



200 N. La Salle, Suite 2100
Chicago, IL 60601
(312) 291-4364
archer@ussilica.com

Via UPS

June 25, 2015

Jay Fedczak, Assistant Director for Permitting
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304

RE: U.S. Silica Company – Berkeley Springs Plant
45 Code of State Regulations (CSR) Rule 13 Permit Application
New air classifier and material handling equipment

Dear Mr. Fedczak:

Enclosed please find an application and supporting materials for proposed new equipment at U.S. Silica Company's (U.S. Silica's) Berkeley Springs Plant in Morgan County, WV. U.S. Silica is proposing to install a new air classifier and other material handling equipment as part of the existing milling operations at the plant. The proposed new material handling equipment includes a feed hopper, a bucket elevator, two (2) feed bins, two (2) feed conveyor belts, a screen and a pneumatic conveyor.

Included in this application is a check made payable to WVDEP – Division of Air Quality for \$2,000 for the application fee. In addition, a public notice was published in the Morgan Messenger on June 24, 2015. The affidavit of publication of this notice will be submitted to the WVDEP upon its receipt.

Please contact me at (312) 291-4364 or via email at archer@ussilica.com if you have any questions regarding the enclosed application.

Sincerely,

A handwritten signature in blue ink that reads "Tina Archer".

Tina Archer
Environmental Project Manager

Attachments



R-13 PERMIT APPLICATION
U.S. Silica Company > Berkeley Springs Plant



Prepared by

U.S. Silica Company – Berkeley Springs Plant

P.O. Box 187
Berkeley Springs, WV 25411
(312) 291-4364

TRINITY CONSULTANTS

5320 Spectrum Dr.
Suite A
Frederick, MD 21703
(240) 379-7490

June 2015

Project 152101.0020

Trinity 
Consultants

Environmental solutions delivered uncommonly well

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1. Facility and Project Description	1
1.2. R-13 Application Organization	1
2. SAMPLE EMISSIONS CALCULATIONS	3
3. R-13 APPLICATION FORM	4
ATTACHMENT A: CERTIFICATE OF AUTHORITY	2
ATTACHMENT B: MAP	3
ATTACHMENT C: STARTUP AND INSTALLATION SCHEDULE	5
ATTACHMENT D: REGULATORY DISCUSSION	7
ATTACHMENT E: PLOT PLAN	6
ATTACHMENT F: DETAILED PROCESS FLOW DIAGRAM	7
ATTACHMENT G: PROCESS DESCRIPTION	8
ATTACHMENT H: MATERIAL SAFETY DATA SHEET (MSDS)	10
ATTACHMENT I: EMISSIONS UNIT TABLE	11
ATTACHMENT J: EMISSIONS POINTS DATA SUMMARY SHEET	12
ATTACHMENT K: FUGITIVE EMISSIONS DATA SUMMARY SHEET	13
ATTACHMENT L: EMISSIONS UNIT DATA SHEET	14
ATTACHMENT M: AIR POLLUTION CONTROL DEVICE SHEETS	15
ATTACHMENT N: SUPPORTING EMISSIONS CALCULATIONS	16
ATTACHMENT O: MONITORING/RECORDKEEPING/REPORTING/TESTING PLANS	17

1.1. FACILITY AND PROJECT DESCRIPTION

U.S. Silica Company (U.S. Silica) owns and operates a sandstone quarry and silica sand processing facility in Berkeley Springs, WV (the Berkeley Springs Plant). Processes at the Berkeley Springs Plant include mining, crushing, screening, drying, milling, classification and packaging and bulk loading. The facility currently operates under Title V Permit No. R30-06500001-2014, issued March 25, 2014.

U.S. Silica is proposing the installation of new equipment at the Berkeley Springs Plant as part of the milling process that will provide more efficient classification and separation of the silica sand product. The proposed new equipment is listed in Attachment I of this application, and in Table 1-1.

Table 1-1. Proposed Emission Units

Emission Unit ID	Emission Unit Description	Control Device
HOPPR25	Cristobalite feed hopper	Baghouse (CF#46)
ELEV25	Cristobalite feed bin bucket elevator	Baghouse (CF#15)
TANK25	Cristobalite feed bin	Baghouse (CF#47)
FEEDB25	Cristobalite feed conveying belt	Baghouse (CF#15)
FEEDB26	Cristobalite feed conveying belt	Baghouse (CF#15)
SCREN25	Scalping screen	Baghouse (CF#15)
BIN25	Feed bin	Baghouse (CF#15)
AIRSE25	Air classifier	Baghouse (CF#45)
PNEU25	Pneumatic conveyer	Baghouse (CF#15)

1.2. R-13 APPLICATION ORGANIZATION

The following information is included as part of this application submittal:

- Section 1 includes the application introduction;
- Section 2 provides sample emissions calculations;
- Section 3 contains the required R-13 permit application form;

- Attachment A includes U.S. Silica’s Certificate of Authority;
- Attachment B includes a map of the facility’s location;
- Attachment C includes the planned schedule for installation and start-up of the proposed new equipment;
- Attachment D includes a regulatory discussion;
- Attachment E includes a plot plan of the site;
- Attachment F includes a detailed process flow diagram of the proposed new equipment;
- Attachment G includes a description of the process for the proposed project;
- Attachment H includes a Material Safety Data Sheet for the material to be processed (crystalline silica sand);

- Attachment I includes the emissions unit table;
- Attachment J includes the emission points data summary sheet;
- Attachment K includes the fugitive emissions data summary sheet;
- Attachment L includes the emissions unit data sheets;
- Attachment M includes the air pollution control device sheets;
- Attachment N includes the supporting emissions calculations; and
- Attachment O includes the proposed monitoring, recordkeeping, reporting and testing plans for the proposed new equipment;

2. SAMPLE EMISSIONS CALCULATIONS

The proposed emission sources at the Berkeley Springs Plant will perform various material handling processes, including the screening, separating and transporting of silica sand. The only pollutants these sources will emit to the air are particulate matter (PM), particulate matter less than 10 microns (PM₁₀) and particulate matter less than 2.5 microns (PM_{2.5}). Sample air emissions calculations are provided below. Detailed supporting calculations are also provided in Attachment N.

