Revision #:	_____
Date:	____ / ____ / ____
Page	_____ of _____
Source Designation:	_____

PROCESS EMISSION UNIT DATA AND INFORMATION	FOR AGENCY USE ONLY
	ID NUMBER:
	EMISSION POINT #:
DATE:	

SOURCE INFORMATION	
1) SOURCE NAME: PQ LLC (formerly PQ Corporation)	
2) DATE FORM PREPARED: September 2021	3) SOURCE ID NO. (IF KNOWN): 197045ABO

GENERAL INFORMATION	
4) NAME OF EMISSION UNIT: Sodium Silicate Manufacturing Furnace (Fusing Furnace #2)	
5) NAME OF PROCESS: Sodium Silicate Production	
6) DESCRIPTION OF PROCESS: Fusion of sand and soda ash in a natural gas-fired furnace.	
7) DESCRIPTION OF ITEM OR MATERIAL PRODUCED OR ACTIVITY ACCOMPLISHED: Sodium silicate	
8) FLOW DIAGRAM DESIGNATION OF EMISSION UNIT: Fusing Furnace #2	
9) MANUFACTURER OF EMISSION UNIT (IF KNOWN): N/A	
10) MODEL NUMBER (IF KNOWN): N/A	11) SERIAL NUMBER (IF KNOWN): N/A
12) DATES OF COMMENCING CONSTRUCTION, OPERATION AND/OR MOST RECENT MODIFICATION OF THIS EMISSION UNIT (ACTUAL OR PLANNED)	a) CONSTRUCTION (MONTH/YEAR): 1961
	b) OPERATION (MONTH/YEAR):
	c) LATEST MODIFICATION (MONTH/YEAR): Prior 2009; Proposed 2022
13) DESCRIPTION OF MODIFICATION (IF APPLICABLE): Replacing burners and associated control systems, changes to firing configuration, and increasing furnace volume.	

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

APPLICATION PAGE _____

Printed on Recycled Paper
220-CAAPP

FOR APPLICANT'S USE

14) DOES THE EMISSION UNIT HAVE MORE THAN ONE MODE OF OPERATION? YES NO
 IF YES, EXPLAIN AND IDENTIFY WHICH MODE IS COVERED BY THIS FORM (NOTE: A SEPARATE PROCESS EMISSION UNIT FORM 220-CAAPP MUST BE COMPLETED FOR EACH MODE):

15) PROVIDE THE NAME AND DESIGNATION OF ALL AIR POLLUTION CONTROL EQUIPMENT CONTROLLING THIS EMISSION UNIT, IF APPLICABLE (FORM 260-CAAPP AND THE APPROPRIATE 260-CAAPP ADDENDUM FORM MUST BE COMPLETED FOR EACH ITEM OF AIR POLLUTION CONTROL EQUIPMENT):
 Venturi Model #6 High Energy Scrubber (Existing - no change, not resubmitting form)
 Low NOx Burners (Being replaced - See attached 260-CAAPP form)

16) WILL EMISSIONS DURING STARTUP EXCEED EITHER THE ALLOWABLE EMISSION RATE PURSUANT TO A SPECIFIC RULE, OR THE ALLOWABLE EMISSION LIMIT AS ESTABLISHED BY AN EXISTING OR PROPOSED PERMIT CONDITION? YES NO
 IF YES, COMPLETE AND ATTACH FORM 203-CAAPP, "REQUEST TO OPERATE WITH EXCESS EMISSIONS DURING STARTUP OF EQUIPMENT".

17) PROVIDE ANY LIMITATIONS ON SOURCE OPERATION AFFECTING EMISSIONS OR ANY WORK PRACTICE STANDARDS (E.G., ONLY ONE UNIT IS OPERATED AT A TIME):
 Fusing Furnace #2 currently has annual and hourly production limits, which were established in Construction Permit No. 09090029. PQ proposes to replace the current limits of 12,750 lbs/hour and 55,845 tons/year with new limits of 48,281 tons/year and 4,828 tons/month.

OPERATING INFORMATION				
18) ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSION RELATED, FROM WHICH THE FOLLOWING OPERATING INFORMATION, MATERIAL USAGE INFORMATION AND FUEL USAGE DATA WERE BASED AND LABEL AS EXHIBIT 220-1. REFER TO SPECIAL NOTES OF FORM 202-CAAPP.				
19a) MAXIMUM OPERATING HOURS	HOURS/DAY: 24	DAYS/WEEK: 7	WEEKS/YEAR: 52	
b) TYPICAL OPERATING HOURS	HOURS/DAY: 24	DAYS/WEEK: 7	WEEKS/YEAR: 52	
20) ANNUAL THROUGHPUT	DEC-FEB(%): 25	MAR-MAY(%): 25	JUN-AUG(%): 25	SEP-NOV(%): 25

MATERIAL USAGE INFORMATION				
21a) RAW MATERIALS	MAXIMUM RATES		TYPICAL RATES	
	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
Soda ash		19,278		
Silica sand		37,246		

21b) PRODUCTS	MAXIMUM RATES		TYPICAL RATES	
	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
Sodium Silicate - solid		48,281		

21c) BY-PRODUCT MATERIALS	MAXIMUM RATES		TYPICAL RATES	
	LBS/HR	TONS/YEAR	LBS/HR	TONS/YEAR
N/A				

FUEL USAGE DATA		
22a) MAXIMUM FIRING RATE (MILLION BTU/HR): 32	b) TYPICAL FIRING RATE (MILLION BTU/HR):	c) DESIGN CAPACITY FIRING RATE (MILLION BTU/HR): 32

d) FUEL TYPE:
 NATURAL GAS
 FUEL OIL: GRADE NUMBER _____
 COAL
 OTHER _____
 IF MORE THAN ONE FUEL IS USED, ATTACH AN EXPLANATION AND LABEL AS EXHIBIT 220-2.

e) TYPICAL HEAT CONTENT OF FUEL (BTU/LB, BTU/GAL OR BTU/SCF): 1020 BTU/scf	f) TYPICAL SULFUR CONTENT (WT %, NA FOR NATURAL GAS): N/A
---	--

g) TYPICAL ASH CONTENT (WT %, NA FOR NATURAL GAS): N/A	h) ANNUAL FUEL USAGE (SPECIFY UNITS, E.G., SCF/YEAR, GAL/YEAR, TON/YEAR):
---	---

23) ARE COMBUSTION EMISSIONS DUCTED TO THE SAME STACK OR CONTROL AS PROCESS UNIT EMISSIONS? YES NO
 IF NO, IDENTIFY THE EXHAUST POINT FOR COMBUSTION EMISSIONS:

APPLICABLE RULES

24) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATION(S) SET BY RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT (E.G., VOM, IAC 218.204(j)(4), 3.5 LBS/GAL):

REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)
Opacity & PM	35 IAC 212.123(a) & 212.321	Opacity < 30%; PM < PWR eqn rate (see text -Section 4.1)
SO2	35 IAC 214.301	SO2 exhaust concentration <= 2000 ppm
VOM	35 IAC 218.301	Organic material emissions <= 8 lb/hr

25) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	RECORDKEEPING RULE(S)	REQUIREMENT(S)
	None	

26) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	REPORTING RULE(S)	REQUIREMENT(S)
PM, NOx, CO, VOM, SO2	35 IAC 254	Annual Emission Report

27) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	MONITORING RULE(S)	REQUIREMENT(S)
	None	

28) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE TO THIS EMISSION UNIT :

REGULATED AIR POLLUTANT(S)	TESTING RULE(S)	REQUIREMENT(S)
	None	

29) DOES THE EMISSION UNIT QUALIFY FOR AN EXEMPTION FROM AN OTHERWISE APPLICABLE RULE? YES NO

IF YES, THEN LIST BOTH THE RULE FROM WHICH IT IS EXEMPT AND THE RULE WHICH ALLOWS THE EXEMPTION. PROVIDE A DETAILED EXPLANATION JUSTIFYING THE EXEMPTION. INCLUDE DETAILED SUPPORTING DATA AND CALCULATIONS. ATTACH AND LABEL AS EXHIBIT 220-3, OR REFER TO OTHER ATTACHMENT(S) WHICH ADDRESS AND JUSTIFY THIS EXEMPTION.

COMPLIANCE INFORMATION

30) IS THE EMISSION UNIT IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS? YES NO

IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE -- ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.

31) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:

Compliance with mass emission limits is based on production rate tracking and emission calculations based on prior test results and AP-42 factors.

Compliance with production rate limits is based on production rate tracking.

Compliance with the opacity standard is based on an annual Method 9 observation.

32) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:

Compliance with mass emission limits will be based on production rate tracking and emission calculations based on prior test results and AP-42 factors.

Compliance with production rate limits will be based on production rate tracking.

Compliance with the opacity standard will be based on an annual Method 9 observation (or Method 22, as allowed).

TESTING, MONITORING, RECORDKEEPING AND REPORTING

33a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):

PARAMETER	UNIT OF MEASUREMENT	METHOD OF MEASUREMENT	FREQUENCY
Sodium Silicate	Tons	Weigh Scale	Monthly
Production			
Rate			

33b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON
Sodium Silicate	Electronic	Operator	HSE Manager
Production			
Rate			

c) IS COMPLIANCE OF THE EMISSION UNIT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? YES NO

IF NO, EXPLAIN:

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND SUBMITTAL TO THE AGENCY UPON REQUEST? YES NO

IF NO, EXPLAIN:

34a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:

Production rate tracking
Annual opacity observation

b) WHAT PARAMETER(S) IS(ARE) BEING MONITORED (E.G., VOM EMISSIONS TO ATMOSPHERE)?

Production rate
Opacity

c) DESCRIBE THE LOCATION OF EACH MONITOR (E.G., IN STACK MONITOR 3 FEET FROM EXIT):

Furnace feed weigh scale in Building #4.

34d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? YES NO

IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE:
Opacity measurements are done by trained personnel

e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? YES NO

IF NO, EXPLAIN:
N/A for opacity observations

f) IS EACH MONITOR OPERATED AT ALL TIMES THE ASSOCIATED EMISSION UNIT IS IN OPERATION? YES NO

IF NO, EXPLAIN:
Opacity observations required only once annually

35) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 220-4:

TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS
3/2008	Meth 10	Platt EnvServices	Normal	8.2 lb/hr CO
10/2016	Meth 7E	ARI	Normal	21.7 lb/hr NOx
10/2016	Meth 1-5	ARI	Normal	2.211 lb/hr PM

36) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:

REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY
Annual Emissions	Annual Emission Report	Annual
Compliance Status	Annual Compliance Cert.	Annual
Summary of Monitoring	Semiannual Monitoring Rpt	Semi-Annual

(37)EMISSION INFORMATION											
REGULATED AIR POLLUTANT		<input type="checkbox"/> ¹ ACTUAL EMISSION RATE <input type="checkbox"/> ¹ UNCONTROLLED EMISSION RATE					ALLOWABLE BY RULE EMISSION RATE			² PERMITTED EMISSION RATE	
		LBS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	³ OTHER TERMS	³ OTHER TERMS	⁴ DM	⁵ RATE (UNITS)	APPLICABLE RULES	TONS PER YEAR (TONS/YR)	RATE (UNITS)	TONS PER YEAR (TONS/YR)
CARBON MONOXIDE (CO)	MAXIMUM:			SEE			()				
	TYPICAL:			APPLI-			()				
LEAD	MAXIMUM:			CATION			()				
	TYPICAL:			TEXT			()				
NITROGEN OXIDES (NOx)	MAXIMUM:			SECTION 3			()				
	TYPICAL:			AND			()				
PARTICULATE MATTER (PART)	MAXIMUM:			APPENDIX			()				
	TYPICAL:			B CALCS			()				
PARTICULATE MATTER <= 10 MICROMETERS (PM10)	MAXIMUM:						()				
	TYPICAL:						()				
SULFUR DIOXIDE (SO2)	MAXIMUM:						()				
	TYPICAL:						()				
VOLATILE ORGANIC MATERIAL (VOM)	MAXIMUM:						()				
	TYPICAL:						()				
OTHER, SPECIFY:	MAXIMUM:						()				
	TYPICAL:						()				
EXAMPLE: PARTICULATE MATTER	MAXIMUM:	5.00	21.9	0.3 GR/DSCF		1	6.0 (LBS/HR)	212.321	26.28	5.5 LBS/HR	22
	TYPICAL:	4.00	14.4	0.24 GR/DSCF		4	5.5 (LBS/HR)	212.321	19.80		

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 220-5.

- ¹CHECK UNCONTROLLED EMISSION RATE BOX IF CONTROL EQUIPMENT IS USED, OTHERWISE CHECK AND PROVIDE THE ACTUAL EMISSION RATE TO ATMOSPHERE, INCLUDING INDOORS. SEE INSTRUCTIONS.
- ²PROVIDE THE EMISSION RATE THAT WILL BE USED AS A PERMIT SPECIAL CONDITION. THIS LIMIT WILL BE USED TO DETERMINE THE PERMIT FEE.
- ³PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.)
- ⁴DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)
- ⁵RATE - ALLOWABLE EMISSION RATE SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

(38) HAZARDOUS AIR POLLUTANT EMISSION INFORMATION							
		<input type="checkbox"/> ¹ ACTUAL EMISSION RATE <input type="checkbox"/> ¹ UNCONTROLLED EMISSION RATE				ALLOWABLE BY RULE	
		POUNDS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	³ OTHER TERMS	⁴ DM	⁵ RATE OR STANDARD	APPLICABLE RULE
NAME OF HAP EMITTED	² CAS NUMBER						
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
		MAXIMUM:					
		TYPICAL:					
<i>EXAMPLE:</i>		MAXIMUM:	10.0	1.2		2	
<i>Benzene</i>	71432	TYPICAL:	8.0	0.8		2	
						98% by wt control device leak-tight trucks	CFR 61 61.302(b),(d)

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 220-6.

¹PROVIDE UNCONTROLLED EMISSIONS IF CONTROL EQUIPMENT IS USED. OTHERWISE, PROVIDE ACTUAL EMISSIONS TO THE ATMOSPHERE, INCLUDING INDOORS. CHECK BOX TO SPECIFY.

²CAS - CHEMICAL ABSTRACT SERVICE NUMBER.

³PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G., PPM, GR/DSCF, ETC.).

⁴DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS, 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS).

⁵RATE - ALLOWABLE EMISSION RATE OR STANDARD SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

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EXHAUST POINT INFORMATION		
THIS SECTION SHOULD NOT BE COMPLETED IF EMISSIONS ARE EXHAUSTED THROUGH AIR POLLUTION CONTROL EQUIPMENT.		
39) FLOW DIAGRAM DESIGNATION OF EXHAUST POINT: Emissions will be exhausted through an existing air pollution control equipment (scrubber)		
40) DESCRIPTION OF EXHAUST POINT (STACK, VENT, ROOF MONITOR, INDOORS, ETC.). IF THE EXHAUST POINT DISCHARGES INDOORS, DO NOT COMPLETE THE REMAINING ITEMS.		
41) DISTANCE TO NEAREST PLANT BOUNDARY FROM EXHAUST POINT DISCHARGE (FT):		
42) DISCHARGE HEIGHT ABOVE GRADE (FT):		
43) GOOD ENGINEERING PRACTICE (GEP) HEIGHT, IF KNOWN (FT):		
44) DIAMETER OF EXHAUST POINT (FT): NOTE: FOR A NON CIRCULAR EXHAUST POINT, THE DIAMETER IS 1.128 TIMES THE SQUARE ROOT OF THE AREA.		
45) EXIT GAS FLOW RATE	a) MAXIMUM (ACFM):	b) TYPICAL (ACFM):
46) EXIT GAS TEMPERATURE	a) MAXIMUM (°F):	b) TYPICAL (°F):
47) DIRECTION OF EXHAUST (VERTICAL, LATERAL, DOWNWARD):		
48) LIST ALL EMISSION UNITS AND CONTROL DEVICES SERVED BY THIS EXHAUST POINT:		
NAME		FLOW DIAGRAM DESIGNATION
a)		
b)		
c)		
d)		
e)		
THE FOLLOWING INFORMATION NEED ONLY BE SUPPLIED IF READILY AVAILABLE		
49a) LATITUDE:		b) LONGITUDE:
50) UTM ZONE:	b) UTM VERTICAL (KM):	c) UTM HORIZONTAL (KM):



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
 DIVISION OF AIR POLLUTION CONTROL – PERMIT SECTION
 P.O. BOX 19506
 SPRINGFIELD, ILLINOIS 62794-9506

FOR APPLICANT'S USE	
Revision #:	_____
Date:	____ / ____ / ____
Page	_____ of _____
Source Designation:	_____

AIR POLLUTION CONTROL EQUIPMENT DATA AND INFORMATION	FOR AGENCY USE ONLY
	ID NUMBER:
	CONTROL EQUIPMENT #:
DATE:	

THIS FORM MUST BE COMPLETED FOR EACH AIR POLLUTION CONTROL EQUIPMENT. COMPLETE AND PROVIDE THIS FORM IN ADDITION TO THE APPLICABLE ADDENDUM FORM 260-A THROUGH 260-K. A SEPARATE FORM MUST BE COMPLETED FOR EACH MODE OF OPERATION OF AIR POLLUTION CONTROL EQUIPMENT FOR WHICH A PERMIT IS BEING SOUGHT.

SOURCE INFORMATION	
1) SOURCE NAME: PQ LLC (formerly PQ Corporation)	
2) DATE FORM PREPARED: 09/01/21	3) SOURCE ID NO. (IF KNOWN): 197045ABO

GENERAL INFORMATION	
4) NAME OF AIR POLLUTION CONTROL EQUIPMENT AND/OR CONTROL SYSTEM: Low NOx Burners (6)	
5) FLOW DIAGRAM DESIGNATION OF CONTROL EQUIPMENT AND/OR CONTROL SYSTEM: Low NOx Burners	
6) MANUFACTURER OF CONTROL EQUIPMENT (IF KNOWN): TBD	
7) MODEL NUMBER (IF KNOWN): TBD	8) SERIAL NUMBER (IF KNOWN): TBD
9) DATES OF COMMENCING CONSTRUCTION, OPERATION AND/OR MOST RECENT MODIFICATION OF THIS EQUIPMENT (ACTUAL OR PLANNED)	a) CONSTRUCTION (MONTH/YEAR): 09/09
	b) OPERATION (MONTH/YEAR): 09/09
	c) LATEST MODIFICATION (MONTH/YEAR): 01/22
10) BRIEFLY DESCRIBE MODIFICATION (IF APPLICABLE): The existing low NOx burners will be replaced as part of the furnace rebuild project planned for Q1 2022.	

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

APPLICATION PAGE _____

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FOR APPLICANT'S USE

11) LIST ALL EMISSION UNITS AND OTHER CONTROL EQUIPMENT DUCTING EMISSIONS TO THIS CONTROL EQUIPMENT:

NAME	DESIGNATION OR CODE NUMBER
Fusing Furnace #2	Fusing Furnace #2

12) DOES THE CONTROL EQUIPMENT HAVE MORE THAN ONE MODE OF OPERATION? YES NO

IF YES, EXPLAIN AND IDENTIFY WHICH MODE IS COVERED BY THIS FORM (NOTE: A SEPARATE AIR POLLUTION CONTROL EQUIPMENT FORM 260-CAAPP MUST BE COMPLETED FOR EACH MODE):

N/A

13) IDENTIFY ALL ATTACHMENTS TO THIS FORM RELATED TO THIS AIR POLLUTION CONTROL EQUIPMENT (E.G., TECHNICAL DRAWINGS):

Form CAAPP-260I

OPERATING SCHEDULE

14) IDENTIFY ANY PERIOD WHEN THE CONTROL EQUIPMENT WILL NOT BE OPERATING DUE TO SCHEDULED MAINTENANCE AND/OR REPAIRS WHEN THE FEEDING EMISSION UNIT(S) TO THIS CONTROL EQUIPMENT IS/ARE IN OPERATION:

N/A

15a) IDENTIFY ANY PERIODS DURING OPERATION OF THE FEEDING EMISSION UNIT(S) WHEN THE CONTROL EQUIPMENT IS/ARE NOT USED:

N/A

b) IS THIS CONTROL EQUIPMENT IN OPERATION AT ALL OTHER TIMES THAT THE FEEDING EMISSION UNIT(S) IS/ARE IN OPERATION? YES NO

IF NO, EXPLAIN AND PROVIDE THE DURATION OF THE CONTROL EQUIPMENT DOWNTIME:

APPLICABLE RULES

16) PROVIDE ANY SPECIFIC EMISSION STANDARD(S) AND LIMITATION(S) SET BY RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT (E.G., VOM, IAC 218.207(b)(1), 81% OVERALL & 90% CONTROL DEVICE EFF.):

REGULATED AIR POLLUTANT(S)	EMISSION STANDARD(S)	REQUIREMENT(S)
None		

17) PROVIDE ANY SPECIFIC RECORDKEEPING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	RECORDKEEPING RULE(S)	REQUIREMENT(S)
None		

18) PROVIDE ANY SPECIFIC REPORTING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	REPORTING RULE(S)	REQUIREMENT(S)
None		

19) PROVIDE ANY SPECIFIC MONITORING RULE(S) WHICH ARE APPLICABLE TO THIS EMISSION UNIT:

REGULATED AIR POLLUTANT(S)	MONITORING RULE(S)	REQUIREMENT(S)
None		

20) PROVIDE ANY SPECIFIC TESTING RULES AND/OR PROCEDURES WHICH ARE APPLICABLE TO THIS EMISSION UNIT :

REGULATED AIR POLLUTANT(S)	TESTING RULE(S)	REQUIREMENT(S)
None		

COMPLIANCE INFORMATION	
21) IS THE CONTROL SYSTEM IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
IF NO, THEN FORM 294-CAAPP "COMPLIANCE PLAN/SCHEDULE OF COMPLIANCE – ADDENDUM FOR NON COMPLYING EMISSION UNITS" MUST BE COMPLETED AND SUBMITTED WITH THIS APPLICATION.	
22) EXPLANATION OF HOW INITIAL COMPLIANCE IS TO BE, OR WAS PREVIOUSLY, DEMONSTRATED:	
The low NOx burners are part of the furnace design, therefore no compliance demonstration needed.	
23) EXPLANATION OF HOW ONGOING COMPLIANCE WILL BE DEMONSTRATED:	
The low NOx burners are part of the furnace design, therefore no compliance demonstration needed.	