Emissions from each of the proposed sources will be controlled via baghouses that will operate continuously when the new equipment is in operation. Four (4) new baghouses are proposed as part of this project, as described in Attachment M. Emissions from each of these baghouses were calculated using an estimated outlet grain loading in grains per dry standard cubic feet (gr/dscf), along with the rated flowrate of gas through the baghouse in dry standard cubic feet per minute (dscfm). For the purpose of the calculations, it was assumed that each process and baghouse will operate for 8,760 hours per year. The equation below was used to calculate the emission rate in tons per year (tpy) from each baghouse.

$$\begin{aligned} & \text{PM Emission rate (tpy)} \\ &= \text{PM Outlet grain loading} \left(\frac{\text{gr}}{\text{dscf}} \right) \times \text{Flowrate (dscfm)} \times \left(\frac{60 \text{ min}}{1 \text{ hour}} \right) \times \left(\frac{1 \text{ lb}}{7,000 \text{ gr}} \right) \times \left(\frac{8,760 \text{ hours}}{1 \text{ year}} \right) \times \left(\frac{1 \text{ ton}}{2,000 \text{ lbs}} \right) \end{aligned}$$

Similarly, the equation used to calculate the emission rate in pounds per hour (pph) is shown below:

$$\text{PM Emission rate (pph)} = \text{PM Outlet grain loading} \left(\frac{\text{gr}}{\text{dscf}} \right) \times \text{Flowrate (dscfm)} \times \left(\frac{60 \text{ min}}{1 \text{ hour}} \right) \times \left(\frac{1 \text{ lb}}{7,000 \text{ gr}} \right)$$

A very minor amount of fugitive emissions are also expected from the two (2) proposed feed conveyor belts (FEEDB25 and FEEDB26). Fugitive emissions from these sources were calculated using each source's maximum rated throughput of material and emission factors from U.S. EPA, AP-42 Section 11.19.2 - Crushed Stone Processing and Pulverized Mineral Processing (August 2004), Table 11.19.2-2. Control factors were estimated based on the enclosure for these units. The equation below was used to estimate fugitive emissions in tpy.

$$\begin{aligned} & \text{Fugitive PM emission rate (tpy)} \\ &= \text{Control factor (\%)} \times \text{Material throughput} \left(\frac{\text{tons}}{\text{hour}} \right) \times \left(\frac{8,760 \text{ hours}}{1 \text{ year}} \right) \times \text{Emission factor} \left(\frac{\text{lbs PM}}{\text{ton}} \right) \times \left(\frac{1 \text{ ton}}{2,000 \text{ lbs}} \right) \end{aligned}$$

Similarly, the equation used to calculate the fugitive emission rate in pounds per hour (pph) is shown below:

$$\begin{aligned} & \text{Fugitive PM emission rate (pph)} \\ &= \text{Control factor (\%)} \times \text{Material throughput} \left(\frac{\text{tons}}{\text{hour}} \right) \times \text{Emission factor} \left(\frac{\text{lbs PM}}{\text{ton}} \right) \end{aligned}$$

3. R-13 APPLICATION FORM



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.dep.wv.gov/daq

**APPLICATION FOR NSR PERMIT
AND
TITLE V PERMIT REVISION
(OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

- CONSTRUCTION** **MODIFICATION** **RELOCATION**
 CLASS I ADMINISTRATIVE UPDATE **TEMPORARY**
 CLASS II ADMINISTRATIVE UPDATE **AFTER-THE-FACT**

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

- ADMINISTRATIVE AMENDMENT** **MINOR MODIFICATION**
 SIGNIFICANT MODIFICATION

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant (as registered with the WV Secretary of State's Office): U.S. Silica Company		2. Federal Employer ID No. (FEIN): 23-0958670	
3. Name of facility (if different from above): Berkeley Springs Plant		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: P.O. Box 187 Berkeley Springs, WV 25411		5B. Facility's present physical address: 2496 Hancock Road Berkeley Springs, WV 25411	
6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO – If YES , provide a copy of the Certificate of Incorporation/Organization/Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A . – If NO , provide a copy of the Certificate of Authority/Authority of L.L.C./Registration (one page) including any name change amendments or other Business Certificate as Attachment A .			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation:			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the <i>proposed site</i> ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If YES , please explain: Proposed equipment will be part of existing facility at Berkeley Springs, wholly owned by the U.S. Silica company – If NO , you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be constructed, modified, relocated, administratively updated or temporarily permitted (e.g., coal preparation plant, primary crusher, etc.): Silica sand processing equipment including: A feed hopper, a bucket elevator, two (2) feed bins, two (2) belt conveyors, a screen, an air classifier, a pneumatic pumping station and a dust collector.		10. North American Industry Classification System (NAICS) code for the facility: 212322	
11A. DAQ Plant ID No. (for existing facilities only): 065 – 00001		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): Facility Title V Permit No. R30-06500001-2014; All proposed equipment in this application are new, and are not included in any current 45CSR13 permits.	

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

<p>12A.</p> <ul style="list-style-type: none"> For Modifications, Administrative Updates or Temporary permits at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road; For Construction or Relocation permits, please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a MAP as Attachment B. <p>Three miles north of Berkeley Springs, WV east of Route 522.</p>		
<p>12.B. New site address (if applicable): Same as existing site</p>	<p>12C. Nearest city or town: Berkeley Springs</p>	<p>12D. County: Morgan</p>
<p>12.E. UTM Northing (KM): 4393.47</p>	<p>12F. UTM Easting (KM): 739.64</p>	<p>12G. UTM Zone: 17</p>
<p>13. Briefly describe the proposed change(s) at the facility: Proposed construction of silica sand processing equipment including: a feed hopper, a bucket elevator, two (2) feed bins, two (2) belt conveyors, a screen, an air classifier, a pneumatic pumping station and a dust collector.</p>		
<p>14A. Provide the date of anticipated installation or change: 10/31/2015</p> <ul style="list-style-type: none"> If this is an After-The-Fact permit application, provide the date upon which the proposed change did happen: / / 	<p>14B. Date of anticipated Start-Up if a permit is granted: 12/15/2015</p>	
<p>14C. Provide a Schedule of the planned Installation of/Change to and Start-Up of each of the units proposed in this permit application as Attachment C (if more than one unit is involved).</p>		
<p>15. Provide maximum projected Operating Schedule of activity/activities outlined in this application: Hours Per Day 24 Days Per Week 7 Weeks Per Year 52</p>		
<p>16. Is demolition or physical renovation at an existing facility involved? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p>		
<p>17. Risk Management Plans. If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your Risk Management Plan (RMP) to U. S. EPA Region III.</p>		
<p>18. Regulatory Discussion. List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (<i>if known</i>). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance (<i>if known</i>). Provide this information as Attachment D.</p>		
<p>Section II. Additional attachments and supporting documents.</p>		
<p>19. Include a check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR22 and 45CSR13).</p>		
<p>20. Include a Table of Contents as the first page of your application package.</p>		
<p>21. Provide a Plot Plan, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as Attachment E (Refer to Plot Plan Guidance) .</p> <ul style="list-style-type: none"> Indicate the location of the nearest occupied structure (e.g. church, school, business, residence). 		
<p>22. Provide a Detailed Process Flow Diagram(s) showing each proposed or modified emissions unit, emission point and control device as Attachment F.</p>		
<p>23. Provide a Process Description as Attachment G.</p> <ul style="list-style-type: none"> Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable). 		
<p>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</p>		