TESTING, MONITORING, RECORDKEEPING AND REPORTING			
24a) LIST THE PARAMETERS THAT RELATE TO AIR EMISSIONS FOR WHICH RECORDS ARE BEING MAINTAINED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE UNIT OF MEASUREMENT, THE METHOD OF MEASUREMENT, AND THE FREQUENCY OF SUCH RECORDS (E.G., HOURLY, DAILY, WEEKLY):			
PARAMETER	UNIT OF MEASUREMENT	METHOD OF MEASUREMENT	FREQUENCY
N/A			
(See 220-CAAPP			
form)			

24b) BRIEFLY DESCRIBE THE METHOD BY WHICH RECORDS WILL BE CREATED AND MAINTAINED. FOR EACH RECORDED PARAMETER INCLUDE THE METHOD OF RECORDKEEPING, TITLE OF PERSON RESPONSIBLE FOR RECORDKEEPING, AND TITLE OF PERSON TO CONTACT FOR REVIEW OF RECORDS:

PARAMETER	METHOD OF RECORDKEEPING	TITLE OF PERSON RESPONSIBLE	TITLE OF CONTACT PERSON
N/A			
(See 220-			
CAAPP form)			

c) IS COMPLIANCE OF THE CONTROL EQUIPMENT READILY DEMONSTRATED BY REVIEW OF THE RECORDS? YES NO

IF NO, EXPLAIN:
N/A

d) ARE ALL RECORDS READILY AVAILABLE FOR INSPECTION, COPYING AND/OR SUBMITTAL TO THE AGENCY UPON REQUEST? YES NO

IF NO, EXPLAIN:
N/A

25a) DESCRIBE ANY MONITORS OR MONITORING ACTIVITIES USED TO DETERMINE FEES, RULE APPLICABILITY OR COMPLIANCE:
N/A

b) WHAT OPERATING PARAMETER(S) IS(ARE) BEING MONITORED (E.G., COMBUSTION CHAMBER TEMPERATURE)?
N/A

c) DESCRIBE THE LOCATION OF EACH MONITOR (E.G., EXIT OF COMBUSTION CHAMBER):
N/A

25d) IS EACH MONITOR EQUIPPED WITH A RECORDING DEVICE? IF NO, LIST ALL MONITORS WITHOUT A RECORDING DEVICE: N/A	<input type="checkbox"/> YES <input type="checkbox"/> NO																									
e) IS EACH MONITOR REVIEWED FOR ACCURACY ON AT LEAST A QUARTERLY BASIS? IF NO, EXPLAIN: N/A	<input type="checkbox"/> YES <input type="checkbox"/> NO																									
f) IS EACH MONITOR OPERATED AT ALL TIMES THE CONTROL EQUIPMENT IS IN OPERATION? IF NO, EXPLAIN: N/A	<input type="checkbox"/> YES <input type="checkbox"/> NO																									
26) PROVIDE INFORMATION ON THE MOST RECENT TESTS, IF ANY, IN WHICH THE RESULTS ARE USED FOR PURPOSES OF THE DETERMINATION OF FEES, RULE APPLICABILITY OR COMPLIANCE. INCLUDE THE TEST DATE, TEST METHOD USED, TESTING COMPANY, OPERATING CONDITIONS EXISTING DURING THE TEST AND A SUMMARY OF RESULTS. IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 260-1:																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">TEST DATE</th> <th style="width: 15%;">TEST METHOD</th> <th style="width: 15%;">TESTING COMPANY</th> <th style="width: 15%;">OPERATING CONDITIONS</th> <th style="width: 15%;">SUMMARY OF RESULTS</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS	N/A																				
TEST DATE	TEST METHOD	TESTING COMPANY	OPERATING CONDITIONS	SUMMARY OF RESULTS																						
N/A																										
27) DESCRIBE ALL REPORTING REQUIREMENTS AND PROVIDE THE TITLE AND FREQUENCY OF REPORT SUBMITTALS TO THE AGENCY:																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">REPORTING REQUIREMENTS</th> <th style="width: 33%;">TITLE OF REPORT</th> <th style="width: 33%;">FREQUENCY</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY	N/A																						
REPORTING REQUIREMENTS	TITLE OF REPORT	FREQUENCY																								
N/A																										

CAPTURE AND CONTROL
28) DESCRIBE THE CAPTURE SYSTEM USED TO CONTAIN, COLLECT AND TRANSPORT EMISSIONS TO THE CONTROL EQUIPMENT. INCLUDE ALL HOODS, DUCTS, FANS, ETC. ALSO INCLUDE THE METHOD OF CAPTURE USED AT EACH EMISSION POINT. (IF ADDITIONAL SPACE IS NEEDED, ATTACH AND LABEL AS EXHIBIT 260-2): The low NOx burners are part of the furnace design.

29) ARE FEATURES OF THE CAPTURE SYSTEM ACCURATELY DEPICTED IN THE FLOW DIAGRAM CONTAINED IN THIS APPLICATION? YES NO

IF NO, A SKETCH SHOWING THE FEATURES OF THE CAPTURE SYSTEM SHOULD BE ATTACHED AND LABELED AS EXHIBIT 260-3:

30) PROVIDE THE ACTUAL (MINIMUM AND TYPICAL) CAPTURE SYSTEM EFFICIENCY, CONTROL EQUIPMENT DESTRUCTION/REMOVAL EFFICIENCY, AND THE OVERALL REDUCTION EFFICIENCY PROVIDED BY THE COMBINATION OF THE CAPTURE SYSTEM AND CONTROL EQUIPMENT FOR EACH REGULATED AIR POLLUTANT TO BE CONTROLLED. ATTACH THE CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH THESE EFFICIENCIES WERE BASED AND LABEL AS EXHIBIT 260-4:

a) CONTROL PERFORMANCE:

REGULATED AIR POLLUTANT	CAPTURE SYSTEM EFFICIENCY (%)		CONTROL EQUIPMENT EFFICIENCY (%)		OVERALL REDUCTION EFFICIENCY (%)	
	(MIN)	(TYP)	(MIN)	(TYP)	(MIN)	(TYP)
i NOx	100	100	17	25	17	25
ii						
iii						

iv. EXPLAIN ANY OTHER REQUIRED LIMITS ON CONTROL EQUIPMENT PERFORMANCE SUCH AS OUTLET CONCENTRATION, COOLANT TEMPERATURE, ETC.:

N/A

b) METHOD USED TO DETERMINE EACH OF THE ABOVE EFFICIENCIES (E.G., STACK TEST, MATERIAL BALANCE, MANUFACTURER'S GUARANTEE, ETC.) AND THE DATE LAST TESTED, IF APPLICABLE:

EFFICIENCY DETERMINATION METHOD	DATE LAST TESTED
CAPTURE: Design specifications	
CONTROL: Manufacturer data	
OVERALL:	

c) REQUIRED PERFORMANCE:

REGULATED AIR POLLUTANT	CAPTURE SYSTEM EFFICIENCY (%)	CONTROL EQUIPMENT EFFICIENCY (%)	OVERALL REDUCTION EFFICIENCY (%)	APPLICABLE RULE
i N/A				
ii				
iii				

iv. EXPLAIN ANY OTHER REQUIRED LIMITS ON CONTROL EQUIPMENT PERFORMANCE SUCH AS OUTLET CONCENTRATION, COOLANT TEMPERATURE, ETC.:

N/A

(31)EMISSION INFORMATION

REGULATED AIR POLLUTANT		1ACTUAL EMISSION RATE					ALLOWABLE BY RULE EMISSION RATE			2PERMITTED EMISSION RATE	
		LBS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	3OTHER TERMS	3OTHER TERMS	4DM	5RATE (UNITS)	APPLICABLE RULES	TONS PER YEAR (TONS/YR)	RATE (UNITS)	TONS PER YEAR (TONS/YR)
CARBON MONOXIDE (CO)	MAXIMUM:						()				
	TYPICAL:						()				
LEAD	MAXIMUM:			SEE			()				
	TYPICAL:			APPLI-			()				
NITROGEN OXIDES (NOx)	MAXIMUM:			CATION			()				
	TYPICAL:			TEXT			()				
PARTICULATE MATTER (PART)	MAXIMUM:			SECTION			()				
	TYPICAL:			3 AND			()				
PARTICULATE MATTER <= 10 MICROMETERS (PM10)	MAXIMUM:			APPENDIX			()				
	TYPICAL:			B CALCS.			()				
SULFUR DIOXIDE (SO2)	MAXIMUM:						()				
	TYPICAL:						()				
VOLATILE ORGANIC MATERIAL (VOM)	MAXIMUM:						()				
	TYPICAL:						()				
OTHER, SPECIFY:	MAXIMUM:						()				
	TYPICAL:						()				
EXAMPLE: PARTICULATE MATTER	MAXIMUM:	5.00	21.9	0.3 GR/DSCF		1	6.0 (LBS/HR)	212.321	26.28	5.5 LBS/HR	22
	TYPICAL:	4.00	14.4	0.24 GR/DSCF		4	5.5 (LBS/HR)	212.321	19.80		

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 260-5.

1 PROVIDE CONTROLLED EMISSIONS (E.G., THE EMISSIONS THAT WOULD RESULT AFTER ALL CONTROL AND CAPTURE EFFICIENCIES ARE ACCOUNTED FOR).

2 PROVIDE THE EMISSION RATE THAT WILL BE USED AS A PERMIT SPECIAL CONDITION. THIS LIMIT WILL BE USED TO DETERMINE THE PERMIT FEE.

3 PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED. REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G. PPM, GR/DSCF, ETC.)

4 DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS), 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS)

5 RATE - ALLOWABLE EMISSION RATE SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

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(32) HAZARDOUS AIR POLLUTANT EMISSION INFORMATION								
HAP INFORMATION		¹ACTUAL EMISSION RATE				ALLOWABLE BY RULE		
NAME OF HAP EMITTED	²CAS NUMBER		POUNDS PER HOUR (LBS/HR)	TONS PER YEAR (TONS/YR)	³OTHER TERMS	⁴DM	⁵RATE OR STANDARD	APPLICABLE RULE
N/A		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
		MAXIMUM:						
		TYPICAL:						
EXAMPLE:		MAXIMUM:	10.0	1.2		2	98% by wt control device	CFR 61
Benzene	71432	TYPICAL:	8.0	0.8		2	leak-tight trucks	61.302(b),(d)

IMPORTANT: ATTACH CALCULATIONS, TO THE EXTENT THEY ARE AIR EMISSIONS RELATED, ON WHICH EMISSIONS WERE DETERMINED AND LABEL AS EXHIBIT 260-6.

¹PROVIDE CONTROLLED EMISSIONS (E.G., THE EMISSIONS THAT WOULD RESULT AFTER ALL CONTROL AND CAPTURE EFFICIENCIES ARE ACCOUNTED FOR).

²CAS - CHEMICAL ABSTRACT SERVICE NUMBER.

³PLEASE PROVIDE ANY OTHER EMISSION RATE WHICH IS COMMONLY USED, REQUIRED BY A SPECIFIC LIMITATION OR THAT WAS MEASURED (E.G., PPM, GR/DSCF, ETC.).

⁴DM - DETERMINATION METHOD: 1) STACK TEST, 2) MATERIAL BALANCE, 3) STANDARD EMISSION FACTOR (AP-42 OR AIRS, 4) ENGINEERING ESTIMATE, 5) SPECIAL EMISSION FACTOR (NOT AP-42 OR AIRS).

⁵RATE - ALLOWABLE EMISSION RATE OR STANDARD SPECIFIED BY MOST STRINGENT APPLICABLE RULE.

EXHAUST POINT INFORMATION		
33) DESCRIPTION OF EXHAUST POINT (STACK, VENT, ROOF MONITOR, INDOORS, ETC.). IF THE EXHAUST POINT DISCHARGES INDOORS, DO NOT COMPLETE THE REMAINING ITEMS. Emissions will be exhausted through existing air pollution control equipment (scrubber).		
34) DISTANCE TO NEAREST PLANT BOUNDARY FROM EXHAUST POINT DISCHARGE (FT):		
35) DISCHARGE HEIGHT ABOVE GRADE (FT):		
36) GOOD ENGINEERING PRACTICE (GEP) HEIGHT, IF KNOWN (FT):		
37) DIAMETER OF EXHAUST POINT (FT): NOTE: FOR A NON CIRCULAR EXHAUST POINT, THE DIAMETER IS 1.128 TIMES THE SQUARE ROOT OF THE AREA.		
38) EXIT GAS FLOW RATE	a) MAXIMUM (ACFM):	b) TYPICAL (ACFM):
39) EXIT GAS TEMPERATURE	a) MAXIMUM (°F):	b) TYPICAL (°F):
40) DIRECTION OF EXHAUST (VERTICAL, LATERAL, DOWNWARD):		
41) LIST ALL EMISSION UNITS AND CONTROL DEVICES SERVED BY THIS EXHAUST POINT:		
NAME		FLOW DIAGRAM DESIGNATION
a)		
b)		
c)		
d)		
e)		
f)		
g)		

42) WHAT PERCENTAGE OF THE CONTROL EQUIPMENT EMISSIONS ARE BEING DUCTED TO THIS EXHAUST POINT (%)?
43) IF THE PERCENTAGE OF THE CONTROL EQUIPMENT EMISSIONS BEING DUCTED TO THE EXHAUST POINT IS NOT 100%, THEN EXPLAIN WHERE THE REMAINING EMISSIONS ARE BEING EXHAUSTED TO:

THE FOLLOWING INFORMATION NEED ONLY BE SUPPLIED IF READILY AVAILABLE.		
44a) LATITUDE:	b) LONGITUDE:	
45) UTM ZONE:	b) UTM VERTICAL (KM):	c) UTM HORIZONTAL (KM):



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
 DIVISION OF AIR POLLUTION CONTROL -- PERMIT SECTION
 P.O. BOX 19506
 SPRINGFIELD, ILLINOIS 62794-9506

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Revision #:	_____
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Source Designation:	_____

SUPPLEMENTAL FORM AIR POLLUTION CONTROL EQUIPMENT NO_x CONTROL (260I)	FOR AGENCY USE ONLY
	ID NUMBER:
	CONTROL EQUIPMENT #:
DATE:	

NOTE: A COMBUSTION MODIFICATION SUCH AS ADDING A LOW NO_x BURNER REQUIRES A SEPARATE ATTACHMENT DESCRIBING THE TYPE OF MODIFICATION AND SUBMITTAL OF THE MANUFACTURER'S SPECIFICATIONS AND GUARANTEES.

DATA AND INFORMATION	
1) FLOW DIAGRAM DESIGNATION OF CONTROL: Low NO _x Burners	
2) TYPE OF CONTROL:	
<input type="checkbox"/> SELECTIVE CATALYTIC REDUCTION	<input type="checkbox"/> NON-SELECTIVE CATALYTIC REDUCTION
<input checked="" type="checkbox"/> LOW NO _x BURNERS	<input type="checkbox"/> WATER INJECTION IN BURNER
<input type="checkbox"/> FLUE GAS RECIRCULATION	<input type="checkbox"/> CO-FIRING
<input type="checkbox"/> LOW ACCESS AIR	<input type="checkbox"/> BIAS FIRING
<input type="checkbox"/> OTHER, DESCRIBE: _____	<input type="checkbox"/> SELECTIVE NON-CATALYTIC REDUCTION
<input type="checkbox"/>	<input type="checkbox"/> STEAM INJECTION IN BURNER
<input type="checkbox"/>	<input type="checkbox"/> OVERFIRE AIR
3) FOR REDUCTION DEVICES:	
TEMPERATURE AT WHICH REDUCTION OCCURS (DEGREES FAHRENHEIT):	
REDUCING AGENT: N/A	
REDUCING AGENT USE RATE:	
DESCRIPTION OF INJECTION SYSTEM: N/A	

THIS AGENCY IS AUTHORIZED TO REQUIRE THIS INFORMATION UNDER ILLINOIS REVISED STATUTES, 1991, AS AMENDED 1992, CHAPTER 111 1/2, PAR. 1039.5. DISCLOSURE OF THIS INFORMATION IS REQUIRED UNDER THAT SECTION. FAILURE TO DO SO MAY PREVENT THIS FORM FROM BEING PROCESSED AND COULD RESULT IN THE APPLICATION BEING DENIED. THIS FORM HAS BEEN APPROVED BY THE FORMS MANAGEMENT CENTER.

APPLICATION PAGE _____

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FOR APPLICANT'S USE

4) FOR CATALYTIC DEVICES:

TYPE OF CATALYST USED: N/A
 EXPECTED FREQUENCY OF REPLACEMENT:

5) DESCRIBE NOx CONTROL UTILIZED:

Six (6) low NOx burners

6) NOx CONTROL PARAMETERS:

	DURING MAXIMUM OPERATION OF FEEDING UNIT(S)	DURING TYPICAL OPERATION OF FEEDING UNIT(S)
INLET GAS TEMPERATURE (DEGREES F°):	N/A	N/A
INLET GAS FLOW RATE (SCFM):	N/A	N/A
REDUCING AGENT INPUT RATE (LB/HR):	N/A	N/A
WATER OR STEAM INPUT RATE (LB/HR):	N/A	N/A
FLUE GAS RECIRCULATIONS:	N/A (%)	N/A (%)
EFFICIENCY (NOx REDUCTION):	25 (%)	17 (%)

APPENDIX B. EMISSION RATE CALCULATIONS

PQ LLC - Joliet Plant
Furnace Rebuild Project

Inputs for Furnace #2

Maximum Rated Heat Input Capacity	32 MMBTU/hr
Average Production Rate	120 MT/day
Proposed Annual Production Limit	48,281 TPY
Proposed Monthly Production Limit	4,828 Tons/month
Maximum Hours of Operation	8760 Hrs/year

Pollutant	Emissions Factor	Unit	Potential Emissions		Notes
			tons/mo	TPY	
CO	1.9	lbs/ton	4.55	45.48	2008 stack test [8.2 lb/hr (from test report) / avg production rate of 5.22 tons/hr during the test = 1.57 lb/ton, and then adding 20% safety factor]
NOx	4.5	lb/ton	10.96	109.63	October 2016 stack test (21.7 lb/hr (from test report)/ avg production rate of 9,557 lb/hr = 5 lb/MT)
PM	0.56	lb/ton	1.34	13.40	October 2016 stack test (2.211 lb/hr (from test report)/ avg production rate of 9,557 lb/hr = 0.46 lb/ton, and then adding 20% safety factor)
SO2	0.24	lb/ton	0.58	5.79	AP-42 Section 11.15 (with venturi scrubber) with a 20% safety factor
VOM	0.24	lb/ton	0.58	5.79	AP-42 Section 11.15 with a 20% safety factor

**PQ LLC - Joliet Plant
Furnace Rebuild Project**

Inputs for dry material dumping into tanks T-110 and T-111:^[1]

Maximum usage rate for tank T-110	292,553 lb/yr
Maximum usage rate for tank T-111	45,400 lb/yr

Emission Factor calculations:

AP-42 Chapter 13.2.4.3 Predictive Emission
Factor Equations, Equation 1

$$E = k * 0.0032 * ((u/5)^{1.3}) / ((M/2)^{1.4})$$

k (Particle size distribution factor) ^[2]	0.74
u (wind speed) ^[3]	1.3 mph
M ^[4]	0.25 %
E (PM Emission Factor)	0.007553931 lb/ton

Process	Total PM ³
	[TPY]
T-110	5.52E-04
T-111	8.57E-05

[1] The updated usage rates for tanks T-110 and T-111 were calculated based on the prior dry material addition rates for the tanks, the actual annual glass production for the facility in those prior years, and the proposed new annual glass production rate.

[2] The particle size distribution factor of 0.74 was used since it was assumed that the largest particle size is <30 μm.

[3] The lowest possible wind speed noted in AP-42 as valid for the equation was used since the process is carried out indoors.

[4] The lowest possible moisture content noted in AP-42 as valid for the equation was used since the process is carried out indoors.

PQ LLC - Joliet Plant
Furnace Rebuild Project

Inputs for SSS bunker transfers:

Maximum throughput 48,281 TPY
4828 TPM
Rail car weight 80 tons/car
Number of railcars 604 cars/year
60 cars/month

Solid Sodium Silicate Bunker Transfers and Rail Car Loading

Process	PM Factor	Total PM			Notes
	[lbs/ton]	[lbs/car]	[lbs/month]	[TPY]	
Transfer 1	0.0054	0.43	25.92	0.13	AP-42 emission factor from AP-42, Table 11.19.2-2 for "Crushed Stone Processing Operations". See factors for tertiary crushing.
Transfer 2		0.43	25.92	0.13	
Transfer 3		0.43	25.92	0.13	
Transfer 4		0.43	25.92	0.13	
Transfer 5		0.43	25.92	0.13	

There are up to five transfers / drop points: Once into the bunker, once from bunker to bunker, once outdoors near the rail loading conveyor, once onto the conveyor, and once into a railcar.

**PQ LLC - Joliet Plant
Furnace Rebuild Project**

Furnace Emissions (TPY)								
Category	Emission Unit	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	VOM	CO
2017 Actual Emissions ^[1]	Furnace	8.79	8.79	8.79	5.17	86.28	5.17	32.60
	Fusing Feed	0.56	0.47	0.47				
	SSS Transfers	0.38	0.38	0.38				
	Dry Material to T-110/T-111	4.08E-04	4.08E-04	4.08E-04				
2018 Actual Emissions ^[1]	Furnace	8.64	8.64	8.64	5.08	84.79	5.08	32.04
	Fusing Feed	0.55	0.46	0.46				
	SSS Transfers	0.38	0.38	0.38				
	Dry Material to T-110/T-111	4.48E-04	4.48E-04	4.48E-04				
Baseline Actual Emissions ^[2]	Furnace	8.72	8.72	8.72	5.12	85.54	5.12	32.32
	Fusing Feed	0.55	0.47	0.47				
	SSS Transfers	0.38	0.38	0.38				
	Dry Material to T-110/T-111	4.28E-04	4.28E-04	4.28E-04				
	Baseline Totals	9.65	9.57	9.57	5.12	85.54	5.12	32.32
Proposed New Emission Limits	Furnace	13.40	13.40	13.40	5.79	109.63	5.79	45.48
	Fusing Feed	0.12	0.12	0.12	--	--	--	--
	SSS Transfers	0.65	0.65	0.65	--	--	--	--
	Dry Material to T-110/T-111	0.0006	0.0006	0.0006	--	--	--	--
	Combined PTE	14.17	14.17	14.17	5.79	109.63	5.79	45.48
Project Emissions Increase ^[3]		5.07	5.07	5.07	0.67	24.09	0.67	13.16
PSD Threshold		N/A	250	250	250	N/A	N/A	250
NNSR Threshold		N/A	N/A	N/A	N/A	25	50	N/A
Below Threshold?		N/A	Yes	Yes	Yes	Yes	Yes	Yes

[1] Sourced from facility's Annual Emissions Report (AER).