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H**.
 – For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I**.

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J**.

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K**.

28. Check all applicable **Emissions Unit Data Sheets** listed below:

<input type="checkbox"/> Bulk Liquid Transfer Operations	<input type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input checked="" type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	
<input type="checkbox"/> General Emission Unit, specify		

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L**.

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

<input type="checkbox"/> Absorption Systems	<input checked="" type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System
<input type="checkbox"/> Other Collectors, specify		

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M**.

30. Provide all **Supporting Emissions Calculations** as **Attachment N**, or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O**.
 ➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and **Example Legal Advertisement** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?
 YES NO
 ➤ If **YES**, identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's "**Precautionary Notice – Claims of Confidentiality**" guidance found in the **General Instructions** as **Attachment Q**.

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R**.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

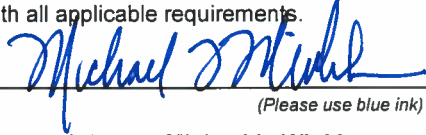
Certification of Truth, Accuracy, and Completeness

I, the undersigned **Responsible Official** / **Authorized Representative**, hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE


(Please use blue ink)

DATE:

6/18/15
(Please use blue ink)

35B. Printed name of signee: **Michael L. Winkler**

35C. Title: **Vice President/Chief Operating Officer**

35D. E-mail: **winklerm@ussilica.com**

36E. Phone: **312-859-7539**

36F. FAX:

36A. Printed name of contact person (if different from above): **Tina Archer**

36B. Title: **Environmental Project Manager**

36C. E-mail: **archer@ussilica.com**

36D. Phone: **312-291-4364**

36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Attachment A: Business Certificate | <input checked="" type="checkbox"/> Attachment K: Fugitive Emissions Data Summary Sheet |
| <input checked="" type="checkbox"/> Attachment B: Map(s) | <input checked="" type="checkbox"/> Attachment L: Emissions Unit Data Sheet(s) |
| <input checked="" type="checkbox"/> Attachment C: Installation and Start Up Schedule | <input checked="" type="checkbox"/> Attachment M: Air Pollution Control Device Sheet(s) |
| <input checked="" type="checkbox"/> Attachment D: Regulatory Discussion | <input checked="" type="checkbox"/> Attachment N: Supporting Emissions Calculations |
| <input checked="" type="checkbox"/> Attachment E: Plot Plan | <input checked="" type="checkbox"/> Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans |
| <input checked="" type="checkbox"/> Attachment F: Detailed Process Flow Diagram(s) | <input type="checkbox"/> Attachment P: Public Notice |
| <input checked="" type="checkbox"/> Attachment G: Process Description | <input type="checkbox"/> Attachment Q: Business Confidential Claims |
| <input checked="" type="checkbox"/> Attachment H: Material Safety Data Sheets (MSDS) | <input type="checkbox"/> Attachment R: Authority Forms |
| <input checked="" type="checkbox"/> Attachment I: Emission Units Table | <input type="checkbox"/> Attachment S: Title V Permit Revision Information |
| <input checked="" type="checkbox"/> Attachment J: Emission Points Data Summary Sheet | <input checked="" type="checkbox"/> Application Fee |

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:

- Forward 1 copy of the application to the Title V Permitting Group and:
- For Title V Administrative Amendments:
- NSR permit writer should notify Title V permit writer of draft permit,
- For Title V Minor Modifications:
- Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,
- NSR permit writer should notify Title V permit writer of draft permit.
- For Title V Significant Modifications processed in parallel with NSR Permit revision:
- NSR permit writer should notify a Title V permit writer of draft permit,
- Public notice should reference both 45CSR13 and Title V permits,
- EPA has 45 day review period of a draft permit.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

ATTACHMENT A: CERTIFICATE OF AUTHORITY

790

State of West Virginia



Mail to
Love, Wise & Woodcock
P.O. Box 951
Charleston, W. Va. 25325

CERTIFICATE

I, Ken Heckler, Secretary of State of the State of West Virginia, hereby certify that originals of an application by

PENNSYLVANIA GLASS SAND CORPORATION

for an amended certificate of authority to transact business in West Virginia are filed in my office, as required by the provisions of Chapter 31, Article 1, Sections 57 and 59 of the West Virginia Code and conform to law. Therefore, I issue this

AMENDED CERTIFICATE OF AUTHORITY

to transact business in West Virginia under the name of

U. S. SILICA COMPANY

and I attach to this certificate a duplicate original of the application.

RECORDED
JAN FEB 13 PM 12:34
CLERK OF THE COUNTY COMMISSIONERS
MARSHALL COUNTY, W.V.

Given under my hand and the Great Seal of the State of West Virginia, on this

TWENTY-SEVENTH

day of

JANUARY

19 87



Ken Heckler

Secretary of State.

ATTACHMENT B: MAP

Figure B-1. Berkeley Springs Plant Area Site Map



ATTACHMENT C: STARTUP AND INSTALLATION SCHEDULE

ATTACHMENT C -Installation and Startup Schedule

Table C-1. Installation and Startup Schedule

Unit ID	Installation Schedule (Planned)	Startup Schedule (Planned)
ELEV25	10/2015	12/2015
TANK25		
FEEDB25		
FEEDB26		
SCREN25		
AIRSE25		
HOPPR25		
BIN25		
PNEU25		

ATTACHMENT D: REGULATORY DISCUSSION

ATTACHMENT D - REGULATORY DISCUSSION

This section documents the applicability determinations made for Federal and State air quality regulations. The monitoring, recordkeeping, reporting and testing plan is presented in Attachment O to this application. In this section, applicability or non-applicability of the following regulatory programs is addressed:

- Prevention of Significant Deterioration (PSD);
- Non-Attainment New Source Review (NNSR);
- Title V Permitting;
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAP); and
- West Virginia State Implementation Plan (SIP) Regulations.