[2] Baseline actual emissions were determined as the average of actual facility emissions from the two most recent and representative years, 2017 and 2018. Years 2019 and 2020 do not represent normal source operations as explained in the application narrative.

[3] Because PQ is changing the emission calculation methodology for the storage and loading of fusing feed, the difference between the proposed limits and baseline actuals for this activity have not been accounted for since they are not comparable). The proposed new emission rate is accounted for without subtracting any baseline emissions.

PQ LLC - Joliet Facility**Fusing Furnace NOx Emissions 2017-2018**

DATE	NOx TONS	
Jan-17	6.54	
Feb-17	6.64	
Mar-17	7.89	
Apr-17	7.41	
May-17	7.40	
Jun-17	5.73	
Jul-17	7.73	
Jul-17	7.77	
Sep-17	7.00	
Oct-17	6.72	
Nov-17	7.43	
Dec-17	8.03	86.28 tpy
Jan-18	6.42	
Feb-18	7.10	
Mar-18	7.40	
Apr-18	7.61	
May-18	6.20	
Jun-18	7.28	
Jul-18	7.64	
Aug-18	7.35	
Sep-18	6.60	
Oct-18	7.80	
Nov-18	7.57	
Dec-18	5.84	84.79 tpy
TOTAL	171.07	
Average	85.54	

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ Corporation
 Attn: Ken Schulte
 111 Ingalls Avenue
 Joliet, Illinois 60435

Application No.: 21110013I.D. No.: 197045ABOApplicant's Designation:Date Received: November 8, 2021Subject: Fusing Furnace #2 Rebuild ProjectDate Issued:Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. It is expected that sodium silicate glass production will increase above current rates of production.

Commented [SR1]: Please embellish this description.

Please say something about the "fusing feed" and silicate transfer.

The existing slat conveyor used for transferring sodium silicate from the furnace to the dissolvers will be replaced with a traditional mold conveyor. The existing hopper/feeder system that supplies the three dissolvers with solid sodium silicate currently utilizes one main dissolver. The source plans to replace the existing system with a hooper that will allow each dissolver to have its own dedicated feeder.

Commented [SR2]: Please describe.

Commented [SR3]: Under which new unit or operation does this fall under?

Bag dump stations T-110 and T-111 (the affected tanks) will also be constructed. These tanks [REDACTED].

Commented [SR4]: It is unclear just what these units are and do.

Due to the changes being made to furnace operation that will alter production and raw material usage rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity.

Commented [SR5]: This will happen, I presume?

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not affect the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1,

issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

- b. The affected fusing furnace, affected [redacted] and affected [redacted], are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

Commented [SR6]: Fusing feed
 Commented [SR7]: Transfer.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx and VOM of the affected furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the increase in NOx, CO, PM, PM₁₀/PM_{2.5} and SO₂ emissions of the affected furnace are less than significant, i.e., less than 40, 100, 25, 15/10 and 40 tons per year, respectively. See Attachment 2 for a summary of emissions increases for purposes of PSD.

Operational limits, e.g., firing rates

Commented [SR8]: Does Condition 2(a) address these operating limits or are new requirements that will supersede the limits in the CAAPP permit?

4. Emission Limits

- a. i. Annual emissions from the affected fusing furnace shall not exceed the following limits.

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Pollutant	Emission Limit		
	Lb/Ton	Tons/Month	Tons/Year
NOx	4.5	11.0	109.6
CO	1.9	4.6	45.5
VOM	0.24	0.6	5.8
PM/PM ₁₀ /PM _{2.5}	0.56	1.4	13.4
SO ₂	0.24	0.6	5.8

- ii. Emissions of PM/PM₁₀/PM_{2.5} from the affected solid sodium silicate transfer system shall not exceed 0.0054 lb/ton and 0.65 tons/year.

Page 3

iii. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected **fusing feed**, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

b. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Project Recordkeeping Requirements

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for fuel usage, sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

6. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

7. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Evaluation of the Aggregate NOx and VOM Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx	VOM
Fusing Furnace #2 ^b	2021	24.09	5.8
Contemporaneous Increases			
None	2019	0.94	??
Contemporaneous Decreases			
None	2019	1.13	??
Net Emissions Change:		23.9	??
De Minimis Threshold:		25	25
De Minimis?		Yes	Yes

Commented [SR9]: Will need 5-year history for VOM.

Commented [SR10]: Same.

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2021) and the previous four calendar years (calendar years 2017 through 2020).
- b. Project emission changes only address the changes to the furnace as the affected material handling operations would not emit NOx or VOM.

Attachment 2: Summary of Emissions Increases for Purposes of PSD^a (Tons/Year)

Affected Units	NOx	CO	PM ^b	PM ₁₀ ^c /PM _{2.5} ^c	SO ₂
Fusing Furnace #2 ^d	109.63	45.48	13.40	13.40	5.79
Sodium Silicate Transfers ^e	---	---	0.65	0.65	---
Fusing Feed ^e	---	---	0.12	0.12	---
Tanks T-110 & T-111 ^e	---	---	0.01	0.01	---
Totals:	109.63	45.48	14.18	14.18	5.79
Significant Emission Rate:	40				
Greater Than Significant?	Yes				

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- a. **Since the source is not a major source under PSD**
- b. PM emissions include the filterable component only.
- c. PM₁₀/PM_{2.5} emissions include filterable and condensable components.
- d. As an existing emission unit, these emissions are based on projected actual emissions.
- e. As a new emission unit, these emissions are based on potential to emit.

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Attachment 3: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx	CO	PM	PM ₁₀ /PM _{2.5}	SO ₂
Increases					
Projected Actuals ^a	109.63	45.48	13.40	13.40	5.79
PTE ^b	---	---	0.77	0.77	---
Decreases					
Baseline Actuals ^c	85.54	32.32	9.65	9.57	5.12
Net Change:	24.09	13.16	4.60	4.60	0.67

- a. Reflects emissions from the modified furnace.
b. Reflects emissions from new units, i.e., fusing feed, sodium silicate transfers and tanks T-110 and T-111.
c. The baseline actual emissions of the plant's emissions were determined as the annual average of the actual emissions of the plant for the 24-month period of _____.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ Corporation
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. The affected fusing furnace and affected fusing feed are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.
- c. Sodium silicate production of the affected fusing furnace shall not exceed 12,750 lbs/hour and 55,845 tons per year.

4. Emission Limits

- a. i. Emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit		
		Tons/Month	Tons/Year
NOx	4.5	11.0	109.6
CO	1.9	4.6	45.5
VOM	-0.24	0.6	5.8
PM/PM ₁₀ /PM _{2.5}	-0.56	1.4	13.4
SO ₂	-0.24	0.6	5.8

Commented [SR2R1]: These factors provide specific compliance rates for the furnace, no different than for a boiler.

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ii. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.44 tons of PM/PM₁₀/PM_{2.5}.

b. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Project Recordkeeping Requirements

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

6. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

7. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes
of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2021	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	-1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2021) and the previous four calendar years (calendar years 2017 through 2020). There was a project in 2018 but no projects in 2017, 2018 or 2020.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Attachment 2: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Furnace ^a	109.63

Baseline Actuals ^b	85.54
Net Change:	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
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The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
- 6.
- a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ Corporation
 Attn: Ken Schulte
 111 Ingalls Avenue
 Joliet, Illinois 60435

Application No.: 21110013I.D. No.: 197045ABOApplicant's Designation:Date Received: November 8, 2021Subject: Fusing Furnace #2 Rebuild ProjectDate Issued:Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. Fusing Furnace #2 will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000 °F. It is expected that sodium silicate glass production will increase above current rates of production. The molten sodium silicate will continue to pour from the furnace draw and cool as it transfers onto an indoor [slat or mold] conveyor/elevator. It is expected that sodium silicate 'glass' production will increase above current rates of production.

Commented [SR1]: Please embellish this description.

Please say something about the "fusing feed" and silicate transfer.

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Due to the changes being made to the furnace that will alter production rates, and raw material (fusing feed) usage rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling ("fusing feed"), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will have increased throughput. Downstream bag dump stations for emptying dry materials (filtrate) into T-110 and T-111 (the affected tanks) will also have increased rates but will remain insignificant for PM emissions (35 IAC 201.210(a)(3)).

Commented [SR2]: This will happen, I presume?

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate is solidifying and then conveyed in a way that does not

generate emissions. Transfer points of solid sodium silicate (into indoor bunkers or outdoor loading operations) are insignificant activities and exempt from construction permitting. Transfer points of solid sodium silicate into dissolving tanks and the dissolving tanks themselves are also insignificant activities and exempt from construction permitting. A natural gas-fired lip burner will be installed intended to start 'glass' flow and is an insignificant activity per 35 IAC 201.210(a) and 35 IAC 201.211(a). The existing slot conveyor used for transferring sodium silicate from the furnace to the dissolvers will be replaced with a traditional mold conveyor. The mold conveyor forms solid sodium silicate cubes that are less prone to PM production. The existing hopper/feeder system that supplies the three dissolvers with solid sodium silicate currently utilizes one main dissolver. The source plans to replace the existing system with a hopper that will allow each dissolver to have its own dedicated feeder or allow transfer of the sodium silicate cubes to an indoor bunker.

Filtrate System Bag dump stations T-110 and T-111 (the affected tanks) will have increased rates but remain insignificant for PM emissions (35 IAC 201.210(a)(3)). also be constructed. These tanks continue to

Due to the changes being made to furnace operation that will alter production and raw material (fusing feed) usage rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity.

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not affect alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. The affected fusing furnace and, affected fusing feed and affected [redacted], are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary

Commented [MS(3)]: Bob - This is a new addition that was not originally contained in the Construction Permit Application. Another PQ facility provided a NOx emission rate of 0.053 lb/hr. This burner will be used only occasionally to start flow of solidified sodium silicate.

Commented [SR4]: Please describe.

Commented [CR5R4]: Bob - The conveyor is sort of like a moving ice cube tray. No emissions are generated as the cubes of solid sodium silicate are traveling along in their molds. See text we added above.

Commented [SR6]: Under which new unit or operation does this fall under?

Commented [CR7R6]: Bob - The feeder is at the end of the mold conveyor and directs the chunks of solid sodium silicate into a dissolving tank. It's just a chute. Emissions would occur after the SSS falls from the chute into its destination, except in this case the destination is a liquid that is inorganic (in the dissolvers), so there are no regulated emissions. We account for (insignificant) emissions when the SSS falls into a pile of other SSS.

Commented [SR8]: It is unclear just what these units are and do.

Commented [CR9R8]: Bob - See additional text above and let us know if you have questions.

Commented [CR10]: I moved this paragraph up earlier, because it seemed to work better with the explanation of what is affected and what is not.

Commented [MS(11)]: Note: As addressed in the CAAPP Permit Section 4.5.1, the Fusing Feed [indoor] baghouse is in place for industrial hygiene.

Commented [SR12]: Transfer.

Commented [CR13R12]: Bob - Since the transfer points are insignificant activities and exempt from construction permitting, it does not seem like they need to be addressed beyond the Condition 1 description. We have proposed deleting.

Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx and VOM of the affected furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.

- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the increase in NOx, CO, PM, PM₁₀/PM_{2.5} and SO₂ emissions of the affected furnace are less than significant, i.e., less than 40, 100, 25, 15/10 and 40 tons per year, respectively. See Attachment 2 for a summary of emissions increases for purposes of PSD.

Operational limits, e.g., firing rates

4. Emission Limits

- a. i. Annual emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit		
	lb/Ton	Tons/Month	Tons/Year
NOx	4.5	11.0	109.6
CO	1.9	4.6	45.5
VOM	0.24	0.6	5.8
PM/PM ₁₀ /PM _{2.5}	0.56	1.4	13.4
SO ₂	0.24	0.6	5.8

- ii. Emissions of PM/PM₁₀/PM_{2.5} from the affected solid sodium silicate transfer system shall not exceed 0.0054 lb/ton and 0.65 tons/year.
- iii. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

- b. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Project Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for fuel usage, sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

6. Reporting Requirements

Commented [CR14]: Bob - The Joliet Facility is not a major source of VOM, so I don't think referring to de minimis in 203.207(d) is accurate for VOM. That is for existing major sources only.

Instead, I think you want to cite something about 35 IAC 203.206(c): "Any physical change that occurs at a stationary source which does not qualify under subsection (a) of this Section as a major stationary source will be considered a major stationary source, if the change would constitute a major stationary source by itself."

Commented [CR15]: Bob - See Section 4.2.1 of the application text. The Joliet Facility is not an existing major source for PSD, so the project would trigger only if one of these pollutants increased by 250 tpy or more.

Commented [SR16]: Does Condition 2(a) address these operating limits or are new requirements that will supersede the limits in the CAAPP permit?

Commented [CR17R16]: Bob - The production limits in CAAPP Condition 4.1.2.g.i.c need to be replaced. The proposed new rates (which are less than the current limits) are given in the application, right after Table 3-1.

Commented [CR18]: Bob - These are emission factors and should not be in the table of emission limits. There are no such limits in the current permit. Annual and monthly limits, coupled with the production limits, should be sufficient.

Commented [CR19]: Bob - 0.65 tpy actually represents the sum of emissions from 5 separate transfer points. Each transfer operation/point is an insignificant activity, and therefore exempt from construction permitting and does not need to be limited here.

Commented [CR20]: Bob - I forget... When the condition is phrased as "this permit is issued based on negligible emissions, i.e....", does that mean the emission rate listed is just an example and not actually enforceable? If so, could we just list 0.44 tpy instead of 0.12 tpy?

Commented [CR21]: Bob - This is not a requirement in the CAAPP permit.

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The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

7. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Evaluation of the Aggregate NOx and VOM Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx	VOM
Fusing Furnace #2 ^b	2021	24.09	5.8
Contemporaneous Increases			
None New 2.2 MMBtu/hr heater	2019	0.94	??
Contemporaneous Decreases			
None Removal of 4.5 MMBtu/hr heater	2019	-1.13	??
Net Emissions Change:		23.9	??
De Minimis Threshold:		25	25
De Minimis?		Yes	Yes

Commented [SR22]: Will need 5-year history for VOM.

Commented [CR23R22]: Bob - Per our comment with Condition 3.a, the Joliet Facility is not an existing major source of VOM, so 5 years of aggregated projects are not required.

Commented [MS(24): Add minus sign?

Commented [SR25]: Same.

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2021) and the previous four calendar years (calendar years 2017 through 2020). There were no projects in 2017, 2018 or 2020.
- b. Project emission changes only address the changes to the furnace as the affected material handling operations fusing feed would not emit NOx ~~or~~ VOM.

Commented [CR26]: Bob - It seems like it could be helpful to include this statement, so it's clear why only 2019 is shown in the 5-year aggregation table.

Attachment 2: Summary of Emissions Increases for Purposes of PSD^a
(Tons/Year)

Affected Units	NOx	CO	PM ^b	PM ₁₀ ^c /PM _{2.5} ^c	SO ₂
Fusing Furnace #2 ^d	109.63 24.09	45.48 13.16	13.40 4.68	13.40 4.68	5,790.67
Sodium Silicate Transfers ^e	---	---	0.27 65	0.27 65	---
Fusing Feed ^e	---	---	0.12	0.12	---
Tanks T-110 & T-111 ^e	---	---	< 0.01	< 0.01	---
Totals:	109.63 24.09	45.48 13.16	5.07 14.18	5.07 14.18	5,790.67
Significant Emission Rate:	40250				
Greater Than Significant?	YesNo				

Commented [CR27]: Bob - It looks like you accidentally put the emission limits in the 1st row of the table instead of the emissions increases. We have marked the updates here. (We assume you meant increases, since you are then comparing to the PSD threshold.)

Commented [CR28]: Bob - Please refer to Section 4.2.1 of the application. There are several paragraphs explaining PSD non-applicability there.

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- a. **Since the source is not a major source under PSD**
- b. PM emissions include the filterable component only.
- c. PM₁₀/PM_{2.5} emissions include filterable and condensable components.
- d. As an existing emission unit, these emissions are based on projected actual emissions.
- e. **As a new emission unit, these emissions are based on potential to emit.**

Commented [CR29]: Bob - I don't think this is true. We used proposed new limits (PTE) vs. past actual.

You might want to note that past actual was based on 2017 & 2018 instead of the past 2 calendar years, because 2019 & 2020 were not representative of normal operation.

Commented [CR30]: Bob - These are not new emission units. They are non-modified emission units affected by the project. I believe there is some flexibility in how you do NSR math for units like that, but PQ looked at actual to potential.

Per footnote 3 on the very last page of the application (page B-6), there is a change in calc method for the Fusing Feed that makes it look like there will be an emissions decrease. Instead of counting a decrease we just showed the new PTE as all increase, to be conservative. Maybe that is something to note here instead?

Attachment 3: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx	CO	PM	PM ₁₀ /PM _{2.5}	SO ₂
Increases					
Projected Actuals ^a	109.63	45.48	13.40	13.40	5.79
PTE ^b	---	---	0.77	0.77	---
Decreases					
Baseline Actuals ^c	85.54	32.32	9.65	9.57	5.12
Net Change:	24.09	13.16	4.60	4.60	0.67

a. Reflects emissions from the modified furnace.

~~b. Reflects emissions from new units, i.e., fusing feed, sodium silicate transfers and tanks T-110 and T-111.~~

~~e-b.~~ The baseline actual emissions of the plant's emissions were determined as the annual average of the actual emissions of the plant for the 24-month period of _____.

Commented [CR31]: This table seems somewhat redundant with Attachment 2 above. Can it be deleted? We did not update all the numbers, since it seems like they might not be needed. We can update them in a 2nd draft if it turns out the table needs to stay.

Commented [CR32]: As noted above, we used PTE for everything.

Commented [CR33]: There are only modified and affected units, not any new units.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ Corporation LLC

Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Commented [CR1]: Bob - The company name has changed slightly. Per the forms with the application, it should be PQ LLC now, instead of PQ Corporation.

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. The affected fusing furnace and affected fusing feed are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.
- c. Sodium silicate production of the affected fusing furnace shall not exceed 12,750 lbs/hour, 4,828 tons/month and 55,84548,281 tons per year.

4. Emission Limits

- a. i. Emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit		
		Tons/Month	Tons/Year
NOx	4.5	11.0	109.6
CO	1.9	4.6	45.5
VOM	0.24	0.6	5.8
PM/PM ₁₀ /PM _{2.5}	0.56	1.4	13.4
SO ₂	0.24	0.6	5.8

Commented [CR2]: Bob - The old production limits (which you had listed) need to be replaced with the values now shown here. The annual limit must be reduced to help ensure MSSCAM is not triggered. PQ also proposes to replace the hourly limit with a monthly limit (set at 1/10th the new annual limit).

Commented [SR4R3]: These factors provide specific compliance rates for the furnace, no different than for a boiler.

Commented [CR5R3]: IEPA - This situation is not exactly like a boiler, since the furnace has both natural gas feed and raw material feed. PQ is willing to conduct a stack test after the furnace rebuild is complete. The test could be used to show compliance with the lb/ton factors used in the permit application, which by extension would show the equivalent of compliance with the tons/month emission limits in this permit. PQ thinks this test could be completed and be meaningful for compliance, without the lb/ton factors being explicit limits in the permit. If the factors are limits in the permit, then the compliance demonstration method, averaging period, etc. all come into play and complicates things. (Do the factors apply every hour? On a monthly average basis? etc.)

When drafting the stack testing condition we request that you please give PQ 180 days to complete the test, to ensure there is adequate shake-down time after the furnace comes back into service after the rebuild.

Page 3

ii. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.44 tons of PM/PM₁₀/PM_{2.5}.

b. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Project Recordkeeping Requirements

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

6. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

7. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Commented [MS(6)]: Insert 'Testing' Section:

The Permittee shall have performance tests conducted for the nitrogen oxides (NO_x) emissions of the Sodium Silicate Manufacturing Furnace by an approved independent testing service during conditions that are representative of maximum emissions following a shakedown and testing period.

Testing shall be performed within ninety (90) days following startup of the furnace after the rebuild is complete.

A written test protocol shall be submitted at least sixty (60) days prior to the actual date of testing, unless it is required otherwise in applicable state or federal statutes.

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022 ±	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	XXXX	23.9
De Minimis Threshold:	XXXX	25
De Minimis?	XXXX	Yes

Commented [CR7]: IEPA - Now that the permit issuance will occur in 2022, we believe that this year and some of the years in the footnote need to be updated.

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022~~±~~) and the previous four calendar years (calendar years 2018~~7~~ through 2021~~0~~). There was a project in 2019~~8~~ but no projects in 2018~~7~~, 2020~~±8~~ or 2021~~0~~.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Attachment 2: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
-Furnace PTE ^a	109.63

Furnace Baseline Actuals ^b	85.54
Net Change:	24.09

Commented [CR8]: IEPA - It might make more sense to put this table before the table above, because the 24.09 tpy NOx value (the conclusion of this table) is the first entry in the table above.

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience ~~an a negligible insignificant~~ increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are ~~insignificant-negligible emitting~~ activities. A natural gas-

Page 2

fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting ~~an insignificant~~ activity.

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. The affected fusing furnace and affected fusing feed are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 120 tons/day (based on a monthly average) and 48,281 tons per year.
- b. The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton of sodium silicate. Compliance with this limit shall be based on a 3-hour average, consistent with the results of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.

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- c. i. Emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit	
	pounds/hour	Tons/Year
NOx	21.7*	109.6
CO	8.2*	45.5
VOM	??	5.8
PM/PM ₁₀ /PM _{2.5}	2.2*	13.4
SO ₂	??	5.8

*Emissions shall be based on a 3-hour average.

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., lead emissions of no more than XY tons/year and total HAP emissions of no more than XY ton/year.
- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.44 tons of PM/PM₁₀/PM_{2.5}.
- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for NOx, CO, PM₁₀ and PM_{2.5} emissions.
- B. This testing shall also be conducted every five years thereafter.
- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Filterable PM ₁₀ or PM _{2.5}	Method 201A
Condensable PM	Method 202
Nitrogen Oxides	Method 7
Carbon Monoxide	Method 10

Page 4

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:
 - A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing including:
 - 1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - 4. The test method(s) that will be used with the specific analysis method.
 - 5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
 - C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within

Page 5

60 days after the date of testing. The Final Report shall include:

1. A summary of results.
2. General information.
3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Project Recordkeeping Requirements

For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

7. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

8. Authorization to Operate

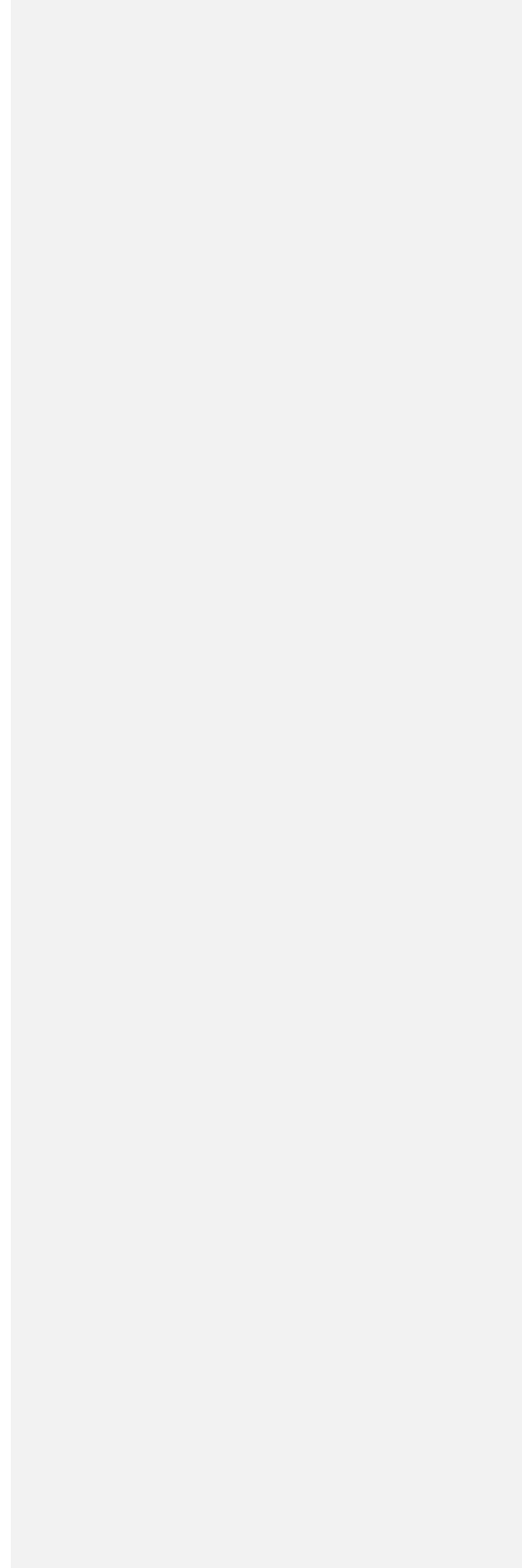
The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

Page 6

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan



Page 7

Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63
Fusing Furnace Baseline Actuals	85.54
Net Change	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.

Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	XXXXXX	23.9
De Minimis Threshold:	XXXXXX	25
De Minimis?	XXXXXX	Yes

Commented [SR1]: Remind me again re this project - it did not receive a permit, right? Was it actually installed in 2019?

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Commented [SR2]: Was this when it was commenced and completed?

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience ~~an a negligible insignificant~~ increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are ~~insignificant-negligible emitting~~ activities. A natural gas-

Page 2

fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting ~~an insignificant~~ activity.

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. The affected fusing furnace and affected fusing feed are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 120 tons/day (based on a monthly average) and 48,281 tons per year.
- b. ~~The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton of sodium silicate. Compliance with this limit shall be based on a 3-hour average, consistent with the results of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.~~

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- c. i. Emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit	
	pounds/hour	Tons/Year
NOx	21.7*	109.6
CO	8.2*	45.5
VOM	??	5.8
PM/PM ₁₀ /PM _{2.5}	2.2*	13.4
SO ₂	??	5.8

Commented [SR1]: What are these?

*Emissions shall be based on a 3-hour average.

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., lead emissions of no more than XY tons/year and total HAP emissions of no more than XY ton/year.

Commented [SR2]: What are these values?

- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.44 tons of PM/PM₁₀/PM_{2.5}.
- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

~~5. Emission Testing~~

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- a. ~~i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for NOx, CO, PM₁₀ and PM_{2.5} emissions.~~
- ~~B. This testing shall also be conducted every five years thereafter.~~
- ~~ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:~~

Filterable PM₁₀ or PM_{2.5}	Method 201A
Condensable PM	Method 202
Nitrogen Oxides	Method 7
Carbon Monoxide	Method 10

Page 4

~~iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.~~

~~b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:~~

~~A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.~~

~~B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing including:~~

~~1. The person(s) who will be performing sampling and analysis and their experience with similar tests.~~

~~2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.~~

~~3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.~~

~~4. The test method(s) that will be used with the specific analysis method.~~

~~5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.~~

~~C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within~~

Page 5

~~60 days after the date of testing. The Final Report shall include:~~

- ~~1. A summary of results.~~
- ~~2. General information.~~
- ~~3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.~~
- ~~4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.~~
- ~~5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.~~

5. Monitoring Requirements

- a. For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.

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Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.

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6. Project Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

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- b. The affected fusing furnace shall comply with the recordkeeping requirements of 35 IAC 217.156.

7. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

8. Authorization to Operate

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The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63
Fusing Furnace Baseline Actuals	85.54
Net Change	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.

Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

Commented [SR3]: Remind me again re this project - it did not receive a permit, right? Was it actually installed in 2019?

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Commented [SR4]: Was this when it was commenced and completed?

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience ~~an a negligible insignificant~~ increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are ~~insignificant-negligible emitting~~ activities. A natural gas-

Page 2

fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting an insignificant activity.

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. The affected fusing furnace and affected fusing feed are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 120 tons/day (based on a monthly average) and 48,281 tons per year.
- b. ~~The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton of sodium silicate. Compliance with this limit shall be based on a 3-hour average, consistent with the results of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.~~

Commented [CR1]: IEPA - This either needs to be labeled as metric tons or the numerical value should be converted to tons. (120 Metric tons is the correct/stated production rate.)

120 MT = 132.28 short tons

- c. i. Emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit	
	pounds/hour	Tons/Year
NOx	25.021.7*	109.6
CO	10.388.2*	45.5
VOM	1.3222	5.8
PM/PM ₁₀ /PM _{2.5}	2.24.7*	13.4
SO ₂	1.3222	5.8

*Emissions shall be based on a 3-hour average.

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., lead emissions of no more than ~~xy~~ 0.001 tons/year and total HAP emissions of no more than ~~xy~~ 0.44 ton/year.

- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.44 tons of PM/PM₁₀/PM_{2.5}. Per Section 4.5.1 of CAAPP Permit No. 96030053, the baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for NOx, CO, PM₁₀ and PM_{2.5} emissions.

B. This testing shall also be conducted every five years thereafter.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Filterable PM ₁₀ or PM _{2.5}	Method 201A
Condensable PM	Method 202
Nitrogen Oxides	Method 7

Commented [CR2]: IEPA - These appear to have been calculated from 120 tons/day, but the correct throughput is 120 MT/day (132.28 tons/day). That increases all of the hourly rates. We have filled in updated values for you here.

Note that, for PM emissions, the new calculated value ends up lower than the current permit limit (3.06 lb/hr vs. 4.7 lb/hr). PQ is proposing to keep the PM lb/hr limit unchanged from the current permit, but the tpy value can match the submitted application.

Commented [SR3]: What are these?

Commented [CR4R3]: IEPA - See values now added to the table, based on emission factors from the application, 132.28 tons/day and 24 hrs/day.

Commented [CR5]: Bob - I seem to recall that you said on the phone that Jason had comments on this asterix. Can you please confirm that it can be deleted?

Commented [SR6]: What are these values?

Commented [CR7R6]: IEPA - AP-42 natural gas HAP factors seem to be the best data source available for this.

The furnace MMBtu/hr rating is 32 MMBtu/hr. With a Pb emission factor of 0.0005 lb/MMscf and a total HAP factor of (summed from the AP-42 HAP table) of 1.89 lb/MMscf, and 1020 Btu/scf and 8760 hrs/yr, we have calculated: 7x10^-5 tpy Pb, and 0.26 tpy total HAP.

We are suggesting < 0.001 tpy Pb and < 0.44 tpy HAP instead of the actual Pb value and 0.26 tpy HAP.

Commented [CR8]: IEPA - Is it necessary to list an emission limit here? See the note in CAAPP permit Section 4.5.1 ("does not serve a function for air pollution regulatory compliance").

Page 4

~~Carbon Monoxide Method 10~~

~~iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.~~

~~b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:~~

~~A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.~~

~~B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing including:~~

~~1. The person(s) who will be performing sampling and analysis and their experience with similar tests.~~

~~2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.~~

~~3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.~~

~~4. The test method(s) that will be used with the specific analysis method.~~

~~5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.~~

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~~C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:~~

- ~~1. A summary of results.~~
- ~~2. General information.~~
- ~~3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.~~
- ~~4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.~~
- ~~5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.~~

5. Monitoring Requirements

- a. For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.

Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.

6. Project Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces.

7. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

Commented [CR9]: IEPA - We suggest making this more specific (as shown here) rather than citing the whole section. There are some paragraphs for combustion tuning of boilers/heaters, documenting non-applicability, etc. that can be eliminated as not applicable to the fusing furnace.

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8. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63
Fusing Furnace Baseline Actuals	85.54
Net Change	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.

Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Commented [SR10]: Remind me again re this project - it did not receive a permit, right? Was it actually installed in 2019?

Commented [CR11R10]: IEPA - That is correct, the heater was exempt from construction permitting per 201.146(c) or (d) and also an insignificant activity for the CAAPP permit. The work was completed in 2019.

Commented [SR12]: Was this when it was commenced and completed?

Commented [CR13R12]: Bob - yes, that is correct. The work was completed in October 2019.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued:

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

~~b. The affected fusing furnace is subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(e).~~

Commented [SR1]: This is being removed since it is already in the CAAPP permit.

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3. Nonapplicability Provisions

a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace are de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.

b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year.

~~b. The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton of sodium silicate. Compliance with this limit shall be based on a 3-hour average, consistent with the results of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.~~

Commented [SR2]: No longer necessary since CEMS will now be used.

- c. i. Emissions from the affected fusing furnace shall not exceed the following limits.

Pollutant	Emission Limit	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	10.38*	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7*	13.4
SO ₂	1.32	5.8

*Emissions shall be based on a 3-hour average.

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.44 tons of PM/PM₁₀/PM_{2.5}.

Note: Per Section 4.5.1 of CAAPP Permit No. 96030053, the baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total)

5. Emission Testing

- a. i. A. ~~Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for NOx, CO, PM₁₀ and PM_{2.5} emissions.~~

~~B. This testing shall also be conducted every five years thereafter.~~

- ii. ~~The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:~~

Filterable PM₁₀ or PM_{2.5}	Method 201A
Condensable PM	Method 202
Nitrogen Oxides	Method 7

Commented [CR3]: Bob - I seem to recall that you said on the phone that Jason had comments on this asterisk. Can you please confirm that it can be deleted?

Commented [SR4R3]: It stays. Does it apply to VOM and SO2 also?

Commented [CR5]: IEPA - Is it necessary to list an emission limit here? See the note in CAAPP permit Section 4.5.1 ("does not serve a function for air pollution regulatory compliance").

Commented [SR6R5]: Her point may be valid. The fusing feed was constructed in 1961 so is grandfathered. The fact that a higher throughput will increase emissions does not alter that.

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Commented [SR7]: Removed because CEMS is now required.

Page 4

~~Carbon Monoxide Method 10~~

~~iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.~~

~~b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:~~

~~A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.~~

~~B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing including:~~

~~1. The person(s) who will be performing sampling and analysis and their experience with similar tests.~~

~~2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.~~

~~3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.~~

~~4. The test method(s) that will be used with the specific analysis method.~~

~~5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.~~

Page 5

~~C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:~~

- ~~1. A summary of results.~~
- ~~2. General information.~~
- ~~3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.~~
- ~~4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.~~
- ~~5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.~~

5. Monitoring Requirements

- a. For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.

Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.

6. Project Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

- b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces only.

7. Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

Commented [CR8]: IEPA - We suggest making this more specific (as shown here) rather than citing the whole section. There are some paragraphs for combustion tuning of boilers/heaters, documenting non-applicability, etc. that can be eliminated as not applicable to the fusing furnace.

Page 6

8. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63
Fusing Furnace Baseline Actuals	85.54
Net Change	24.09

- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.

Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

Commented [SR9]: Remind me again re this project - it did not receive a permit, right?
Was it actually installed in 2019?

Commented [CR10R9]: IEPA - That is correct, the heater was exempt from construction permitting per 201.146(c) or (d) and also an insignificant activity for the CAAPP permit. The work was completed in 2019.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued: [DRAFT 3-11-2022](#)

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.
- b. ~~The affected fusing furnace is subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(e).~~

Commented [SR1]: This is being removed since it is already in the CAAPP permit.

Commented [SJ2R1]: agree

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3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace ~~are-is~~ de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition ??? of the CAAPP Permit.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition ??? of the CAAPP Permit.
- b. ~~The NOx emission rate of the affected fusing furnace shall not exceed 4.5 lb/ton of sodium silicate. Compliance with this limit shall be based on a 3-hour average, consistent with the results~~

Commented [SR3]: No longer necessary since CEMS will now be used.

Commented [SJ4R3]: agree

~~of emission testing, which generally reflects the average of three test runs, each nominally one hour in duration.~~

- c. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions ??? of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	10.38*	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7*	13.4
SO ₂	1.32	5.8

~~*Emissions shall be based on a 3-hour average.~~

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 tons/year.
- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than ~~0.44~~ 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: Per Section 4.5.1 of CAAPP Permit No. 96030053, the baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for ~~NOx, CO, PM and PM₁₀~~ and PM_{2.5} emissions.
- B. This testing shall also be conducted every five years thereafter.
- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Commented [CR5]: Bob - I seem to recall that you said on the phone that Jason had comments on this asterisk. Can you please confirm that it can be deleted?

Commented [SR6R5]: It stays. Does it apply to VOM and SO2 also?

Commented [SJ7R5]: Talked to KM about this and he is ok deleting. The emissions rates apply to any 1 hour period.

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Commented [CR8]: IEPA - Is it necessary to list an emission limit here? See the note in CAAPP permit Section 4.5.1 ("does not serve a function for air pollution regulatory compliance").

Commented [SR9R8]: Her point may be valid. The fusing feed was constructed in 1961 so is grandfathered. The fact that a higher throughput will increase emissions does not alter that.

Commented [SJ10R8]: They requested a limit of 0.12. I'd prefer to say it's negligible at 0.12 tpy. As an alternative, they can retract their request for a limit, rely on PAE-BAE (not PTE) and we can delete the condition.

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Commented [SR11]: Removed because CEMS is now required.

Commented [SJ12R11]: You only have a CEMS for NOx, so why would we delete testing for other pollutants. I confirmed this with KM.

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Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ (filterable)*	Method 201A
PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202

~~Filterable PM_{2.5} or PM_{2.5}~~ Method 201A

~~Condensable PM~~ Method 202

Nitrogen Oxides

~~Method 7~~

Carbon Monoxide

Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀.

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:

A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing including:

1. The person(s) who will be performing sampling and analysis and their experience with similar tests.

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Page 5

2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 4. The test method(s) that will be used with the specific analysis method.
 5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

56. Monitoring Requirements

- a. For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.

Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.

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Commented [SJ13]: This doesn't apply. Also, it has nothing to do with NOx CEMS.

Page 6

a. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The NO_x CEMS shall monitor continuously and record the hourly NO_x emission concentration (parts per million) at all times that the affected fusing furnace is in operation.

ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 2) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. The Permittee shall either:

- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
 3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and

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Page 7

handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Commented [SJ14]: Run this by KM.

~~76.~~ Project Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces only.

Commented [CR15]: IEPA - We suggest making this more specific (as shown here) rather than citing the whole section. There are some paragraphs for combustion tuning of boilers/heaters, documenting non-applicability, etc. that can be eliminated as not applicable to the fusing furnace.

~~78.~~ Reporting Requirements

The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

Commented [SJ16R15]: This doesn't apply - what is going on here?

~~98.~~ Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)

Emissions	NOx
Fusing Furnace PTE	109.63 ^a
Fusing Furnace Baseline Actuals	85.54 ^b
Net Change	24.09

Commented [SJ17]: This table should reflect all PSD pollutants applicable to the project. It should also be identified as a PSD table.

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- a. Reflects potential emissions from the modified furnace.
- b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 ~~since these years were more representative of operation.~~

Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

Commented [SJ18]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years, what is the justification?

Commented [SR19]: Remind me again re this project - it did not receive a permit, right? Was it actually installed in 2019?

Commented [CR20R19]: IEPA - That is correct, the heater was exempt from construction permitting per 201.146(c) or (d) and also an insignificant activity for the CAAPP permit. The work was completed in 2019.

Commented [SJ21]: Confirm this is based on actuals.

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

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The following conditions are applicable unless superseded by special condition(s).

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2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued: [DRAFT 3-11-2022](#)

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Condition 4.1.2(f)(i)(A) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	10.38*	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7*	13.4
SO ₂	1.32	5.8

~~*Emissions shall be based on a 3-hour average.~~

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ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for CO, PM and PM₁₀/PM_{2.5} emissions.

B. This testing shall also be conducted every five years thereafter.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

<u>Location of Sample Points</u>	<u>Method 1</u>
<u>Gas Flow and Velocity</u>	<u>Method 2</u>
<u>Flue Gas Weight</u>	<u>Method 3</u>
<u>Moisture</u>	<u>Method 4</u>
<u>PM (filterable)</u>	<u>Method 5</u>
<u>PM₁₀/PM_{2.5} (filterable)*</u>	<u>Method 201A</u>
<u>PM_{2.5} (filterable)*</u>	<u>Method 201A</u>
<u>Condensable Particulate Matter</u>	<u>Method 202</u>
<u>Carbon Monoxide</u>	<u>Method 10</u>

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

Commented [CR1]: IEPA - Is it necessary to list an emission limit here? See the note in CAAPP permit Section 4.5.1 ("does not serve a function for air pollution regulatory compliance").

Commented [SJ2R1]: They requested a limit of 0.12. I'd prefer to say it's negligible at 0.12 tpy. As an alternative, they can retract their request for a limit, rely on PAE-BAE (not PTE) and we can delete the condition.

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Page 4

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. i. For the emission testing required by Condition 5-1(a), the Permittee shall fulfill the following notification and reporting requirements:
- A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 4. The test method(s) that will be used with the specific analysis method.

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5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.

C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:

1. A summary of results.
2. General information.
3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

a. ~~For the affected fusing furnace, the Permittee shall comply with the monitoring requirements in accordance with 35 IAC 217.157(b) as they would apply to glass melting furnaces.~~

~~Note: Emission averaging requirements as they may apply to glass melting furnaces, will not apply to the affected fusing furnace.~~

~~a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The NO_x CEMS shall monitor continuously and record the hourly NO_x emission concentration (parts per million) at all times that the affected fusing furnace is in operation.~~

ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 2) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. The Permittee shall either:

Commented [SR3]: Monitoring will take a while to install.

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Page 6

- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
 3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.
7. ~~Project~~ Recordkeeping Requirements

Page 7

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces only.

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8. Reporting Requirements

a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.

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b. One copy of required reports and notifications shall be sent to:

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i. Via mail or overnight delivery:

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Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Electronically: epa.boa.smu@illinois.gov

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9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

~~Attachment 1: Summary of Changes in Emissions (Tons/Year)
(based on information in the application)~~

Emissions	NOx
Fusing Furnace PTE	109.63*
Fusing Furnace Baseline Actuals	-85.54^b
Net Change	24.09

- ~~a. Reflects potential emissions from the modified furnace.
b. The baseline actual emissions of the furnace's emissions were determined as the annual average of the actual emissions of the furnace for the 24-month period of January 2017 through December 2018 since these years were more representative of operation.~~

~~Attachment 2: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)~~

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

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Commented [SJ4]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years for purposes of MSSCAM, what is the justification for using earlier years?

Commented [SR5]: Confirm, with calculations, that these (the 2.2 and 4.5 mmBtu/hr heaters) are both based on actual emissions.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Condition 4.1.2(f)(i)(A) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	----	109.6
CO	10.38	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	13.4
SO ₂	1.32	5.8

Page 3

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for CO, PM and PM₁₀/PM_{2.5} emissions.

B. This testing shall also be conducted every five years thereafter.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

Commented [CR1]: IEPA - Is it necessary to list an emission limit here? See the note in CAAPP permit Section 4.5.1 ("does not serve a function for air pollution regulatory compliance").

Commented [SJ2R1]: I'd prefer to say it's negligible at 0.12 tpy. As an alternative, they can retract their request for a limit, rely on PAE-BAE (not PTE) and we can delete the condition.

Page 4

- b. i. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 4. The test method(s) that will be used with the specific analysis method.
 5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.

Page 5

- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The NOx CEMS shall monitor continuously and record the hourly NOx emission concentration (parts per million) at all times that the affected fusing furnace is in operation.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall either:
- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced

Page 6

proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or

B. Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:

1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces.

8. Reporting Requirements

Page 7

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

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If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2018	23.9
De Minimis Threshold:	2019	25
De Minimis?	2020	Yes

Commented [SJ3]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years for purposes of MSSCAM, what is the justification for using earlier years?

Commented [SR4]: Confirm, with calculations, that these (the 2.2 and 4.5 mmBtu/hr heaters) are both based on actual emissions.

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 4-6-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Condition 4.1.2(f)(i)(A) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	----	109.6
CO	10.38	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	13.4 20.6
SO ₂	1.32	5.8

Commented [CR1]: IEPA - PQ originally proposed lowering the PM limits based on a 2016 stack test and a safety factor. Then, in draft permit review, we proposed maintaining the prior hourly emission limit to give short-term flexibility, but we kept the proposed new annual emission limit. Upon further review, PQ would also like to keep the prior annual limit. It is marked here, and matches CAAPP Condition 4.1.2.b.1.B, which cites Construction Permit #09090029.

Page 3

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter. Ongoing compliance for NOx is addressed by Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
<u>Nitrogen Oxides</u>	<u>Method 7E</u>
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

Page 4

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. i. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
 - A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - 1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - 4. The test method(s) that will be used with the specific analysis method.

Page 5

5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60-90 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

Commented [CR2]: IEPA - Please update timing for consistency with the CAAPP permit and because stack testing firms remain very busy these days, so report turnaround can be affected.

6. Monitoring Requirements

- a.
 - i. Except as provided in Condition 6.b of this permit, t~~The~~ Permittee shall install, calibrate, ~~certify,~~ maintain, and operate a NOx CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within [18-24] months after the results from the testing in Condition 5.a are obtained. The period in which the Permittee must install and calibrate the NOx CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NOx CEMS or CERMS shall be operated as provided in Condition 6.a.iii ~~shall monitor continuously and record the hourly NOx emission concentration (parts per million)~~ at all times that the affected fusing furnace is in operation.
 - ii. The CEMS from Condition 6.a.i shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

Commented [CR3]: TBD.