This review is presented to supplement and/or add clarification to the information provided in the WVDEP R13A permit application forms. In addition to providing a summary of applicable requirements, this section of the application also provides non-applicability determinations for certain regulations, allowing the WVDEP to confirm that identified regulations are not applicable to the proposed new units at the Berkeley Springs Plant. Note that explanations of non-applicability are limited to those regulations for which there may be some question of applicability specific to the proposed new units at the Berkeley Springs Plant. Regulations that are categorically non-applicable are not discussed.

Prevention of Significant Deterioration (PSD)/Non-Attainment New Source Review (NNSR) Classification

Federal construction permitting programs regulate new and modified sources of attainment pollutants under Prevention of Significant Deterioration (PSD) and new and modified sources of non-attainment pollutants under Non-Attainment New Source Review (NNSR). PSD and NNSR regulations apply when a new major source is constructed or an existing major source makes a change, such as installing new equipment or modifying existing equipment, resulting in a significant increase in emissions. The Berkeley Springs Plant is located in Morgan County, West Virginia, which is classified as attainment for all pollutants and therefore is regulated under PSD. The Berkeley Springs Plant is considered a major source under PSD, since its potential emissions of PM₁₀ and SO₂ are each above the major source threshold of 250 tons per year (tpy). As such, PSD permitting would be triggered if the emissions increase from this construction project were above the Significant Emission Rate (SER) for any pollutant regulated under PSD. As shown in Table D-1, the emissions increases associated with the proposed units are below the SER, therefore PSD permitting is not required.

Table D-1. Project Emissions Increases

Pollutant	Project Emissions Increase (tpy)	SER (tpy)
PM	5.4	25
PM ₁₀	5.4	15
PM _{2.5}	4.3	10

Title V Operating Permit Program

Title 40 of the Code of Federal Regulations Part 70 (40 CFR 70) establishes the federal Title V operating permit program. West Virginia has incorporated the provisions of this federal program in its Title V operating permit

program in West Virginia Code of State Regulations (CSR) 45-30. The major source thresholds with respect to the West Virginia Title V operating permit program regulations are 10 tons per year (tpy) of a single HAP, 25 tpy of any combination of HAP, and 100 tpy of all other regulated pollutants. The Berkeley Springs Plant currently operates under Title V permit #R30-06500001-2014, issued on March 25, 2014. The proposed emission units in this permit application, along with all applicable requirements, will be incorporated in the facility's Title V permit.

New Source Performance Standards

New Source Performance Standards (NSPS), located in 40 CFR 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. Moreover, any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, except where expressly noted. The following is a summary of applicability and non-applicability determinations for NSPS regulations of relevance to the proposed project at the Berkeley Springs Plant.

NSPS Subpart 000 - Standards of Performance for Nonmetallic Mineral Processing Plants

Subpart 000 – Standards of Performance for Nonmetallic Mineral Processing Plants applies to affected facilities in fixed or portable nonmetallic mineral processing plants that commenced construction, reconstruction or modification after August 31, 1983. The affected facilities under this Subpart are each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. Subpart 000 establishes particulate matter (PM) emissions standards for affected facilities that use capture systems to transport PM to a control device and fugitive opacity standards for affected facilities that do not use capture systems. Subpart 000 also includes monitoring and testing requirements for affected facilities.

Several of the proposed pieces of equipment in this application will be subject to the emissions standards, monitoring and testing requirements of Subpart 000, as shown in Table D-1. All new equipment subject to NSPS 000 will use a capture system to send PM to a baghouse and will meet the applicable emissions standards in Table 2 of the rule.

Table D-2. NSPS 000 Sources

Emission Unit ID	Emission Unit Description	Control Device
ELEV25	Cristobalite feed bin bucket elevator	Baghouse (CF#15)
TANK25	Enclosed Cristobalite feed bin.	Baghouse (CF#47)
FEEDB25	Cristobalite feed conveying belt	Baghouse (CF#15)
FEEDB26	Cristobalite feed conveying belt	Baghouse (CF#15)
SCREN25	Scalping screen	Baghouse (CF#15)
BIN25	Enclosed storage/feed bin	Baghouse (CF#15)
AIRSE25	Air classifier	Baghouse (CF#45)

A detailed description of the applicable monitoring, testing, recordkeeping and reporting requirements for each piece of proposed equipment are included in the application as Attachment O.

In addition, two of the proposed units are not subject to the requirements of NSPS 000, because they are not affected sources under the rule. This includes the Cristobalite feed hopper (HOPPR25) and the pneumatic conveyor (PNEU25).

Non-Applicability of All Other NSPS

NSPS are developed for particular industrial source categories. Other than NSPS developed for nonmetallic mineral processing plants (Subpart 000), the applicability of a particular NSPS to the proposed new units at the Berkeley Springs Plant can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable to proposed operations.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

Part 63 NESHAP allowable emission limits are established on the basis of a maximum achievable control technology (MACT) determination for a particular major source. A HAP major source is defined as having potential emissions in excess of 25 tpy for total HAP and/or potential emissions in excess of 10 tpy for any individual HAP. The Berkeley Springs Plant is an area (minor) source of HAP and will remain an area source after the installation of the proposed project since its potential emissions of HAP are less than the 10/25 major source thresholds. NESHAP apply to sources in specifically regulated industrial source categories (Clean Air Act Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The proposed project at the Berkeley Springs Plant will not be subject to any NESHAP Subpart, and the project will not change the applicability of any Subpart to the facility as a whole.

West Virginia SIP Regulations

The Berkeley Springs Plant is potentially subject to regulations contained in the West Virginia Code of State Regulations, Chapter 45 (Code of State Regulations). The Code of State Regulations fall under two main categories, those regulations that are generally applicable (e.g., permitting requirements), and those that have specific applicability (e.g., PM standards for manufacturing equipment). The Berkeley Springs Plant as a whole is subject to several West Virginia regulations that have been already addressed in the Title V permit. As such, only those regulations with potential applicability to the proposed new equipment have been addressed in this section.