Commented [CR4]: IEPA - PQ proposes linking the timing to the stack test results, in the event that the stack test shows NOx is considerably lower than estimated in the permit application.

Page 6

- iii. Except as provided in Condition 6.b of this permit, the Permittee shall either:
- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, ~~certify~~, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
 3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Commented [CR5]: IEPA - Does this include calculating flow rate from some surrogate parameter, such as gas usage?

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NOTE: The timing for the requirements in Condition 6.a.iii.A and B is as specified in Condition 6.a.i.

b. i. If Will County, Illinois (or the portion of it where the affected fusing furnace is located), is redesignated to attainment with the 2008 national ambient air quality standard for ozone (8-hour average), or if the results of the initial NOx testing in Condition 5.a are less than 95% of the applicable standard, the Permittee may demonstrate compliance with the NOx emission limits established in this permit for the affected fusing furnace as follows, in lieu of installing a CEMS (or CERMS):

- A. If the results of the NOx emissions testing in Condition 5.a.i.A of this permit are less than 80% of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 5 years thereafter.
- B. If the results of the NOx emissions testing in Condition 5.a.i.A of this permit are between 80 and 95% of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 3 years thereafter.
- C. If the results of the NOx emissions testing in Condition 5.a.i.A of this permit are greater than 95% of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated within 13 months.
- D. The results of any NOx emissions testing shall be compared to the applicable standard and the timing of the subsequent test shall be based on Conditions 6.b.i.A-C, as applicable.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. ~~The affected fusing furnace shall comply with the applicable recordkeeping requirements of 35 IAC 217.156 as they would apply to glass melting furnaces.~~

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:

Commented [CR6]: IEPA - Is this CEMS vs. CERMS distinction needed? We have not seen it in other permits.

Commented [CR7]: IEPA - If the results are equivalent to 95% of 109.6 tpy NOx from Condition 4.b, then the annual result is 104.1 tpy.

If we had used 104.1 tpy in our NANSR math, the project increase would be ~5.5 tpy less, which would be < 20 tpy NOx increase, which would be < 80% of the NANSR triggering threshold.

(This gets a little confusing with paragraph C below. Maybe the ranges in B and C need to get shifted slightly. We wanted to draft in the concept for now.)

Commented [CR8]: IEPA - If we are not going to refer to 35 IAC 217 for monitoring requirements, it seems like we should also eliminate using it a substitute for recordkeeping permit conditions. Please check and see which provisions of 35 IAC 217.156 are important to IEPA and draft them as stand-alone permit conditions instead.

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- i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

- ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan

Commented [SJ9]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years for purposes of MSSCAM, what is the justification for using earlier years?

Commented [CR10R9]: IEPA - Please refer to Section 3.2 of the permit application for the justification. There is a half-page write-up about it there.

The short version is:
 2019 = polar vortex-related downtime and other mechanical/ maintenance work;
 2020 = COVID-related demand/ production decrease

Commented [SR11]: Confirm, with calculations, that these (the 2.2 and 4.5 MMBtu/hr heaters) are both based on actual emissions.

Commented [CR12R11]: IEPA - Why would we base the value for the 2.2 MMBtu/hr heater on actual emissions? It is a new unit, so the number is (and must be) based on PTE.

The NOx PTE of a 4.5 MMBtu/hr heater is 1.93 tpy:

$4.5 \text{ MMBtu/hr} \times \text{MMscf}/1020 \text{ MMBtu} \times 8760 \text{ hr/year} \times 100 \text{ lb/MMscf} \times 1 \text{ ton}/2,000 \text{ lb} = 1.93 \text{ tpy}$.

Therefore the 1.13 tpy does represent actuals rather than PTE.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 4-6-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual emission limits for the furnace as described in Section 4.1 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr. This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Condition 4.1.2(f)(i)(A) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	----	109.6
CO	10.38	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	20.6
SO ₂	1.32	5.8

Page 3

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted for the affected fusing furnace for CO, NO_x, PM and PM₁₀/PM_{2.5} emissions.
- B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NO_x is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

Page 4

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. i. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
 - A. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - B. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - 1. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - 2. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum operation and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - 3. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - 4. The test method(s) that will be used with the specific analysis method.

Page 5

5. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- C. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 90 days after the date of testing. The Final Report shall include:
1. A summary of results.
 2. General information.
 3. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 4. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 5. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

Commented [SR1]: They wanted 90 which I allowed.

6. Monitoring Requirements

- a.
 - i. ~~Except as provided for in Condition 6(b) of this permit,~~ the Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within [18-24] months after the results from the testing in Condition 5(a) are obtained. The period in which the Permittee must install and calibrate the NOx CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NOx CEMS or CERMS shall be operated as provided in Condition 6(a)(iii) shall monitor continuously and record the hourly NOx emission concentration (parts per million) at all times that the affected fusing furnace is in operation.
 - ii. The CEMS from Condition 6(a)(i) shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

Commented [CR2]: TBD.

Commented [SR3R2]: 18-24 months is way too much time. I suggest 3 to 6 months.

Commented [CR4]: IEPA - PQ proposes linking the timing to the stack test results, in the event that the stack test shows NOx is considerably lower than estimated in the permit application.

Commented [SR5]: Suggest removing.

Page 6

- iii. Except as provided in Condition 6(b) of this permit, the Permittee shall either:
- A. Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPA approved method for calculating flow. In conjunction with the USEPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced; or
- B. Install, calibrate, certify, maintain, and operate NOx Continuous Emission Rate Monitoring System (CERMS) as follows:
1. The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);
 2. The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);
 3. In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.

Commented [CR6]: IEPA - Does this include calculating flow rate from some surrogate parameter, such as gas usage?

Commented [SR7R6]: I would think so. Should we clarify?

Note: The timing for the requirements in Condition 6(a)(iii)(A) and (B) is as specified in Condition 6(a)(i).

b. i. If Will County, Illinois (or the portion of it where the affected fusing furnace is located), is redesignated to attainment with the 2008 national ambient air quality standard for ozone (8-hour average), or if the results of the initial NOx testing in Condition 5(a) are less than 95 percent of the applicable standard, the Permittee may demonstrate compliance with the NOx emission limits established in this permit for the affected fusing furnace as follows, in lieu of installing a CEMS (or CERMS):

A. If the results of the NOx emissions testing in Condition 5(a)(i)(A) of this permit are less than 80 percent of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 5 years thereafter.

B. If the results of the NOx emissions testing in Condition 5(a)(i)(A) of this permit are between 80 and 95 percent of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 3 years thereafter.

C. If the results of the NOx emissions testing in Condition 5(a)(i)(A) of this permit are greater than 95 percent of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated within 13 months.

D. The results of any NOx emissions testing shall be compared to the applicable standard and the timing of the subsequent test shall be based on Conditions 6(b)(i)(A)-(C), as applicable.

7. Recordkeeping Requirements

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.

Commented [CR8]: IEPA - Is this CEMS vs. CERMS distinction needed? We have not seen it in other permits.

Commented [SR9R8]: Removed CERMS?

Commented [SR10]: They added (b), which I suggest should be removed entirely.

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Commented [CR11]: IEPA - If the results are equivalent to 95% of 109.6 tpy NOx from Condition 4.b, then the annual result is 104.1 tpy.

If we had used 104.1 tpy in our NANSR math, the project increase would be ~5.5 tpy less, which would be < 20 tpy NOx increase, which would be < 80% of the NANSR triggering threshold.

(This gets a little confusing with paragraph C below. Maybe the ranges in B and C need to get shifted slightly. We wanted to draft in the concept for now.)

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- ii. Calendar date of the record.
- iii. Monthly, ~~seasonal~~, and annual operating hours.
- iv. Type and quantity of fuel used monthly, ~~seasonally~~, and annually.
- v. Product and material throughput, as applicable.
- vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
- vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
- viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NOx that is performed on the unit.
- ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
- x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6.
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

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8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:

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- i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

- ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project within 180 days of commencing operation of the modified furnace. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	XXXX	23.9
De Minimis Threshold:	XXXX	25
De Minimis?	XXXX	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan

Commented [SJ12]: What were the "actual emissions" of the furnace, pursuant to 203.104? If you aren't using most recent 2 years for purposes of MSSCAM, what is the justification for using earlier years?

Commented [CR13R12]: IEPA - Please refer to Section 3.2 of the permit application for the justification. There is a half-page write-up about it there.

The short version is:
 2019 = polar vortex-related downtime and other mechanical/ maintenance work;
 2020 = COVID-related demand/ production decrease

Commented [SR14]: Confirm, with calculations, that these (the 2.2 and 4.5 MMBtu/hr heaters) are both based on actual emissions.

Commented [CR15R14]: IEPA - Why would we base the value for the 2.2 MMBtu/hr heater on actual emissions? It is a new unit, so the number is (and must be) based on PTE.

The NOx PTE of a 4.5 MMBtu/hr heater is 1.93 tpy:

$4.5 \text{ MMBtu/hr} \times \text{MMscf}/1020 \text{ MMBtu} \times 8760 \text{ hr/year} \times 100 \text{ lb/MMscf} \times 1 \text{ ton}/2,000 \text{ lb} = 1.93 \text{ tpy}$.

Therefore the 1.13 tpy does represent actuals rather than PTE.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 4-6-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: —Upon startup of the affected fusing furnace with new burners, This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

	Emission Limits
--	-----------------

Page 3

Pollutant	pounds/hour	Tons/Year
NOx	---	109.6
CO	10.38	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	20.6
SO ₂	1.32	5.8

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.
- B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5

Page 4

PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
 - i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions ~~would be considered representative of maximum operation~~ operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

Page 5

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. ~~Except as provided in Condition 6b of this permit, t~~The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS ~~or Continuous Emission Rate Monitoring System (CERMS)~~ on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within [196-2412] months after the results from the testing in Condition 5a are obtainedinitial startup of the rebuilt furnace. The period in which the Permittee must install and calibrate the NOx CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NOx CEMS ~~or CERMS~~ shall be operated as provided in Condition 6(a)(iii) ~~shall monitor continuously and record the hourly NOx emission concentration (parts per million)~~ at all times that the affected fusing furnace is in operation.

Page 6

- ii. The CEMS ~~from Condition 6a~~ shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. ~~Except as provided in Condition 6b of this permit, the~~ Permittee shall ~~either~~:
- A. ~~Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPAan Illinois EPA approved method for calculating flow rate. In conjunction with the USEPA-Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~
- B. ~~Install, calibrate, certify, maintain, and operate NOx Continuous Emission Rate Monitoring System (CERMS) as follows:~~
1. ~~The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);~~
 2. ~~The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);~~
 3. ~~In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton~~

Commented [SR1]: How would you calculate/determine the flow rate?

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~~emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.~~

~~N: The timing for the requirements in Condition 6aiiiA and B is as specified in Condition 6ai.~~

- ~~b. i. If Will County, Illinois (or the portion of it where the affected fusing furnace is located), is redesignated to attainment with the 2008 national ambient air quality standard for ozone (8-hour average), or if the results of the initial NOx testing in Condition 5a are less than 95 of the applicable standard, the Permittee may demonstrate compliance with the NOx emission limits established in this permit for the affected fusing furnace as follows, in lieu of installing a CEMS (or CERMS):~~

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~~If the results of the NOx emissions testing in Condition 5aiA of this permit are less than 80 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 5 years thereafter.~~

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~~If the results of the NOx emissions testing in Condition 5aiA of this permit are between 80 and 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 3 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are greater than 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated within 13 months.~~

~~The results of any NOx emissions testing shall be compared to the applicable standard and the timing of the subsequent test shall be based on Conditions 6biAC, as applicable.~~

7. Recordkeeping Requirements

a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.

b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.

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ii. Calendar date of the record.

iii. Monthly, ~~seasonal~~, and annual operating hours.

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- ~~iv. Type and quantity of fuel used monthly, seasonally, and annually.~~
- ~~v. Product and material throughput, as applicable.~~
- ~~vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.~~
- ~~vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.~~
- ~~viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NOx that is performed on the unit.~~
- ~~ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.~~
- ~~x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.~~
- ~~c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).~~
- ~~ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.~~

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- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Page 9

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project ~~within 180 days of commencing operation of the modified furnace~~. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Page 10

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 4-6-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

Commented [MS(1): No change to existing CAAPP Permit Limits for these pollutants.

3. Nonapplicability Provisions

a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NOx of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.

b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: —Upon startup of the affected fusing furnace with new burners, This limit replaces the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.

ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.

b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Commented [MS(2): Per conversation with Bob Smet, existing CAAPP Limits for CO, PM, SO₂, and VOM will remain the same.

	Emission Limits
--	-----------------

Pollutant	pounds/hour	Tons/Year
NOx	----	109.6
CO	10,388.2	45.5
VOM	1.32	5.8
PM/PM ₁₀ /PM _{2.5}	4.7	20.6
SO ₂	1.32	5.8

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an total individual HAP being no more than 0.1 lb/hour tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely for industrial hygiene purposes.

e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5

Commented [MS(3)]: IEPA - To correspond to the 0.44 tpy total HAP limit, this should be 0.1 lb/hr total HAP.

If you are actually wanting an individual HAP tpy limit, the value needs to be updated to 0.25 tpy. Based on AP-42 natural gas combustion factors, there is one individual HAP that contributes heavily to the total HAP value.

Page 4

PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
- B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative of ~~maximum operation~~ operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

Commented [CR4]: IEPA - This condition does not seem necessary, given that there are not separate limits for PM10/PM2.5.

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a.
 - i. ~~Except as provided in Condition 6b of this permit, The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS or Continuous Emission Rate Monitoring System (CERMS) on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 612 months after the performance of emission testing provided in Condition 5(-a)(-ii). However, this timeframe may be extended upon written request from Permittee and approval by IEPA. after the results from the testing in Condition 5a are obtained performance of emission testing provided in Condition 5.a. initial startup of the rebuilt furnace. However, this timeframe may be extended upon written request from Permittee and approval by IEPA. The period in which the Permittee must install and calibrate the NOx CEMS or CERMS may be extended upon written request by the Permittee and approval by Illinois EPA. The NOx CEMS or~~

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Commented [CR5]: IEPA - Upon further review, there doesn't seem to be a reason to give a range of time (i.e., 9- 15 months). The upper limit can be listed instead.

Commented [MS(6)]: In addition, it provides another data point to help determine analyzer monitoring ranges and facilitate implementation of the CEMS.

Commented [MS(7)]: Following the Performance Test(s) would make more sense, since the performance test is the initial compliance demonstration method.

Page 6

~~CERMS shall be operated as provided in Condition 6(a)(iii) shall monitor continuously and record the hourly NO_x emission concentration (parts per million) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.~~

ii. The CEMS ~~from Condition 6a~~ shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

iii. ~~Except as provided in Condition 6b of this permit, the~~ Permittee shall either:

A. ~~Follow requirements set forth above in Condition 6(a) for the CEMS and then use a USEPAan Illinois EPA approved method for calculating flow rate. In conjunction with the USEPA-Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~

Commented [SR8]: How would you calculate/determine the flow rate?

B. ~~Install, calibrate, certify, maintain, and operate NO_x Continuous Emission Rate Monitoring System (CERMS) as follows:~~

1. ~~The CERMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specification 6), and 40 CFR 60 Appendix F (Quality Assurance Procedures);~~

2. ~~The Permittee must comply with all monitoring, recordkeeping and reporting requirements in 40 CFR 60.13 and 40 CFR 60 Appendix B (Performance Specification 6);~~

3. ~~In conjunction with the flow rate monitoring device, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end~~

Page 7

~~of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced for the applicable day.~~

~~N: The timing for the requirements in Condition 6aiiiA and B is as specified in Condition 6ai.~~

- ~~b. i. If Will County, Illinois (or the portion of it where the affected fusing furnace is located), is redesignated to attainment with the 2008 national ambient air quality standard for ozone (8-hour average), or if the results of the initial NOx testing in Condition 5a are less than 95 of the applicable standard, the Permittee may demonstrate compliance with the NOx emission limits established in this permit for the affected fusing furnace as follows, in lieu of installing a CEMS (or CERMS):~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are less than 80 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 5 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are between 80 and 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated 3 years thereafter.~~

~~If the results of the NOx emissions testing in Condition 5aiA of this permit are greater than 95 of the applicable standard, NOx emissions testing consistent with Condition 5 shall be repeated within 13 months.~~

~~The results of any NOx emissions testing shall be compared to the applicable standard and the timing of the subsequent test shall be based on Conditions 6biAC, as applicable.~~

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
- ii. Calendar date of the record.
- iii. Monthly, ~~seasonal~~, and annual operating hours.
- iv. Type and quantity of fuel used monthly, ~~seasonally~~, and annually.
- v. Product and material throughput, as applicable.
- vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
- vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
- viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NOx that is performed on the unit.
- ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
- x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

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8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable

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cause of such deviation, the corrective actions taken, and any preventive measures taken.

b. One copy of required reports and notifications shall be sent to:

i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project ~~within 180 days of commencing operation of the modified furnace.~~ This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

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3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
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- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
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Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-13-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

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Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, ~~with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.~~

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- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
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- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. ~~These hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.~~

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Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

Commented [SR1]: Once we have a CEMS, a 365-day rolling average is doable. Prior to CEMS, we propose an hourly limit (lb/hr) with compliance determined by stack test. Does this satisfy?

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a. ~~This rate limit shall only apply whenever the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).~~

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ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1-25 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed ~~and controlled by baghouse [?], i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.~~

Commented [SR2]: What is the baghouse's designation?

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~~Note: Given that this limit is based on the use of the baghouse, it cannot be considered to The baghouse associated with this process does not constitute air pollution control equipment and is solely for the purpose of industrial hygiene purposes.~~

Commented [SR3]: We received new information indicating that the emission rates reflect use of the control device, so we will make it enforceable and include appropriate monitoring (pressure drop) and recordkeeping (operating logs).

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e. i. ~~Except as provided by Condition 4(e)(ii), Compliance compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).~~

~~ii. When During operation of the NOx CEMS is in operation, compliance with annual NOx limits established by this permit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).~~

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5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for ~~CO~~, NOx, CO, PM and PM₁₀/PM_{2.5} emissions.

Page 4

B. 1. This testing for NO_x, ~~NO_x~~, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

2. Testing for NO_x shall also be conducted at least once a year until the NO_x CEMS required under Condition 6 has been installed and is operational.

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Note: Ongoing compliance for NO_x is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

~~* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.~~

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

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- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
 - A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records

Page 6

of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. ~~The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 9 to 15 months after the initial re-startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.~~
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. ~~At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall monitor compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors as approved in writing by the Illinois EPA.

Commented [SR4]: We will need to rely on the stack test prior to installation of the CEMS. We are not aware of other monitoring to verify compliance with the NOx limits. If the CEMS goes down, we would propose monthly roll since we won't have daily data. OK? (we won't be authorizing operation without the cems but if it goes down, we will need appropriate records)

Commented [SJ5]: While not applicable, this seems consistent with 40 CFR 60.13(e).

Commented [SR6]: This was an artifact of an early draft that had limits in terms of lbs/ton (pre-cems draft). We propose to delete this language and require concentration and flow records that will be used to determine daily emissions.

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7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

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- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - ~~viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for that is performed on the unit.~~
 - ~~ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.~~
 - ~~x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.~~
 - ~~xi. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for PM that is performed on the unit.~~
 - ~~xii. The Permittee shall measure and maintain records for the pressure drop across the Baghouse XYZ once per operating day.~~
- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for

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purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	 	23.9
De Minimis Threshold:	 	25
De Minimis?	 	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued: DRAFT 5-13-2022

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NO _x	25.0 ^a	109.6
CO	8.20	35.9

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VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

- a. This limit shall only apply when the NO_x CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).
- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
- e. i. Except as provided by Condition 4(e)(ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
- ii. When the NO_x CEMS is in operation, compliance with annual NO_x limit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).
5. Emission Testing
- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NO_x, CO, PM and PM₁₀/PM_{2.5} emissions.
- B. 1. This testing for NO_x, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
2. Testing for NO_x shall also be conducted at least once a year until the NO_x CEMS required under Condition 6 has been installed and is operational.

Page 4

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.

Page 5

- B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NO_x CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.

Page 6

- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
 - iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- b. During periods when the NO_x CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NO_x conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log for the NO_x monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.

Page 7

- ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
- xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
 - i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an

Page 8

application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-13-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued ~~June 14, 2022~~ ~~(December 31, 2020)~~ the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, ~~with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.~~

Commented [CR1]: Apparently this date got changed at some point and we missed it. It should be December 31, 2020 (i.e., the date that was listed in an earlier draft of the permit, which we confirmed is the correct CAAPP issuance date).

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. ~~These hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A) 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.~~

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.031.4	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

Commented [SR2]: Once we have a CEMS, a 365-day rolling average is doable. Prior to CEMS, we propose an hourly limit (lb/hr) with compliance determined by stack test. Does this satisfy?

Commented [CR3R2]: PQ would like the same hourly limit that is in the current permit until the performance test is done and the CEMS is installed. The 25 lb/hr value does not offer any operational flexibility on a short-term basis. Consistent with the other pollutants (e.g., CO, the short term limits remain the same.)

a. ~~This ratelimit shall only apply whenever the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).~~

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1-25 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed ~~and controlled by a baghouse [2], i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.~~

Commented [SR4]: What is the baghouse's designation?

Commented [CR5R4]: This baghouse does not have an ID number.

Formatted: Highlight

~~Note: Given that this limit is based on the use of the baghouse, it cannot be considered to The baghouse associated with this process does not constitute air pollution control equipment and is solely for the purpose of industrial hygiene purposes.~~

Commented [SR6]: We received new information indicating that the emission rates reflect use of the control device, so we will make it enforceable and include appropriate monitoring (pressure drop) and recordkeeping (operating logs).

e. i. ~~Except as provided by Condition 4(e)(ii), Compliance compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).~~

ii. ~~When During operation of the NOx CEMS is in operation, compliance with annual NOx limits established by this permit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).~~

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for ~~CO~~, NOx, CO, PM and PM₁₀/PM_{2.5} emissions.

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B. 1. This testing for ~~NO_x, NO_x, CO~~, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

2. Testing for NO_x shall also be conducted at least once a year until the NO_x CEMS required under Condition 6 has been installed and is operational.

Commented [CR7]: Every 5 year testing of NO_x should not be necessary once the CEMS is installed and RATAs are being performed, and Condition B.2 requires annual testing in the event that the CEMS is delayed. Please remove NO_x here.

Note: Ongoing compliance for NO_x is addressed by the monitoring requirements addressed in Condition 6 of this permit.

ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or Method 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

Commented [CR8]: PQ's typical stack testing firm suggested the permit also should allow Method 3A.

~~* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.~~

iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

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- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
 - A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records

of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 9- to 15 months after the initial re-startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall monitor/demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors as approved in writing by the Illinois EPA.

Commented [SR9]: We will need to rely on the stack test prior to installation of the CEMS. We are not aware of other monitoring to verify compliance with the NOx limits. If the CEMS goes down, we would propose monthly roll since we won't have daily data. OK? (we won't be authorizing operation without the cems but if it goes down, we will need appropriate records)

Commented [SJ10]: While not applicable, this seems consistent with 40 CFR 60.13(e).

Commented [SR11]: This was an artifact of an early draft that had limits in terms of lbs/ton (pre-cems draft). We propose to delete this language and require concentration and flow records that will be used to determine daily emissions.

Commented [CR12R11]: OK

Commented [CR13]: Does this mean use the lb/hr x hrs of operation to gap fill for the annual emissions limit?

Or does this also require a lbs/ton factor derived from the stack test x short-term production to show compliance with the lb/hr?

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:

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- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - ~~viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for that is performed on the unit.~~
 - ~~ix.~~ viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
 - x. A log of all maintenance and inspections related to performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
 - xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse XYZ once per operating dayweek, during periods that the feed system is operating.
- c.
- i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for

Commented [CR14]: We suggest weekly monitoring, since this unit does not have emissions high enough to be subject to CAM. We also cleaned up the wording since it does not have an ID number.

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purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	25
De Minimis?	2019	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013

I.D. No.: 197045ABO

Applicant's Designation:

Date Received: November 8, 2021

Subject: Fusing Furnace #2 Rebuild Project

Date Issued: DRAFT 5-13-2022

Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NO _x	25.0 ^a	109.6
CO	8.20	35.9

Page 3

VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

- a. This limit shall only apply when the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).
- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
- e. i. Except as provided by Condition 4(e)(ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
- ii. When the NOx CEMS is in operation, compliance with annual NOx limit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).
5. Emission Testing
- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NOx, CO, PM and PM₁₀/PM_{2.5} emissions.
- B. 1. This testing for NOx, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

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Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.

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- B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.

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- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.

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- ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
 - x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
 - xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
- i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an

Page 8

application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan

Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2019	23.9
De Minimis Threshold:	2019	2540
De Minimis?	2019	Yes

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- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued:
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203.
- i. For NO_x, this is because the increase in emissions for NO_x of the affected fusing furnace is not significant. In particular, the increase in NO_x emissions is 24.1 tons, which is below the significant emissions rate of 40 tons/year for purposes of MSSCAM.
- ii. For VOM, this is because the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

* This limit shall only apply when the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
 - d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
 - e.
 - i. Except as provided by Condition 4(e)(ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
 - ii. When the NOx CEMS is in operation, compliance with annual NOx limit in Condition 4(b)(i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).
5. Emission Testing
- a.
 - i.
 - A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NOx, CO, PM and PM₁₀/PM_{2.5} emissions.
 - B.
 - 1. This testing for NOx, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
 - 2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required

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under Condition 6 has been installed and is operational.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

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- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NO_x CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the

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exception of monitor malfunctions and short-term calibration issues.

- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- a. During periods when the NO_x CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NO_x conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.

Page 7

- viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
- ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
- xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
 - i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

Page 8

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC

Attn: Ken Schulte

111 Ingalls Avenue

Joliet, Illinois 60435

Application No.: 21110013I.D. No.: 197045ABOApplicant's Designation:Date Received: November 8, 2021Subject: Fusing Furnace #2 Rebuild ProjectDate Issued: JUN 13 2022Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

2125 S. First Street, Champaign, IL 61820 (217) 278-5800
1101 Eastport Plaza Dr., Suite 100, Collinsville, IL 62234 (618) 346-5120
9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000
595 S. State Street, Elgin, IL 60123 (847) 608-3131

2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued December 31, 2020 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace.

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203.
 - i. For NO_x, this is because the increase in emissions for NO_x of the affected fusing furnace is not significant. In particular, the increase in NO_x emissions is 24.1 tons, which is below the significant emissions rate of 40 tons/year for purposes of MSSCAM.
 - ii. For VOM, this is because the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g) (i) (B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g) (i) (C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. The hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f) (i) (A) and 4.1.2(c) (i) (B) of the CAAPP Permit.

Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0*	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

* This limit shall only apply when the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.25 tons/year and total HAP emissions of no more than 0.44 ton/year.
- c. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed controlled by a baghouse, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.
- d. i. Except as provided by Condition 4(e) (ii), compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).
- ii. When the NOx CEMS is in operation, compliance with annual NOx limit in Condition 4(b) (i) shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for NOx, CO, PM and PM₁₀/PM_{2.5} emissions.
- B. 1. This testing for NOx, CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.
- 2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

Note: Ongoing compliance for NO_x is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.

- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:

- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
- B. The specific conditions under which testing will be performed, including a discussion of why these

conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NO_x CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 15 months after the initial startup of the rebuilt furnace. The NO_x CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation, with the exception of monitor malfunctions and short-term calibration issues.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13,

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40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).

- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values.
- b. During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall demonstrate compliance with emissions limits using emissions factors derived from the most recent stack testing, fuel analysis or other sources of emissions factors.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - ix. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.

Page 7

- x. A log of all maintenance and inspections performed on the affected furnace's air pollution control equipment for PM that is performed on the unit.
 - xi. The Permittee shall measure and maintain records for the pressure drop across the fusing feed baghouse once per week during periods when the feed system is operating.
- c.
- i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

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If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr SMS

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statues and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6.
 - a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
 - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
 7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
 - a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

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217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-3-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

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2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.

3. Nonapplicability Provisions

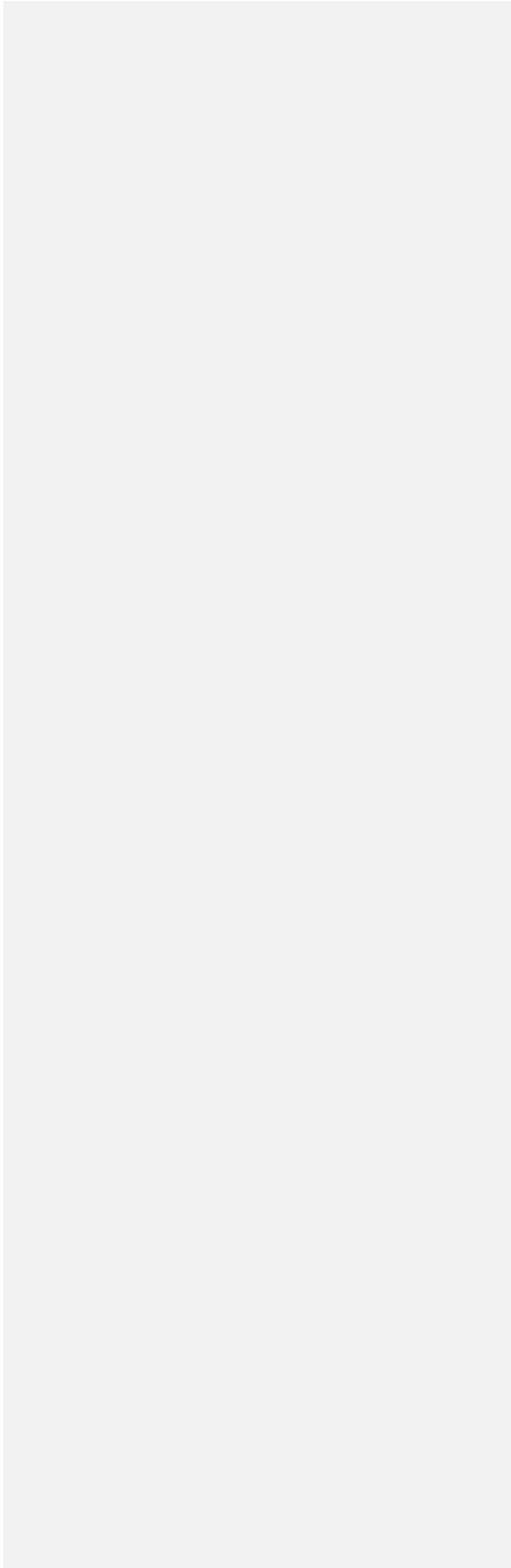
- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a.
 - i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.

Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
 - ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b.
 - i. Emissions from the affected fusing furnace shall not exceed the following limits. These limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

	Emission Limits
--	-----------------



Pollutant	pounds/hour	Tons/Year
NOx	---	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

- ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1 tons/year and total HAP emissions of no more than 0.44 ton/year.
- d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

Note: The baghouse associated with this process does not constitute air pollution control equipment and is solely used for industrial hygiene purposes.

- e. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

5. Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

- B. This testing for CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5

Commented [D01]: Where short term limits are determined to be inappropriate due to substantial and unpredictable variation in production or short-term emissions, EPA policy generally expresses a preference for a 365 day rolling average. In addition, "[w]hen such a long term average is used, we believe that it is reasonable to require permit conditions which provide for interim limits that ensure compliance and enforceability during the first year. The method used to provide interim limits and the need to do so should be determined on a case by case basis, considering how close the allowable emissions would be to the applicability threshold, and how closely the enforcing agency believes monitoring is warranted for the particular source." See <https://www.epa.gov/sites/default/files/2015-07/documents/rollave.pdf>.

Commented [SJ2R1]: Once we have a CEMS, a 365-day rolling average is doable. Prior to CEMS, we propose an hourly limit (lb/hr) with compliance determined by stack test. Does this satisfy?

Commented [D03]: Is the baghouse's effect on emissions relied upon in calculating potential emissions from the process? If so, operation of the baghouse should be made enforceable as a practical matter.

Commented [SJ4R3]: We received new information indicating that the emission rates reflect use of the control device, so we will make it enforceable and include appropriate monitoring (pressure drop) and recordkeeping (operating logs).

Commented [D05]: We recommend this (performance) testing also address NOx emissions. The CEMS required by Condition 6 addresses emissions in between stack tests but the results of the stack testing are used to validate the CEMS data (outside of annual RATAs).

Commented [SJ6R5]: Agree. Also, test would be used to verify compliance with the new short term limit added above (pre-CEMS operation).

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PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
 - i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.

Page 5

- C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

- a.
 - i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within 6 to 12 months after the initial startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation.
 - ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
 - iii. The Permittee shall:

Use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow

Commented [D07]: Please address NOx monitoring for the periods before the NOx CEMS is installed and during monitor downtime.

Commented [SJ8R7]: We will need to rely on the stack test. We are not aware of other monitoring to verify compliance with the NOx limits. If the CEMS goes down, we would propose monthly roll since we won't have daily data. OK? (we won't be authorizing operation without the cems but if it goes down, we will need appropriate records)

Commented [D09]: Recommend the CEMS be installed, calibrated and certified prior to the stack testing required by Condition 5 (i.e., not later than 180 days after re-startup of the affected fusing furnace). Alternatively, a new stack test for those pollutants (CO and PM) could be required upon installation of the CEMS.

Commented [SJ10R9]: Discuss with KM and get a practical response. (is a nox test reasonable shortly after cems installation as DO has suggested?)

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method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
 - i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.
 - vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NOx that is performed on the unit.
 - ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - x. Identification of time periods for which operating conditions and pollutant data were not obtained by the

Commented [DO11]: Could this provision be expanded/clarified to require a daily calculation of emissions in tpy for compliance with a 365-day rolling average?

Commented [SJ12R11]: This is an artifact of an early draft that had limits in terms of lbs/ton (pre-cems draft). We propose to delete this language and require concentration and flow records that will be used to determine daily emissions.

Commented [DO13]: What equipment is used to control NOx emissions?

Commented [SJ14R13]: No control for NOx but there is for PM...we will clean this up.

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continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.

- c. i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
- ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

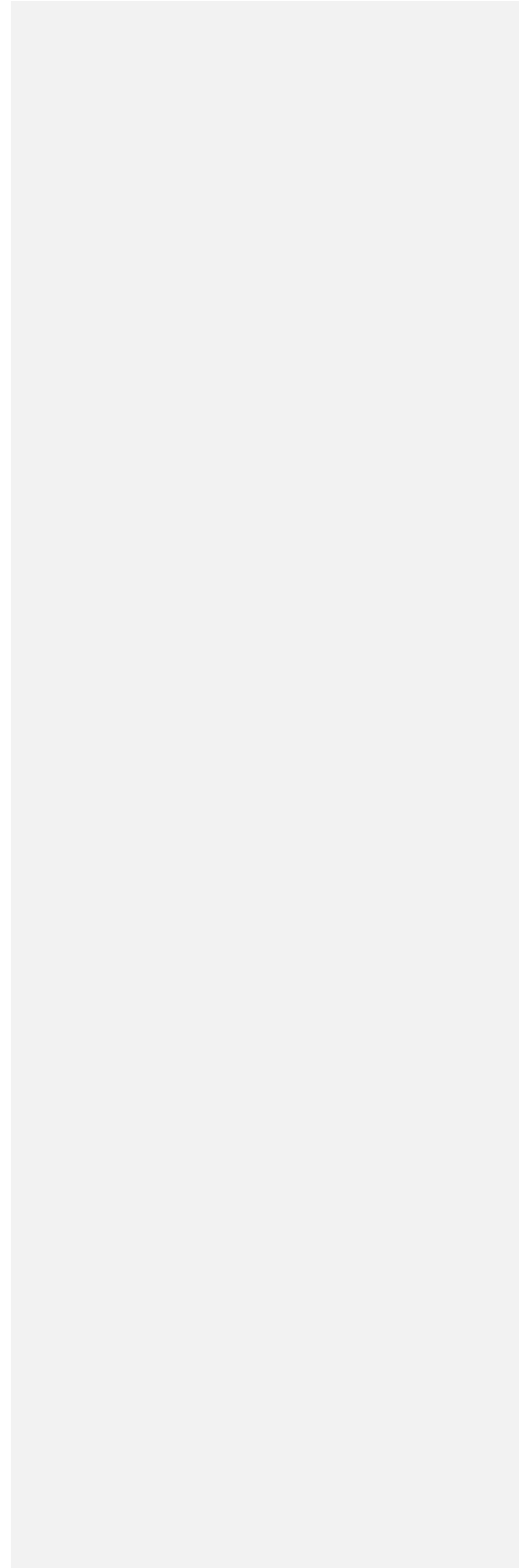
If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr

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Manager, Permit Section
Bureau of Air

WDM:RPS:tan



Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan

Commented [D015]: We have concerns with the methodology used to calculate this increase. Specifically, the application and project summary do not include operating data sufficient to establish that the last two years would not yield representative data needed to calculate actual emissions (as defined at 35 IAC 203.104). The applicant has used the period 2017-2018 as the period for calculating actual emissions. While 35 IAC 203.104(a) allows the use of a different time period, the applicant is required to demonstrate to the Agency that the desired time period is more representative of normal source operation. Consistent with 35 IAC 203.104(a), we recommend that such demonstration include historical operating records for at least the last 5-10 years to establish the baseline annual utilization of the furnace and the frequency of shutdowns and breakdowns and associated repairs/maintenance.

As regards to the justification provided by the applicant, we note the following:
 -Maintenance work that is not triggered by a "catastrophic event" should not count in this evaluation since equipment breakdown and maintenance due to normal wear of equipment should be factored into the normal operation of the unit. Routine maintenance and repair should not be considered a factor in the evaluation.
 -The polar vortex event in 2019 only appears to have impacted February 2019 production. There's no evidence that this event impacted production for the rest of the year.
 -Need to see historical production data for at least the last 10 years to establish the baseline annual utilization of the furnace and the frequency of required repairs.
 -The Covid 19 pandemic (2020) established a new baseline for all facilities and there's no evidence that future production does not already account for the pandemic's effects. Consequently, without records showing a clear dip in production in 2020, it is not clear that 2020 was not a "normal" operating year.

Commented [SJ16R15]: I am leaving this to you, Bob. This rule is in our SIP and we have the experience and expertise to make this decision. If you need more information, such as the production information that DO suggests, then please request that information.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act, and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:
 - a. to enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
 - b. to have access to and copy any records required to be kept under the terms and conditions of this permit,
 - c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
 - d. to obtain and remove samples of any discharge or emission of pollutants, and
 - e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
 - b. does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,
 - c. does not release the Permittee from compliance with the other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,
 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

- e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.
- b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:
- a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or
 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Page 1

217/785-1705

CONSTRUCTION PERMIT

PERMITTEE

PQ LLC
Attn: Ken Schulte
111 Ingalls Avenue
Joliet, Illinois 60435

Application No.: 21110013 I.D. No.: 197045ABO
Applicant's Designation: Date Received: November 8, 2021
Subject: Fusing Furnace #2 Rebuild Project
Date Issued: DRAFT 5-13-2022
Location: 111 Ingalls Avenue, Joliet

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a modification/rebuild of the sodium silicate fusing furnace #2, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Description

This permit authorizes the rebuild of sodium silicate furnace #2 (the affected fusing furnace), which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system (the affected fusing feed), which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity.

Page 2

2. Applicable Emission Standards

- a. For the affected fusing furnace, this permit does not alter the applicable requirements for the furnace, as addressed in Clean Air Act Permit Program (CAAPP) Permit No. 96030053, Section 4.1, issued June 14, 2022 (the "CAAPP Permit") and addressed in Construction Permit 09090029 for the replacement of burners on the existing furnace, ~~with the exception of increasing the annual CO, VOM and SO₂ emission limits for the furnace in Section 4.1.2 of the CAAPP Permit and Condition 5 of Construction Permit 09090029.~~

3. Nonapplicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of Illinois' rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the increase in emissions for NO_x of the affected fusing furnace is de minimis, pursuant to 35 IAC 203.207(d). See Attachment 1 for a summary of emissions increases for purposes of MSSCAM. For VOM, the source, including this project, is not major under MSSCAM.
- b. This permit is issued based on this project not being a major project for purposes of Illinois' rules for the Prevention of Significant Deterioration of Air Quality (PSD), 35 IAC Part 204. This is because the source, including this project, is not a major source under PSD.

4. Design, Production and Emission Limits

- a. i. The total rated heat input capacity of the new burners within the affected fusing furnace shall not exceed 32.0 mmBtu/hr.
- Note: Upon startup of the affected fusing furnace with new burners, the limit in Condition 4.1.2(g)(i)(B) of the CAAPP Permit that applied to the burners being replaced shall no longer apply.
- ii. Sodium silicate production of the affected fusing furnace shall not exceed 132.3 tons/day (based on a monthly average) and 48,281 tons per year. These limits replace the limits in Condition 4.1.2(g)(i)(C) of the CAAPP Permit.
- b. i. Emissions from the affected fusing furnace shall not exceed the following limits. These hourly NO_x and SO₂ limits replace the limits in Conditions 4.1.2(f)(i)(A), 4.1.2(e)(i)(A), 4.1.2(d)(i)(A) and 4.1.2(c)(i)(B) of the CAAPP Permit.

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Pollutant	Emission Limits	
	pounds/hour	Tons/Year
NOx	25.0	109.6
CO	8.20	35.9
VOM	1.30	5.7
PM/PM ₁₀ /PM _{2.5}	4.70	20.6
SO ₂	1.28	5.6

a. This rate shall only apply ~~before~~^{when} the NOx CEMS is not in operation (e.g., prior to installation of the CEMS and during breakdown of the CEMS).

ii. This permit is issued based on minimal emissions of HAPs from the affected fusing furnace, i.e., emissions of an individual HAP being no more than 0.1-25 tons/year and total HAP emissions of no more than 0.44 ton/year.

d. This permit is issued based on negligible emissions of PM/PM₁₀/PM_{2.5} from the affected fusing feed, i.e., annual emissions of no more than 0.12 tons of PM/PM₁₀/PM_{2.5}.

~~Note: Given that this limit is based on the use of the baghouse, it cannot be considered to The baghouse associated with this process does not constitute air pollution control equipment and is solely for the purpose of industrial hygiene purposes.~~

e. i. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12-month total).

~~ii. During operation of the NOx CEMS, compliance with annual limits established by this permit shall be calculated from a rolling total of 365 days of data, i.e., from the sum of the data for the current day and data for the preceding 364 days (365-day total)~~

5. Emission Testing

a. i. A. Within 60 days after achieving the maximum production rate at which the affected fusing furnace will be operated, but not later than 180 days after re-startup of the affected fusing furnace, the Permittee shall have emission testing conducted during representative operating conditions for the affected fusing furnace for CO, NOx, PM and PM₁₀/PM_{2.5} emissions.

B. 1. This testing for ~~NOx,~~ CO, PM and PM₁₀/PM_{2.5} shall also be conducted at least once every five years thereafter.

Commented [SR1]: Once we have a CEMS, a 365-day rolling average is doable. Prior to CEMS, we propose an hourly limit (lb/hr) with compliance determined by stack test. Does this satisfy?

Commented [DO2R1]: Yes, this would work.

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Commented [SR3]: We received new information indicating that the emission rates reflect use of the control device, so we will make it enforceable and include appropriate monitoring (pressure drop) and recordkeeping (operating logs).

Commented [DO4R3]: OK

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Commented [SR5]: We added this.

Commented [DO6R5]: This works.

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Commented [DO7]: It wouldn't be a significant cost increase or technical challenge to add NOx to the mix if these are pollutants are being tested. Also, perhaps this testing could occur under conditions in which the NOx CEMS is less reliable as specified in the test plan.

Page 4

2. Testing for NOx shall also be conducted at least once a year until the NOx CEMS required under Condition 6 has been installed and is operational.

Note: Ongoing compliance for NOx is addressed by the monitoring requirements addressed in Condition 6 of this permit.

- ii. The following USEPA methods and procedures shall be used for this testing, unless another method is approved by the Illinois EPA as part of its review of the test plan:

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM ₁₀ /PM _{2.5} (filterable)*	Method 201A
Condensable Particulate Matter	Method 202
Nitrogen Oxides	Method 7E
Carbon Monoxide	Method 10

* Testing for filterable PM₁₀/PM_{2.5} need not be conducted if the measurements for PM and condensable particulate show compliance with applicable permit limits for PM₁₀/PM_{2.5}.

- iii. These tests shall be designed to measure the hourly emission rate of each pollutant in terms of pounds per hour.
- b. For the emission testing required by Condition 5(a), the Permittee shall fulfill the following notification and reporting requirements:
- i. The Illinois EPA shall be notified prior to required emissions tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion of the Compliance Section Manager or designee accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- ii. At least 60 days prior to the actual date of required emissions testing, a written test plan shall be submitted to the Illinois EPA for review and approval. The Illinois EPA may at the discretion of the Compliance Section Manager

Commented [SR8]: We added this. Also, test would be used to verify compliance with the new short term limit added above (pre-CEMS operation).

Commented [DO9R8]: This works, since it's in addition to the initial test conducted under 5(a)(i)(A) (might want to clarify that the 180-day testing required by 5(a)(i)(A) would satisfy this requirement for the first year. Hopefully this provision is never triggered, and they will have the CEMS installed before the 1 year mark.

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Page 5

or designee accept a test plan less than 60 days prior to testing provided it does not interfere with the Illinois EPA's ability to review this test plan prior to testing. This plan shall describe the specific procedures for testing including:

- A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions under which testing will be performed, including a discussion of why these conditions would be considered representative operating conditions and the means by which the operating parameters for the emission unit and any control equipment will be determined.
 - C. The specific determinations of emissions and operation, which are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used with the specific analysis method.
 - E. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
- iii. Copies of the Final Reports(s) for required emissions tests shall be submitted to the Illinois EPA within 60 days after the date of testing. The Final Report shall include:
- A. A summary of results.
 - B. General information.
 - C. Description of test method(s), including description of sample points sampling train, analysis equipment, and test schedule.
 - D. Detailed description of test conditions, including process information and furnace and control device information, e.g., equipment condition and operating parameters during testing.
 - E. Data and calculations, including copies of all raw data sheets, opacity observation records and records of laboratory analyses, sample calculations, and data on equipment calibration.

6. Monitoring Requirements

Page 6

- a. i. The Permittee shall install, calibrate, certify, maintain, and operate a NOx CEMS on the exhaust stack of the scrubber controlling the affected fusing furnace. The system shall be installed and calibrated within ~~9 to~~ 15 months after the initial re-startup of the rebuilt furnace. The NOx CEMS shall be operated as provided in Condition 6(a)(iii) at all times that the affected fusing furnace is in operation.
- ii. The CEMS shall be installed, calibrated, certified, maintained, and operated in accordance with 40 CFR 60.13, 40 CFR 60 Appendix B (Performance Specifications 2 and 6) and 40 CFR 60 Appendix F (Quality Assurance Procedures).
- iii. The Permittee shall use an Illinois EPA approved method for calculating flow rate. In conjunction with the Illinois EPA approved flow method calculation, the data acquisition and handling system for the CEMS shall convert the ppm values into pound per hour values. ~~At the end of each operating day, the data acquisition and handling system shall divide the total daily emissions in pounds per day for valid CEMS hourly data by the total tons of sodium silicate produced during the operating day (reduced proportionally based on the valid CEMS data hours) to describe the pound per ton emission rate for the operating day. This number shall be recorded in units of pounds of pollutant per ton of sodium silicate produced.~~

Commented [SR10]: We will need to rely on the stack test prior to installation of the CEMS. We are not aware of other monitoring to verify compliance with the NOx limits. If the CEMS goes down, we would propose monthly roll since we won't have daily data. OK? (we won't be authorizing operation without the cems but if it goes down, we will need appropriate records)

Commented [DO11R10]: Recommend restating what you say here as a permit condition below. For ex., "During periods when the NOx CEMS is not operational (e.g., due to equipment malfunction), the Permittee shall monitor compliance with emissions limits using emissions factors derived from stack testing, fuel analysis or other sources of emissions factors as approved in writing by the Illinois EPA."

Commented [SR12]: This was an artifact of an early draft that had limits in terms of lbs/ton (pre-cems draft). We propose to delete this language and require concentration and flow records that will be used to determine daily emissions.

Commented [DO13R12]: OK

7. Recordkeeping Requirements

- a. For the affected fusing furnace, the Permittee shall comply with applicable recordkeeping requirements for the furnace, including recordkeeping for sodium silicate production and emissions, with supporting data and calculations, as set forth in Section 4.1 of the CAAPP Permit.
- b. The Permittee shall maintain records that demonstrate compliance with the requirements of this permit that include the following:
- i. Identification, type (e.g., gas-fired), and location of the affected fusing furnace.
 - ii. Calendar date of the record.
 - iii. Monthly and annual operating hours.
 - iv. Type and quantity of fuel used monthly and annually.
 - v. Product and material throughput, as applicable.
 - vi. Reports for all applicable emissions tests for NOx conducted on the affected fusing furnace, including results.

Page 7

- vii. The date, time, and duration of any startup, shutdown, or malfunction in the operation of the affected fusing furnace.
 - viii. A log of all maintenance and inspections related to the affected furnace's air pollution control equipment for NOx PM that is performed on the unit.
 - ix. A log for the NOx monitoring device including periods when not in service and maintenance and inspection activities that are performed on the device.
 - x. Identification of time periods for which operating conditions and pollutant data were not obtained by the continuous emissions monitoring system, including the reasons for not obtaining sufficient data and a description of corrective actions taken.
- c.
- i. The Permittee shall maintain records that demonstrate compliance with the monitoring requirements of Condition 6, including flow rate (in scfm) and NOx concentration (in ppm).
 - ii. The Permittee shall submit a report to the Illinois EPA within 30 days after the end of each calendar quarter. This report shall include information identifying and explaining the times and dates when continuous emissions monitoring for NOx was not in operation, other than for purposes of calibrating or performing quality assurance or quality control activities for the monitoring equipment.

8. Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations from the requirements of this permit within 30 days of such occurrence. Reports shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. One copy of required reports and notifications shall be sent to:
 - i. Via mail or overnight delivery:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
 - ii. Electronically: epa.boa.smu@illinois.gov

Commented [SR14]: No control for NOx but there is for PM..we will clean this up.

Commented [DO15R14]: OK

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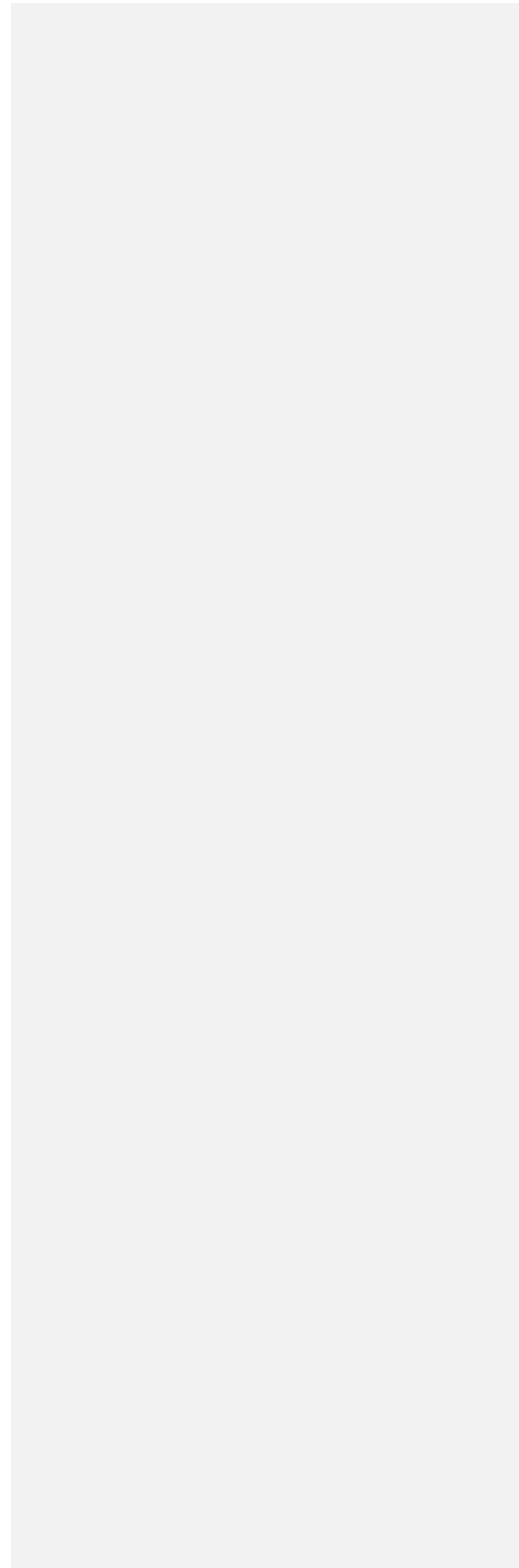
9. Authorization to Operate

The affected fusing furnace with changes authorized by this permit may be operated under this construction permit until this project has been addressed in the CAAPP Permit provided that the Permittee submits an application to amend the CAAPP Permit to address this project. This condition supersedes Standard Condition 6.

If you have any questions on this permit, please call Bob Smet at 217/785-9250.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:RPS:tan



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Attachment 1: Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes ^a	Year	NOx
Fusing Furnace #2 ^b	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	1.13
Net Emissions Change:	2022	23.9
De Minimis Threshold:	2022	25
De Minimis?	2022	Yes

- a. In accordance with 35 IAC 203.207(d), this evaluation addresses the calendar year in which the current project will occur (calendar year 2022) and the previous four calendar years (calendar years 2018 through 2021). There was a project in 2019 but no projects in 2018, 2020 or 2021.
- b. Project emission changes only address the changes to the furnace as the affected fusing feed would not emit NOx.

WDM:RPS:tan



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

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July 1, 1985

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5. The issuance of this permit:
 - a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
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 - d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

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 - b. upon finding that any standard or special conditions have been violated, or
 - c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

Illinois Environmental Protection Agency**Notice of Public Comment Period
Proposed Issuance of a Construction Permit
PQ LLC in Joliet**

PQ LLC (PQ) has applied to the Illinois EPA Bureau of Air for a construction permit for a rebuild of its sodium silicate fusing furnace, and for other associated equipment at its sodium silicate manufacturing plant located at **One Edmund Street** in Joliet. The key changes that PQ is proposing are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production. The project is not considered major for purposes of the state's rules for [if nonattainment for ozone and involves NOx or VOM] Major Stationary Sources Construction and Modification (MSSCAM), 35 Ill. Adm. Code 203> and <Prevention of Significant Deterioration, 35 Ill. Adm. Code 204>.

Based on its review of the application, the Illinois EPA has made a preliminary determination that this project will comply with the applicable air pollution control regulations and has prepared a draft permit for public review.

The Illinois EPA is accepting comments prior to making a final decision on this application. Comments must be received by 11:59 PM on **June XX, 2022**. If sufficient interest is expressed in this matter, a hearing or other informational meeting may be held. Comments, questions and requests for information should be directed to Cassandra Metz, Office of Community Relations, Illinois EPA, PO Box 19506, Springfield, Illinois 62794-9506, phone 217/785-7491, TDD 866/273-5488, Cassandra.Metz@Illinois.gov.

The repositories for these documents and the application will be made available at the Illinois EPA's offices at 9511 Harrison Street, Des Plaines, 847/294-4000 and 1021 N. Grand Ave. East, Springfield, 217/785-7491 (please call ahead to assure that someone will be available to assist you). The draft permit and other documents may also be viewed at <http://bit.ly/2SiUSql>. Copies of the documents will be made available upon request to the contact listed above.

The facility is located in an area of Environmental Justice concern. More information concerning Environmental Justice may be found at <https://www2.illinois.gov/epa/topics/environmental-justice/Pages/default.aspx>.

Illinois Environmental Protection Agency

Notice of Public Comment Period
Proposed Issuance of a Construction Permit
PQ LLC in Joliet

PQ LLC (PQ) has applied to the Illinois EPA Bureau of Air for a construction permit for a rebuild of its sodium silicate fusing furnace, and for other associated equipment at its sodium silicate manufacturing plant located at 111 Ingalls Avenue in Joliet. The key changes that PQ is proposing are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production. The project is not considered major for purposes of the state's rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. The source is not a major source under Illinois' rules for the Prevention of Significant Deterioration, 35 IAC Part 204.

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Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ Corporation for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: January XYZ, 2022
Public Comment Period Closes: February XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ Corporation (PQ) has requested a construction permit for a rebuild of its glass furnace (Furnace 2), and other associated equipment at its sodium silicate glass manufacturing plant in Joliet.

The key rebuilding changes to equipment that PQ is seeking to the furnace are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate glass at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. In 1961, PQ installed Furnace 2 with a design capacity of XY tons of sodium silicate per day. The furnace uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Commented [SR1]: What is the design capacity?

In glass furnaces, glass is made by melting and mixing together silica sand, soda ash (sodium carbonate), limestone (calcium carbonate), dolomite (calcium magnesium carbonate), "salt cake" (sodium sulfate), cullet (recycled glass), and other, lesser ingredients. These raw materials arrive at the plant by rail and trucks and are stored in silos.

Commented [SR2]: Can you provide a description of the SS production process as conducted at the plant? What is written here is for a typical glass manufacturing operation. You are welcome to adapt this language to that at the facility.

From the silo, the dry raw materials are mixed in "batches" with the appropriate recipe for the type of glass that is being made. The batches are fed to the melter section of the glass furnace in which the raw materials melt and mix together to make molten glass. From the melter, molten glass flows to the refiner and forehearth where the glass cools to the proper temperature for the forming process. The melter section of a glass furnace is the operation that is of particular concern for emissions because of the high temperatures that are needed in this operation to melt the raw materials.

Commented [SR3]: This paragraph is in red because, in contrast with the green above and below it, it delivers the holiday spirit that only a project summary can provide!

In the forming process, the stream of molten glass that flows from the forehearth is cut into portions or "gobs." The forming machine converts the individual gobs into glass bottles and containers of the appropriate size and geometry using molds for the exterior of the container. After these bottles and containers are formed, they travel through the hot end surface treatment hood where tin oxide is applied to the exterior surface of the glass to provide resistance to abrasion. The containers are then reheated and slowly cooled to relieve any stresses that may remain in the glass. The exterior of the cooled glass containers is then sprayed with a polyethylene and water solution to reduce surface friction and be suitable for handling by automated equipment. The final step is packaging the finished glass containers.

While Furnace 2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners. The permitted annual emissions for all regulated air pollutants from the project were below the thresholds at which the project would have been a major project under the Illinois' rules for Major Stationary Source Construction And Modification (MSSCAM), 35 IAC Part 203.

III. CURRENT REQUEST

The key changes to PQ's operations will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project. The annual increases in emissions will not be significant.

IV. EMISSIONS OF THE PROJECT

The increases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	85.5	109.6	24.1
Carbon Monoxide (CO)	32.3	45.5	13.2
Volatile Organic Material (VOM)	5.1	5.8	0.7
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	9.6	13.4	4.8

Commented [SR4]: This is getting too close to the 25 tpy threshold. How will PQ ensure that the increase will not creep over 25 tpy?
This is likely to be the stickiest issue re this project & permit.

Sulfur Dioxide (SO ₂)	5.1	5.8	0.7
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V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ is a major source for NOx emissions under Illinois' MSSCAM rules. The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under PSD. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is already required for the furnace to track actual operation. These measures are imposed to assure that the operation and emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

Commented [SR5]: How true (or untrue) is this statement?

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ ~~Corporation LLC~~ for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: ~~January-February~~ XYZ, 2022
Public Comment Period Closes: ~~February-March~~ XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ ~~Corperation LLC~~ (PQ) has requested a construction permit for a rebuild of its ~~glass-sodium silicate fusing~~ furnace (Fusing Furnace #2), and other associated equipment at its sodium silicate ~~glass~~-manufacturing plant in Joliet.

The key rebuilding changes to equipment that PQ is seeking to the furnace are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume (Project). It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate ~~glass~~ at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed by PQ in 1961. In 1961, PQ installed Furnace 2 with a design capacity of XX tons of sodium silicate per day. The furnace has a rated heat input capacity of 32 MMBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Commented [SR1]: What is the design capacity?

Soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired soda ash to silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand is transported via bucket elevator and screw conveyor to Fusing Furnace #2. Any dust generated from the silos, weigh bin and mixer (collectively referred to in the current CAAPP permit as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000 °F. The furnace is natural gas fired and has a rated heat input capacity of 32 million Btu per hour (MMBtu/hr). PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers, or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through several intermediate tanks, can be

filtered (using filter aid or similar dry raw materials added through insignificant activity bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (an insignificant activity).

In glass furnaces, glass is made by melting and mixing together silica sand, soda ash (sodium carbonate), limestone (calcium carbonate), dolomite (calcium magnesium carbonate), "salt cake" (sodium sulfate), cullet (recycled glass), and other, lesser ingredients. These raw materials arrive at the plant by rail and trucks and are stored in silos.

From the silo, the dry raw materials are mixed in "batches" with the appropriate recipe for the type of glass that is being made. The batches are fed to the melter section of the glass furnace in which the raw materials melt and mix together to make molten glass. From the melter, molten glass flows to the refiner and forehearth where the glass cools to the proper temperature for the forming process. The melter section of a glass furnace is the operation that is of particular concern for emissions because of the high temperatures that are needed in this operation to melt the raw materials.

In the forming process, the stream of molten glass that flows from the forehearth is cut into portions or "gobs." The forming machine converts the individual gobs into glass bottles and containers of the appropriate size and geometry using molds for the exterior of the container. After these bottles and containers are formed, they travel through the hot end surface treatment hood where tin oxide is applied to the exterior surface of the glass to provide resistance to abrasion. The containers are then reheated and slowly cooled to relieve any stresses that may remain in the glass. The exterior of the cooled glass containers is then sprayed with a polyethylene and water solution to reduce surface friction and be suitable for handling by automated equipment. The final step is packaging the finished glass containers.

While Furnace 2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners. The permitted annual emissions for all regulated air pollutants from the project were below the thresholds at which the project would have been a major project under the Illinois' rules for Major Stationary Source Construction And Modification (MSSCAM), 35 IAC Part 203.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the Project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Commented [MS(2)]: Not a 'Glass Manufacturer' see CAAPP Permit 4.3.1 Non-Applicability Determination.

Commented [SR3]: Can you provide a description of the SS production process as conducted at the plant? What is written here is for a typical glass manufacturing operation. You are welcome to adapt this language to that at the facility.

Commented [CR4R3]: Bob - We are substituting in the process description from the permit application. Feel free to tweak the wording if you weren't comfortable using it verbatim originally.

Commented [SR5]: This paragraph is in red because, in contrast with the green above and below it, it delivers the holiday spirit that only a project summary can provide!

Commented [CR6R5]: Nice! 😊

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, the Zeolite manufacturing plant, and the Metasilicate manufacturing. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project. The annual increases in emissions will not be significant.

IV. EMISSIONS OF THE PROJECT

The increases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	85.5 137.5	109.6	24.1
Carbon Monoxide (CO)	32.3 35.9	45.5	13.2
Volatile Organic Material (VOM)	5.1 5.7	5.8	0.7
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	9.6 20.6	13.4	4.8
Sulfur Dioxide (SO ₂)	5.1 5.6	5.8	0.7

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

Commented [CR7]: IEPA - The values currently shown in this column are not the "original permitted" emissions. They are the baseline actual emissions. Is the purpose of this table to show baseline vs. limit, the increase, and show MMSCAM and PSD non-applicability? Or is the purpose of this proposal to show how limits are changing?

We have added in the current permit limits. Please delete the baseline emissions and also update the "increase" values in the last column if you are wanting to compare limits. If you want to compare baseline to proposed new limits, please delete the limits we added and rename the column.

Commented [SR8]: This is getting too close to the 25 tpy threshold. How will PQ ensure that the increase will not creep over 25 tpy?

This is likely to be the stickiest issue re this project & permit.

Commented [CR9R8]: IEPA - If you are really going to show a comparison of limits (which is not a MSSCAM analysis), then you will see a decrease in NOx and it will not be necessary to compare to the 25 tpy threshold.

If you are trying to do a MSSCAM analysis, then you also have to do 5-year aggregation since the site is in the Chicago serious ozone area. Then the 24.1 tpy increase from the project is also combined with the 2019 heater replacement, which was a small net decrease in emissions. Then the 5-year total for comparing to 25 tpy is 23.9 tpy. Is that still "too close"?

NOx emissions are related to sodium silicate production, so compliance with the proposed new production limit (lower than the prior limit, and tracked monthly & 12-mo rolling) will show compliance with the 109.6 tpy NOx limit.

PQ is also willing to do a stack test to confirm the NOx lb/ton emissions factor used in the application, which can be combined with the ongoing production tracking.

Commented [MS10R8]: The Permittee shall have performance tests conducted for the nitrogen oxides (NO_x) emissions of the Sodium Silicate Manufacturing Furnace by an approved independent testing service during conditions that are representative of maximum emissions.

Testing shall be performed within ninety (90) days of start of operation, to allow for a shakedown period.

A written test protocol shall be submitted at least sixty (60) days prior to the actual date of testing, unless it is required otherwise in applicable state or federal statutes.

Commented [MS11]: PQ does and will monitor raw material feed rate that will ensure permit limit compliance.

VI. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions under Illinois' MSSCAM rules. The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under MSSCAMPSD. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is performed by PQ to track operation of the furnace. -already required for the furnace to track actual operation. This monitoring is performed to determine that the operation of the furnace is within ranges that are consistent with good operating, combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are: raw material feed rate and natural gas flow rate. These measures are imposed to assure that the operation and emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.

Commented [MS12]: PQ acquired the facility in 2008. Capacity data for 1961 is not available.

Note that PQ only manufactures a 3:3 ratio blend (Wt. % SiO₂ / Wt. % Na₂O).

Commented [SR13]: How true (or untrue) is this statement?

Commented [CR14R13]: IEPA – The only continuous monitoring required by the permit is on the scrubber, which controls PM emissions (so the monitoring is unrelated to actual furnace operation and also unrelated to NOx emissions).

There are furnace parameters that are continuously monitored, as part of properly operating the furnace, but those are not addressed by the CAAPP permit.

Specifically, PQ does and will monitor raw material feed rate that will ensure permit limit compliance. PQ also controls natural gas flow rates.

PQ is willing to include requirements in the permit for continuous monitoring of these parameters to ensure compliance, in addition to more frequent stack testing.

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ LLC for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: March XYZ, 2022
Public Comment Period Closes: April XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ LLC (PQ) has requested a construction permit for a rebuild of its sodium silicate fusing furnace (Fusing Furnace #2), and other associated equipment at its sodium silicate manufacturing plant in Joliet.

The key rebuilding changes to equipment that PQ is seeking to the furnace are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed by PQ in 1961, four decades before PQ acquired the facility. Fusing Furnace #2 has a current rated heat input capacity of 32 MMBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand is transported via bucket elevator and screw conveyor to Fusing Furnace #2. Any dust generated from the silos, weigh bin and mixer (collectively referred to as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000-°F. The furnace ~~is natural gas fired and~~ has a ~~rated heat input~~current production capacity of 32 million Btu per hour (MMBtu/hr)~~56,000 tons per year and it will decrease as a result of this project, to 48,281 tons per year.~~ PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers, or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through

several intermediate tanks, which can be filtered (using filter aid or similar dry raw materials added through negligible emitting bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (an emits insignificant activity negligible quantities of PM).