45 CSR 4: To Prevent and Control the Discharge of Air Pollutants into the Air Which Causes or Contributes to an Objectionable Odor

According to 45 CSR 4-3:

No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.

The proposed new equipment is generally subject to this requirement. However, due to the nature of the proposed processes, production of objectionable odor is unlikely.

45 CSR 7: To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations

The proposed equipment at the Berkeley Springs Plant will be subject to the requirements of 45 CSR 7, which include standards for opacity and PM emissions for manufacturing processes. In addition to the emissions

limitations, 45 CSR 7 establishes requirements for fugitive particulate matter control, as specified in 45 CSR 7-5.1:

No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.

Further requirements are included in 45 CSR 7-5.2:

The owner or operator of a plant shall maintain particulate matter control of the plant premises, and plant owned, leased or controlled access roads, by paving, application of asphalt, chemical dust suppressants or other suitable dust control measures. Good operating practices shall be implemented and when necessary particulate matter suppressants shall be applied in relation to stockpiling and general material handling to minimize particulate matter generation and atmospheric entrainment.

U.S. Silica will continue to comply with the requirements of 45 CSR 7 for all operations at the Berkeley Springs Plant, including the processes proposed in this application.

45 CSR 13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation

45 CSR 13 provides the procedures for obtaining a permit for several types of actions, including a non-major modification to an existing major stationary source. The Berkeley Springs Plant is an existing stationary source, and the proposed new equipment constitute a non-major modification to the Plant. This permit application is being submitted for the proposed project in accordance with 45 CSR 13.

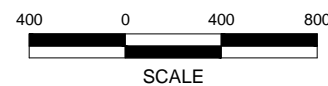
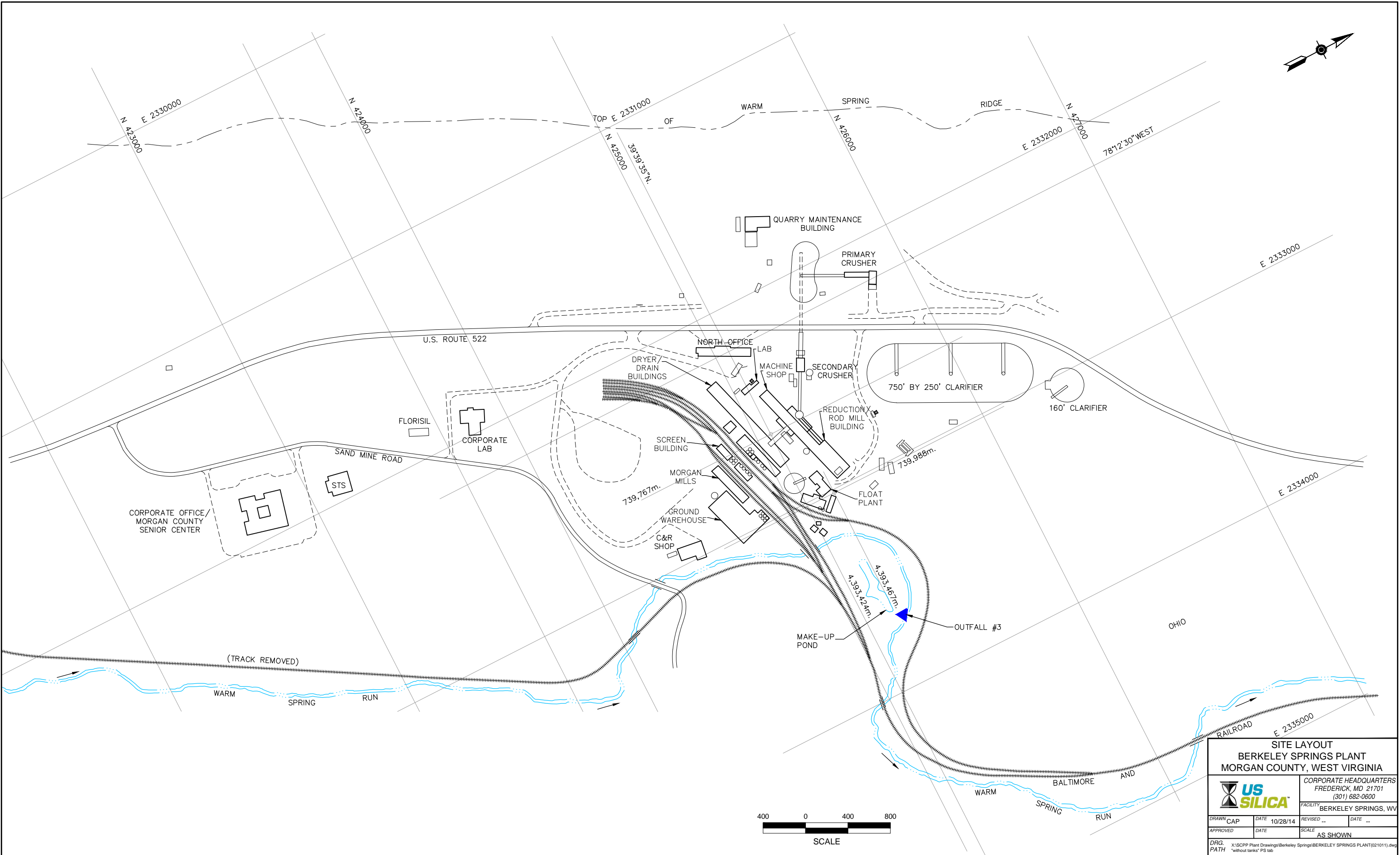
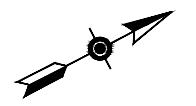
45 CSR 17: To Prevent and Control Particulate Matter Air Pollution From Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter

Requirements for the prevention and control of fugitive particulate matter emissions from materials handling, preparation, storage and other sources are provided in 45 CSR 17. However, sources subject to 45 CSR 7 are exempt from the requirements of 45 CSR 17, per 45 CSR 17-6. The proposed equipment at the Berkeley Springs Plant is subject to 45 CSR 7, and is therefore exempt from 45 CSR 17.