Description of the furnace itself.

While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners. The permitted annual emissions for all regulated air pollutants from the project were below the thresholds at which the project would have been a major project under the Illinois' rules for Major Stationary Source Construction And Modification (MSSCAM), 35 IAC Part 203.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, the zeolite and metasilicate manufacturing plants. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project. The annual increases in emissions will not be significant.

IV. EMISSIONS OF THE PROJECT

The increases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing

Commented [SR1]: What about the furnace itself? Does it have a melter, forehearth, etc.? Please describe the furnace...

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Commented [SR2]: Do these shutdowns include reductions in NOx, CO, etc.?

configuration and an increase in furnace volume. The actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	137.5	109.6	-37.9
Carbon Monoxide (CO)	35.9	45.5	9.6
Volatile Organic Material (VOM)	5.7	5.8	0.1
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	20.6	13.4	-7.2
Sulfur Dioxide (SO ₂)	5.6	5.8	0.2

Commented [SR3]: For Jason -- This is permitted-to-permitted. Do we want to also include the MSSCAM increase?

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

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combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are: raw material feed rate and natural gas flow rate. A continuous emissions monitor of NOx emissions and the operational monitoring are both being ~~These measures are imposed required~~ to assure that the operation and NOx emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

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Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ LLC for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: March XYZ, 2022
Public Comment Period Closes: April XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

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II. BACKGROUND

PQ manufactures sodium silicate at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed by PQ in 1961, four decades before PQ acquired the facility. Fusing Furnace #2 has a current rated heat input capacity of 32 MMBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Soda ash and silica sand are the only two raw materials used to produce sodium silicate. The sSoda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand (also known as "batch") is transported via bucket elevator and screw conveyor to Fusing Furnace #2. The batch melts in the rectangular furnace bed comprised of refractory and fired by natural gas and discharges on the opposite side as molten, soluble sodium silicate. There are no additives for color or special processing to eliminate bubbles (e.g., no sodium sulfate) or seeds. Any dust generated from the silos, weigh bin and mixer (collectively referred to as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000-°F. The furnace is natural gas fired and has a rated heat inputcurrent production capacity of 32 million Btu per hour (MMBtu/hr)56,000 tons per year and it will decreasebut PQ will take a production limit as a result of this project, to 48,281 tons per year. PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled

by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers, or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through several intermediate tanks, which can be filtered (using filter aid or similar dry raw materials added through negligible emitting bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (an-emits insignificant activity negligible quantities of PM).

Description of the furnace itself. The sodium silicate furnace is different than a glass manufacturing furnace, in that there is no post-process finishing of the molten sodium silicate. There is no distributor, forehearth, bowl or working end for bottling or float bath. As noted above, there are no additives for color or special processing to eliminate bubbles. PQ does not manufacture soda-lime glass, lead glass, fused silica, borosilicate, or 96% silicate (i.e., the commercially produced glass types described in AP-42 Section 11.15).

While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners. The permitted annual emissions for all regulated air pollutants from the project were below the thresholds at which the project would have been a major project under the Illinois' rules for Major Stationary Source Construction And Modification (MSSCAM), 35 IAC Part 203.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are insignificant activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1,

Commented [SR1]: What about the furnace itself? Does it have a melter, forehearth, etc.? Please describe the furnace...

Commented [CR2R1]: Bob - We added some additional description above (when the furnace first comes up in the description) and then a bit more here.

Commented [CR3]: Bob - In the section above, Jason wanted you to change "insignificant activities" to equipment with negligible emissions. Should that language be used here, too?

the zeolite and metasilicate manufacturing plants. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project. The annual increases in emissions will not be significant.

Commented [SR4]: Do these shutdowns include reductions in NOx, CO, etc.?

Commented [CR5R4]: Bob – Yes, there were combustion sources in those areas.

IV. EMISSIONS OF THE PROJECT

The increases and decreases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Commented [CR6]: IEPA - These changes have already been described twice in the document. Maybe it doesn't need to be here again?

Pollutant	Permitted Project Emissions (tons/year)		Increase (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	137.5	109.6	-37.9
Carbon Monoxide (CO)	35.9	45.5	9.6
Volatile Organic Material (VOM)	5.7	5.8	0.1
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	20.6	13.4	-7.2
Sulfur Dioxide (SO ₂)	5.6	5.8	0.2

Commented [SR7]: For Jason -- This is permitted-to-permitted. Do we want to also include the MSSCAM increase?

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions under Illinois' MSSCAM rules. The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the

emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under MSSCAM. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is performed by PQ to track operation of the furnace. This monitoring is performed to determine that the operation of the furnace is within ranges that are consistent with good operating, combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are: raw material feed rate and natural gas flow rate. A continuous emissions monitoring of NOx emissions as applicable under 35 IAC 217.157(b) and the operational monitoring are both being These measures are imposed required to assure that the operation and NOx emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

Commented [CR8]: IEPA – Minor wording change suggested here to align the project summary wording with the draft permit.

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ LLC for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: March XYZ, 2022
Public Comment Period Closes: April XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ LLC (PQ) has requested a construction permit for a rebuild of its sodium silicate fusing furnace (Fusing Furnace #2), and other associated equipment at its sodium silicate manufacturing plant in Joliet.

The key rebuilding changes to equipment that PQ is seeking to the furnace are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

PQ manufactures sodium silicate at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed in 1961, four decades before PQ acquired the facility. Fusing Furnace #2 has a current rated heat input capacity of 32 MMBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Soda ash and silica sand are the only two raw materials used to produce sodium silicate. The soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand (also known as "batch") is transported via bucket elevator and screw conveyor to Fusing Furnace #2. The batch melts in the rectangular furnace bed comprised of refractory and fired by natural gas and discharges on the opposite side as molten, soluble sodium silicate. There are no additives for color or any special processing to eliminate bubbles (e.g., no sodium sulfate) or seeds. Any dust generated from the silos, weigh bin and mixer (collectively referred to as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. The furnace has a current production capacity of 56,000 tons per year, but PQ will take a production limit as a result of this project, to 48,281 tons per year. PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as

it moves on an indoor conveyor/elevator. From the elevator, solidified sodium silicate "chunks" drop down chutes into one of three pressurized dissolvers, or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through several intermediate tanks, which can be filtered (using filter aid or similar dry raw materials added through negligible emitting bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (emits negligible quantities of PM).

The sodium silicate furnace is different than a glass manufacturing furnace, in that there is no post-process finishing of the molten sodium silicate, no distributor, forehearth, bowl or working end for bottling or float bath. As noted above, additives for color or special processing to eliminate bubbles are not inherent to the process. PQ also does not manufacture soda-lime glass, lead glass, fused silica, borosilicate, or 96 percent silicate, i.e., the commercially produced glass types described in AP-42 Section 11.15.

While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners. The permitted annual emissions for all regulated air pollutants from the project were below the thresholds at which the project would have been a major project under the Illinois' rules for Major Stationary Source Construction And Modification (MSSCAM), 35 IAC Part 203.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks operations that emit negligible amounts of particulate matter. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will emit negligible quantities of pollutants.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, the zeolite and metasilicate manufacturing plants. Of the proposed changes,

those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project. The annual increases in emissions will not be significant.

IV. EMISSIONS OF THE PROJECT

The increases and decreases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

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Pollutant	Permitted Project Emissions (tons/year)		Increase/Decrease (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	137.5	109.6	-37.9
Carbon Monoxide (CO)	35.9	45.5	9.6
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Particulate Matter (PM/PM ₁₀ /PM _{2.5})	20.6	13.4	-7.2
Sulfur Dioxide (SO ₂)	5.6	5.8	0.2

Commented [SR2]: This is permitted-to-permitted. Do we want to also include the MSSCAM increase?

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions under Illinois' MSSCAM rules. The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the

permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under MSSCAM. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is performed by PQ to track operation of the furnace. This monitoring is performed in order to determine that the operation of the furnace is within the ranges that are consistent with good operating, combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are the following: raw material feed rate and natural gas flow rate. Operational monitoring and a continuous emissions monitor for NOx emissions that follow the provisions of 35 IAC 217.157(b) are being required so as to assure that both the operation and NOx emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

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Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for an
Application from PQ LLC for
a Construction Permit for a
Furnace Rebuild Project at its
Sodium Silicate Manufacturing Plant in Joliet

Site Identification No.: 197045ABO
Application No.: 21110013
Date Received: November 8, 2021

Schedule

Public Comment Period Begins: May XYZ, 2022
Public Comment Period Closes: June XYZ, 2022

Illinois EPA Contacts

Permit Analyst: Bob Smet
Community Relations Coordinator: Cassandra Metz

I. INTRODUCTION

PQ LLC (PQ) has requested a construction permit for a rebuild of its sodium silicate fusing furnace (Fusing Furnace #2), and for other associated equipment at its sodium silicate manufacturing plant located at 111 Ingalls Avenue in Joliet.

The key changes that PQ is proposing are the replacement of burners and the associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is also expected that sodium silicate production will increase above current rates of production.

The Illinois EPA has reviewed PQ's application and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft construction permit that it proposes to issue. However, before issuing this permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. BACKGROUND

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Soda ash and silica sand are the only two raw materials used to produce sodium silicate. The soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand (also known as "batch") is transported via bucket elevator and screw conveyor to Fusing Furnace #2. The batch melts in the rectangular furnace bed comprised of refractory and fired by natural gas and discharges on the opposite side as molten, soluble sodium silicate. There are no additives for color or special processing to eliminate bubbles (e.g., no sodium sulfate) or seeds. Any dust generated from the silos, weigh bin and mixer (collectively referred to as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. The furnace has a current production capacity of 56,000 tons per year, but PQ will take a production limit as a result of this project, to 48,281 tons per year. PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium

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The sodium silicate furnace is different than a glass manufacturing furnace, in that there is no post-process finishing of the molten sodium silicate. There is no distributor, forehearth, bowl or working end for bottling or float bath. As noted above, there are no additives for color or special processing to eliminate bubbles. PQ does not manufacture soda-lime glass, lead glass, fused silica, borosilicate, or 96% silicate (i.e., the commercially produced glass types described in AP-42 Section 11.15).

While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are operations that emit negligible amounts of particulate matter. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, the zeolite and metasilicate manufacturing plants. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project.

IV. APPLICABILITY OF NEW SOURCE REVIEW

A. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions while not major for volatile organic material (VOM) emissions under Illinois' MSSCAM rules (35 IAC Part 203). The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

For purposes of MSSCAM, there will be an increase in allowable NOx emissions over their actual emissions. Actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes	Year	NOx
Fusing Furnace #2	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	-1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

B. PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

PQ's Joliet facility is not a major source for any pollutant under Illinois's rules for the Prevention of Significant Deterioration (PSD), 35 IAC Part 204. This is because no pollutant is emitted in excess of its major source threshold.

C. CHANGE IN PERMITTED EMISSIONS OF THE PROJECT

The increases and decreases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. As noted above, the actual annual emissions from the project should be lower than the requested permitted emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase/Decrease (tons/year)
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Nitrogen Oxides (NOx)	137.5	109.6	-37.9
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Sulfur Dioxide (SO ₂)	5.6	5.8	0.2

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. Among the standards that the fusing furnace must meet are: 35 IAC 212.123(a) for opacity, 35 IAC 212.322 for particulate matter emissions, 35 IAC 214.301 for sulfur dioxide emissions ~~and, 35 IAC 218.301 for emissions of volatile organic materials and 35 IAC 217.157 for monitoring of NO_x~~. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

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II. BACKGROUND

PQ manufactures sodium silicate at its Joliet plant. Sodium silicate has many uses, including its use in the manufacture of wastewater treatment coagulants and flocculants, silica gels, refractory ceramics and adhesives. Fusing Furnace #2 was installed in 1961. Fusing Furnace #2 has a current rated heat input capacity of 32 mmBtu/hr and uses natural gas as its fuel, combusting it with burners that are supplied with air. Particulate emissions from the furnace are controlled with a scrubber.

Soda ash and silica sand are the only two raw materials used to produce sodium silicate. The soda ash and silica sand are unloaded from railcar or truck and conveyed with screw conveyors and bucket elevators into silos (one for soda ash and one for silica sand). The raw materials are further transported to a weigh bin, and then to a mixer, where the desired silica sand to soda ash ratio is obtained. From the mixer, the mixture of soda ash and silica sand (also known as "batch") is transported via bucket elevator and screw conveyor to Fusing Furnace #2. The batch melts in the rectangular furnace bed comprised of refractory and fired by natural gas and discharges on the opposite side as molten, soluble sodium silicate. There are no additives for color or special processing to eliminate bubbles (e.g., no sodium sulfate) or seeds. Any dust generated from the silos, weigh bin and mixer (collectively referred to as "Fusing Feed") is captured by a shared baghouse, which vents indoors and is for industrial hygiene purposes.

Fusing Furnace #2 produces sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. The furnace has a current production capacity of 56,000 tons per year, but PQ will take a production limit as a result of this project, to 48,281 tons per year. PM emissions from the furnace are controlled with a Venturi Scrubber. All of the subsequent steps in the manufacturing process have negligible (insignificant) PM emissions because the material is in an aqueous salt solution, or because the solid material is in large pieces (and is frequently handled by/transferred into enclosed equipment). The molten sodium silicate that pours from the furnace cools as it moves on an indoor conveyor/elevator. From the elevator, solidified sodium

silicate "chunks" drop down chutes into one of three pressurized dissolvers, or can be routed to an indoor storage bunker, if needed, for later recycling to the dissolvers. The [dissolved] liquid sodium silicate then goes through several intermediate tanks, which can be filtered (using filter aid or similar dry raw materials added through negligible emitting bag dump stations) and then on to final liquid product storage. This liquid product can be loaded onto trucks and sold commercially or used on-site for the micronized gel and hydrogel operations. On occasion, the solid sodium silicate from the storage bunker can also be loaded onto trucks (emits negligible quantities of PM).

The sodium silicate furnace is different than a glass manufacturing furnace, in that there is no post-process finishing of the molten sodium silicate. There is no distributor, forehearth, bowl or working end for bottling or float bath. As noted above, there are no additives for color or special processing to eliminate bubbles. PQ does not manufacture soda-lime glass, lead glass, fused silica, borosilicate, or 96% silicate (i.e., the commercially produced glass types described in AP-42 Section 11.15).

While Fusing Furnace #2 and its associated equipment were originally constructed in 1961, it was modified in 2009 with the replacement of its burners.

III. CURRENT REQUEST

The key changes to PQ's operations as part of the project will be to the furnace, namely the replacement of burners and its associated burner control system, changes to the furnace's firing configuration and an increase in furnace volume. It is expected that sodium silicate production will increase above current rates of production. As a consequence, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks will experience an insignificant increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are operations that emit negligible amounts of particulate matter. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will be an insignificant activity.

This project will not result in any significant furnace operational changes and will actually reduce current permitted air pollution emission limits. Over the years, there has been a significant reduction in operations and subsequent air emissions at the facility due to the shutdowns of Furnace #1, the zeolite and metasilicate manufacturing plants. Of the proposed changes, those to the furnace and the increase in the production rate will comprise the bulk of the emissions increases from the project.

IV. APPLICABILITY OF NEW SOURCE REVIEW

A. MAJOR STATIONARY SOURCES CONSTRUCTION AND MODIFICATION (MSSCAM)

PQ's Joliet facility is a major source for NOx emissions but is not major for volatile organic material (VOM) emissions under Illinois' MSSCAM rules (35 IAC Part 203). The construction permit for the Furnace Rebuild project requested by PQ would not make the proposed permitting action a major modification under MSSCAM because the project's NOx emissions would not be significant for purposes of MSSCAM. That is, the emissions of NOx, considering the increases proposed in the draft permit, would be less than 25 tons/year for purposes of MSSCAM. Accordingly, this project would not become subject to the substantive requirements of the MSSCAM rules for NOx.

For purposes of MSSCAM, there will be an increase in allowable NOx emissions over their actual emissions. Actual annual emissions from the Furnace Rebuild project should be lower than the requested permitted emissions. This is because PQ has requested limits that provide a margin of compliance and account for the normal variation in the operation of the Furnace and its emissions.

Evaluation of the Aggregate NOx Emissions Changes for Purposes of MSSCAM (Tons/Year)

Project Emissions Changes	Year	NOx
Fusing Furnace #2	2022	24.09
New 2.2 MMBtu/hr Heater	2019	0.94
Removal of 4.5 MMBtu/hr Heater	2019	-1.13
Net Emissions Change:		23.9
De Minimis Threshold:		25
De Minimis?		Yes

B. PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

PQ's Joliet facility is not a major source for any pollutant under Illinois's rules for the Prevention of Significant Deterioration (PSD), 35 IAC Part 204. This is because no pollutant is emitted in excess of its major source threshold.

C. CHANGE IN PERMITTED EMISSIONS

The increases and decreases in the permitted annual emissions for the Furnace Rebuild project that PQ is requesting are provided below. The requested increases in permitted emissions involve the increases in emissions from the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. As noted above, the actual annual emissions from the project should be lower than the requested permitted emissions.

Pollutant	Permitted Project Emissions (tons/year)		Increase/Decrease (tons/year)
	Original	Requested	
Nitrogen Oxides (NOx)	137.5	109.6	-37.9
Carbon Monoxide (CO)	35.9	35.9	0.0

Volatile Organic Material (VOM)	5.7	5.7	0.0
Particulate Matter (PM/PM ₁₀ /PM _{2.5})	20.6	13.4	-7.2
Sulfur Dioxide (SO ₂)	5.6	5.6	0.0

V. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with State emissions standards adopted by the Illinois Pollution Control Board. The Board's emission standards, 35 Illinois Administrative Code: Subtitle B, represent the basic requirements for sources in Illinois. Among the standards that the fusing furnace must meet are: 35 IAC 212.123(a) for opacity, 35 IAC 212.322 for particulate matter emissions, 35 IAC 214.301 for sulfur dioxide emissions and 35 IAC 218.301 for emissions of volatile organic materials. The Furnace Rebuild project readily complies with applicable state emission standards and should continue to do so.

VI. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it proposes to issue for this Furnace Rebuild project. The conditions of the permit set forth the air pollution control requirements that the project must meet. The requirements include the measures that must be used and the emission limits that must be met for emissions of different regulated air pollutants from the furnace.

The conditions of the draft permit for the rebuilt furnace contain limits and requirements to assure that the facility complies with applicable regulatory requirements. The draft permit includes enforceable limits on the project's emissions to ensure that they are below the levels at which it would be considered a significant modification under MSSCAM. The permit also establishes requirements for recordkeeping and reporting. Continuous monitoring of operating parameters is performed by PQ to track operation of the furnace. This monitoring is performed to determine that the operation of the furnace is within the ranges that are consistent with good operating, combustion, and emission control practices. The particular operating parameters that PQ monitors continuously are the following: raw material feed rate and natural gas flow rate. Emissions monitoring of NO_x emissions as applicable under 35 IAC 217.157(b) and the operational monitoring are both being required to assure that the operation and NO_x emissions of the furnace are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

VII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the construction permit meets all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Accordingly, the Illinois EPA is proposing to issue a construction permit for this project.

Comments are requested on this proposed action by the Illinois EPA and the terms and conditions of the draft permit.



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

Date: May 4, 2022

Source: PQ, LLC

Location: 111 Ingalls Avenue, Joliet, Will County

Project: Construction application for the rebuild of sodium silicate furnace #2, which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

The permitted emissions of the various pollutants from the rebuilt furnace will either be equal to or less than the permitted emissions of the current furnace.

Public/EJ Notice: EJ notification/outreach was provided for this project. No comments, questions, or other expressions of concern or interest were received.

Compliance History: The only and most recent flag was from March 2020 which pertained to a possible late submittal of the application for the renewal of the CAAPP permit, which is not relevant to this current permit application and draft permit.

Calculation Sheet**Company: PQ Corp.****ID: 197045ABO****PN: 20110007****Analyst: Bob Smet****Date Received: November 8, 2021****Current Date: June 13, 2022**

The company is seeking a construction permit for the rebuild of sodium silicate furnace #2, which includes the replacement of burners and associated burner control system, changes to the firing configuration and an increase in furnace volume. The furnace will continue to produce sodium silicate by the fusion of sand and soda ash at temperatures above 2,000°F. It is expected that sodium silicate production will increase above current rates of production.

Due to the changes being made to the furnace that will alter production rates, material handling operations upstream and downstream of the furnace may experience an increase in utilization of existing capacity. Specifically, the raw material handling system, which consists of silos for soda ash and sand, a weigh bin, and mixer all venting through a common baghouse, will experience an increase in throughput. Downstream bag dump stations for emptying dry materials (filtrate) into existing tanks T-110 and T-111 will experience a negligible increase in particulate matter emissions.

Other equipment in the process that may be replaced or added, such as conveyors and feeders, are not emission units because the molten sodium silicate solidifies and is conveyed in a way that does not generate emissions. Transfer points where solid sodium silicate is transferred into indoor bunkers or outdoor loading operations and into dissolving tanks are negligible emitting activities. A natural gas-fired lip burner that will be installed to initiate 'glass' flow, will also be a negligible emitting activity. Attachment 2 of the permit shows the emissions changes from the project.

The most critical issue to address was that concerning whether a CEMS or a stack test would be appropriate for determining the emissions from the furnace. Considering that the source is located in both a NAA and an EJ area, we determined that a CEMS, rather than a stack test was necessary not just to determine compliance but to determine emissions. This is because a stack test is a on-time snapshot of emissions. Yet PQ argued with us on multiple occasions that the stack test was sufficient. To better inform our opinion, we spoke with both Kevin Mattison (see emails around April 26) and USEPA Region 5 (David Ogulei; call scheduled on March 28th) and both agreed with our assessment. There is plenty of discussion on this issue and other issues in the record.

Also, during the comment period, the Chicago Ozone NAA was redesignated from serious (2008) to moderate (2015), so the threshold went from 25 tpy to 40 tpy. The final permit reflects this change. The issued permit removed the Attachment from the draft permit and the language in Condition 3(a) was enhanced. Just to note, the years 2017 and

2018 were used as baseline years of production since they were representative of production.

See permit for other details.

Review of project aggregation indicated that there were only two very minor projects in the last 5 years.

EJ outreach was necessary and conducted but no concerns were raised.

We expected comments to be raised by the company during the comment period re stack testing versus CEMS but they did not provide them.

The submitted fee was \$3,000 (for two mods).

Also, there was a Compliance flag indicating that the Title V permit application may have been received late. Not relevant to this permit.

GRANT