45 CSR 27: To Prevent and Control the Emissions of Toxic Air Pollutants

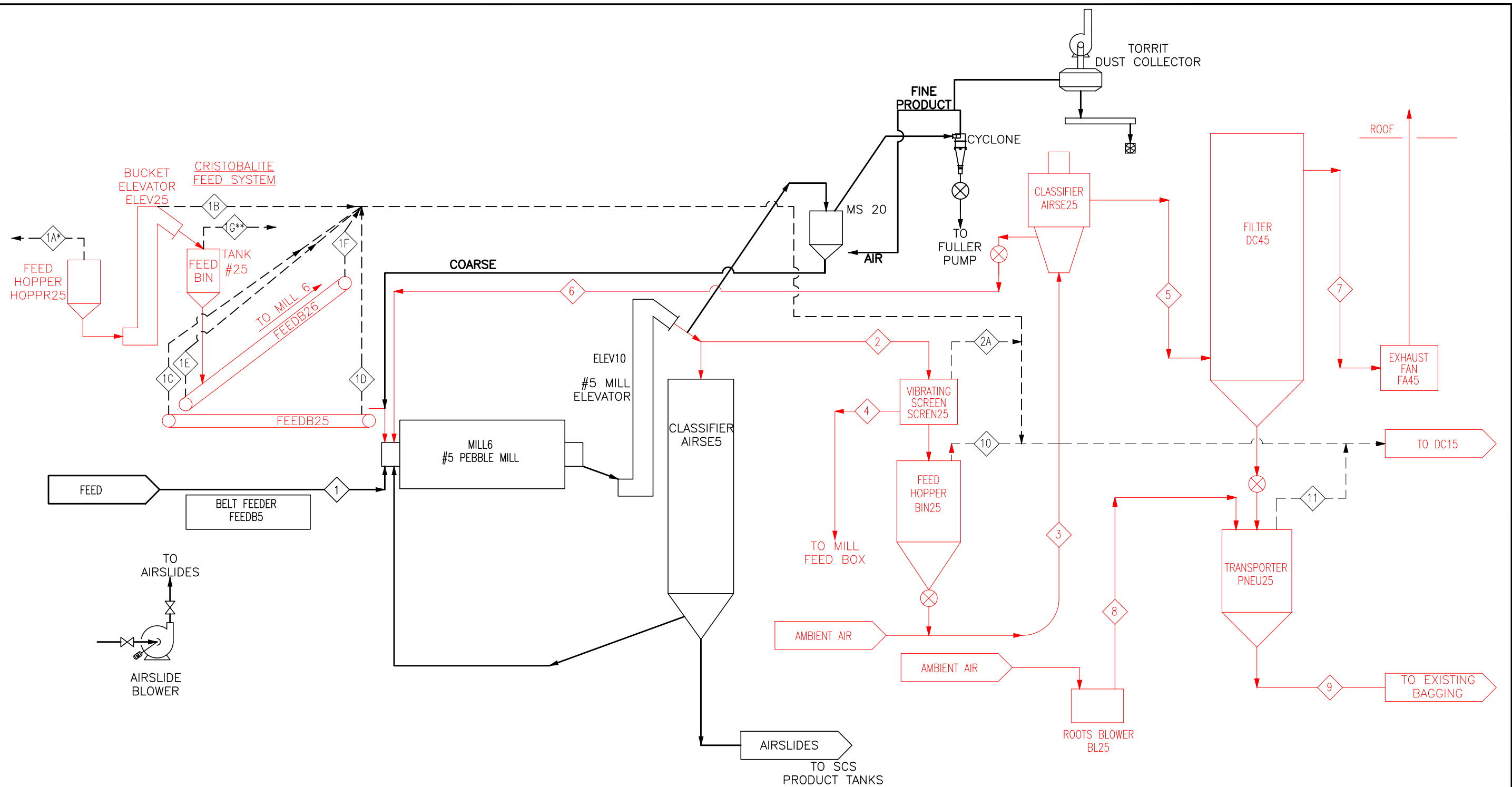
45 CSR 27 sets the requirements for the use of best available technology to prevent and control the discharge of toxic air pollutants. Due to the nature of material handled in the proposed emission sources, this regulation will not apply.

ATTACHMENT E: PLOT PLAN



SITE LAYOUT BERKELEY SPRINGS PLANT MORGAN COUNTY, WEST VIRGINIA			
		CORPORATE HEADQUARTERS FREDERICK, MD 21701 (301) 682-0600	
FACILITY BERKELEY SPRINGS, WV		REVISION	DATE
DRAWN CAP	DATE 10/28/14	REVISION	DATE
APPROVED	DATE	SCALE	AS SHOWN
DRG. PATH	X:\SCPP Plant Drawings\Berkeley Springs\BERKELEY SPRINGS PLANT(021011).dwg *without tanks' PS tab		

ATTACHMENT F: DETAILED PROCESS FLOW DIAGRAM



STREAM	1	1A*	1B	1C	1D	1E	1F	1G**	2	2A	3	4	5	6	7	8	9	10	11
TEMP (° F)	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	193	193	193	193	193	193	193	AMB	150	193	150
PRESSURE (in/h20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8 psi	8 psi	-	-
FLOW RATE (lb/hr)	2400	-	-	-	-	-	-	-	12,000	-	11,900	100	2400	9500	-	-	2600	-	-
FLOW RATE (cfm)	-	750	1500	300	300	300	300	300	-	300	-	-	-	-	3530	220	220	300	50
DENSITY (#/ft)	90	-	-	-	-	-	-	-	50	-	50	-	-	-	-	-	50	-	-

LEGEND

- PRODUCT FLOW
- AIR FLOW
- * SELF-CONTAINED BAG BREAKING STATION
- ** BIN VENT

REVISIONS				TITLE				
				PEBBLE MILL #5 FLOW DIAGRAM - ECUTECH				
				U.S. SILICA BERKELEY SPRINGS, WV				
B	MODIFIED PRI PACIFIC MILLS DWG #USS FOR BERKELEY	CAP	4-17-15	PROCESS APPR	OPER. APPR	SCALE AS NOTED	DRAWN JBN	DATE 7/12/13
A	ISSUED FOR REVIEW	JLB	7-12-13					
NO	DESCRIPTION	BY	DATE			DRAWING NO.		REV

ATTACHMENT G: PROCESS DESCRIPTION

ATTACHMENT G - PROCESS DESCRIPTION

U.S. Silica is proposing to install new equipment at their Berkeley Springs Plant in Morgan County, West Virginia. This equipment includes a new air classifier and supporting equipment as part of the Mill 5 circuit. This new classifier provides a more efficient separation and classification of U.S. Silica's product based on size. The supporting equipment includes a new screen, feed hopper and pneumatic transporter. Particulate matter emission from the new air classifier will be controlled using a new baghouse. Fugitive particulate emissions from the new supporting equipment will be controlled by a second new baghouse.

In addition, U.S. Silica is proposing the installation of a new hand-fed feed hopper, bucket elevator, feed bin and two (2) new feed conveying belts as part of the Mill 5 and Mill 6 circuit. This new equipment will support the processing of cristobalite, a new material at the Berkeley Springs Plant. Particulate matter emissions from the new feed conveyor belts will be controlled using a new baghouse. The hand-fed feed hopper will be controlled using a dedicated, self-contained baghouse. The feed bin will also be controlled using a dedicated baghouse. A list of the proposed emission units is shown in Table G-1.

The proposed equipment, along with the location the equipment will be installed in relation to the existing production line, is shown in the detailed process flow diagram provided in Attachment F.

Table G-1. Proposed Emission Units

Emission Unit ID	Emission Unit Description	Control Device
HOPPR25	Cristobalite feed hopper	Baghouse (CF#46)
ELEV25	Cristobalite feed bin bucket elevator	Baghouse (CF#15)
TANK25	Cristobalite feed bin	Baghouse (CF#47)
FEEDB25	Cristobalite feed conveying belt	Baghouse (CF#15)
FEEDB26	Cristobalite feed conveying belt	Baghouse (CF#15)
SCREN25	Scalping screen	Baghouse (CF#15)
BIN25	Feed bin	Baghouse (CF#15)
AIRSE25	Air classifier	Baghouse (CF#45)
PNEU25	Pneumatic conveyor	Baghouse (CF#15)

ATTACHMENT H: MATERIAL SAFETY DATA SHEET (MSDS)

U.S. SILICA COMPANY

Material Safety Data Sheet

Page 1 of 12

Product Name: Silica Sand and Ground Silica

Product Description: Crystalline Silica

1. Identification of the substance/preparation and of the company/undertaking

1.1. Identification of the substance or preparation

Product Name/Trade Names:

Sand and Ground Silica Sand (sold under various names: ASTM TESTING SANDS • GLASS SAND • FILPRO® • FLINT SILICA • DM-SERIES • F-SERIES • FOUNDRY SANDS • FJ-SERIES • H-SERIES • L-SERIES • N-SERIES • NJ SERIES • OK-SERIES • P-SERIES • T-SERIES • hydraulic fracturing sand, all sizes • frac sand, all sizes • MIN-U-SIL® Fine Ground Silica • MYSTIC WHITE® • #1 DRY • #1 SPECIAL • PENN SAND® • PRO WHITE® • SILURIAN® • Q-ROK® • SIL-CO-SIL® Ground Silica • MICROSIL® • SUPERSIL® • MASON SAND • GS SERIES • PER-SPEC • proppant, all sizes • SHALE FRAC® - SERIES • KOSSE WHITE® • OTTAWA WHITE® • OPTIJUMP®.

Chemical Name or Synonym:

Crystalline Silica (Quartz), Sand, Silica Sand, Flint, Ground Silica, Silica Flour.
White or tan sand or ground silica with no odor.

1.2. Use of the Substance/Preparation

Main Applications (non-exhaustive list): brick, ceramics, foundry castings, glass, grout, hydraulic fracturing sand, frac sand, proppant, mortar, paint and coatings, silicate chemistry, silicone rubber, thermoset plastics.

DO NOT USE U.S. SILICA COMPANY SAND OR GROUND SILICA FOR SAND BLASTING.

1.3. Company / Producer

U.S. Silica Company
8490 Progress Drive, Suite 300
Frederick, MD 21701
U.S.A.

Phone: 800-243-7500
Emergency Phone: 301-682-0600
Fax: 301-682-0690

2. Hazards Identification

2.1. EMERGENCY OVERVIEW:

The material is white or tan sand, or ground sand; the ground sand looks like white powder. It has no odor and is not flammable, combustible or explosive. It does not cause burns or severe skin or eye irritation. A single exposure will not result in serious adverse health effects. Crystalline silica is not known to be an environmental hazard.

Personal protective equipment – respirator -- is not required unless the concentration of respirable silica dust exceeds applicable occupational exposure levels.

Crystalline silica (quartz) is incompatible with hydrofluoric acid, fluorine, chlorine trifluoride or oxygen difluoride.

2.2. OSHA REGULATORY STATUS

This material is considered hazardous under the OSHA Hazard Communications Standard (29 CFR 1910.1200).

2.3. POTENTIAL HEALTH EFFECTS: The potential health effects are CHRONIC; the route of exposure is INHALATION; the hazards described are associated with respirable crystalline silica dust – respirable dust particles are less than 10 microns in aerodynamic diameter.

2.3.1. Inhalation:

a. Silicosis: The prolonged repeated inhalation of respirable crystalline silica can cause silicosis, a fibrosis (scarring) of the lungs.

Silicosis may be progressive; it may lead to disability and death.

b. Lung Cancer: Crystalline silica is classified as carcinogenic to humans.

c. Tuberculosis: Silicosis increases the risk of tuberculosis.

d. Autoimmune and Chronic Kidney Diseases: Some studies show excess numbers of cases of scleroderma, connective tissue disorders, lupus, rheumatoid arthritis, chronic kidney diseases and end-stage kidney disease in workers exposed to respirable crystalline silica.

e. Non-Malignant Respiratory Diseases (other than silicosis): Some studies show an increased incidence in chronic bronchitis and emphysema in workers exposed to respirable crystalline silica.

2.3.2. Eye Contact:

Crystalline silica (sand or ground silica) may cause abrasion of the cornea.

2.3.3. Skin Contact:

Not applicable.

2.3.4. Ingestion:

Not applicable.

2.3.5. Chronic Effects:

The adverse health effects -- silicosis, lung cancer, autoimmune and chronic kidney diseases, tuberculosis, and non-malignant respiratory diseases -- are chronic effects.

2.3.6. Signs and Symptoms of Exposure:

Generally, there are no signs or symptoms of exposure to crystalline silica; silicosis may result in shortness of breath, especially upon exertion. See Section 11 for additional information.

2.3.7. Medical Conditions Generally Aggravated by Exposure:

The condition of individuals with lung disease (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure.

2.3.8. Potential Environmental Effects

None known.

See Section 11, Toxicological Information, for additional detail on potential adverse health effects.

3. Composition / Information on Ingredients

Component / CAS #	%	Hazardous under OSHA Haz Comm Standard?
Crystalline Silica (quartz) 14808-60-7	99.0 – 99.9	Yes
Aluminum Oxide 1344-28-1	<1.0	No
Iron Oxide 1309-37-1	<0.1	No
Titanium Oxide 13463-67-7	<0.1	No

4. First Aid Measures

- 4.1. Eye Exposure:**
Wash immediately with plenty of water. If irritation persists, seek medical attention.
- 4.2. Skin Exposure:**
Not applicable
- 4.3. Inhalation:**
No specific first-aid is necessary since the adverse health effects associated with inhalation of respirable crystalline silica result from chronic exposures. If there is a gross inhalation of crystalline silica, remove the person immediately to fresh air, give artificial respiration as needed, seek medical attention as needed.
- 4.4. Ingestion:**
Not applicable

5. Fire Fighting Measures

- 5.1. Fire Hazard Data:**
- Auto ignition:** Not Applicable
- Flash Point:** Not Applicable
- Flammability Limits (vol/vol%):** **Lower:** Not Applicable **Upper:** Not Applicable
- Extinguishing Media:**
Product is not flammable, combustible or explosive. Use extinguishing media appropriate for surrounding fire.
- Special Fire Fighting Procedures:**
Not applicable.
- Unusual Fire and Explosion Hazards:**
None

6. Accidental Release Measures

6.1. Personal precautions:

Avoid generating dust. If the concentration of respirable silica dust exceeds the OSHA PEL or other applicable limit (if lower than the PEL), wear respirator specified in Section 8 of this Safety Data Sheet.

Environmental precautions: No specific precautions. Discard any product, residue, disposable container or liner in compliance with regulatory requirements.

Methods for cleaning up: Avoid dry sweeping. Do not use compressed air to clean spilled sand or ground silica. Use water spraying/flushing or ventilated or HEPA filtered vacuum cleaning system. Dispose of in closed containers.

7. Handling and Storage

7.1. Handling:

Avoid generating dust. Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud.

Use adequate exhaust ventilation and dust collection. Maintain and test ventilation and dust collection equipment. Use all available work practices to control dust exposures, such as water sprays. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Keep airborne dust concentrations below permissible exposure limits.

Where necessary to reduce exposures below the PEL or other applicable limit (if lower than the PEL), wear a respirator approved for silica containing dust when using, handling, storing or disposing of this product or bag. See Section 8, for further information on respirators.. Do not alter the respirator. Do not wear a tight-fitting respirator with facial hair such as a beard or mustache that prevents a good face to face piece seal between the respirator and face. Maintain, clean, and fit test respirators in accordance with applicable standards. Wash or vacuum clothing that has become dusty.

Participate in training, exposure monitoring, and health surveillance programs to monitor any potential adverse health effects that may be caused by breathing respirable crystalline silica.

The OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local worker or community "right-to-know" laws and regulations should be strictly followed.

DO NOT USE U.S. SILICA COMPANY SAND OR GROUND SILICA FOR SAND BLASTING.

7.2. Storage

Use dust collection to trap dust produced during loading and unloading. Keep containers closed and store bags to avoid accidental tearing, breaking, or bursting.

7.3. Specific uses

Apply safe handling recommendations in Section 7.1.

8. Exposure Controls / Personal Protection

8.1. Local Exhaust Ventilation:

Use sufficient local exhaust ventilation to reduce the level of respirable crystalline silica to below the OSHA PEL or other applicable limit (if lower than PEL). See ACGIH "Industrial Ventilation, A Manual of Recommended Practice" (latest edition).

8.2. Respiratory Protection:

If it is not possible to reduce airborne exposure levels to below the OSHA PEL or other applicable limit with ventilation, use the table below to assist you in selecting respirators that will reduce personal exposures to below the OSHA PEL. This table is part of the NIOSH Respirator Selection Logic, 2004, Chapter III, Table 1, "Particulate Respirators". The full document can be found at www.cdc.gov/niosh/npptl/topics/respirators; the user of this MSDS is directed to that site for information concerning respirator selection and use. The assigned protection factor (APF) is the minimum anticipated level of protection provided by each type of respirator worn in accordance with an adequate respiratory protection program. For example, an APF of 10 means that the respirator should reduce the airborne concentration of a particulate by a factor of 10, so that if the workplace concentration of a particulate was 150 ug/m³, then a respirator with an APF of 10 should reduce the concentration of particulate to 15 ug/m³.

Assigned protection factor ¹	Type of Respirator (Use only NIOSH-certified respirators)
10	Any air-purifying elastomeric half-mask respirator equipped with appropriate type of particulate filter. ² Appropriate filtering facepiece respirator. ^{2,3} Any air-purifying full facepiece respirator equipped with appropriate type of particulate filter. ² Any negative pressure (demand) supplied-air respirator equipped with a half-mask.
25	Any powered air-purifying respirator equipped with a hood or helmet and a high efficiency (HEPA) filter. Any continuous flow supplied-air respirator equipped with a hood or helmet.
50	Any air-purifying full facepiece respirator equipped with N-100, R-100, or P-100 filter(s). Any powered air-purifying respirator equipped with a tight-fitting facepiece (half or full facepiece) and a high-efficiency filter. Any negative pressure (demand) supplied-air respirator equipped with a full facepiece. Any continuous flow supplied-air respirator equipped with a tight-fitting facepiece (half or full facepiece). Any negative pressure (demand) self-contained respirator equipped with a full facepiece.
1,000	Any pressure-demand supplied-air respirator equipped with a half-mask.

1. The protection offered by a given respirator is contingent upon (1) the respirator user adhering to complete program requirements (such as the ones required by OSHA in 29CFR1910.134), (2) the use of NIOSH-certified respirators in their approved configuration, and (3) individual fit testing to rule out those respirators that cannot achieve a good fit on individual workers.
 2. Appropriate means that the filter medium will provide protection against the particulate in question.
 3. An APF of 10 can only be achieved if the respirator is qualitatively or quantitatively fit tested on individual workers.

8.3. Exposure controls

8.3.1. Occupational exposure controls / guidelines

Component	CAS No.	OSHA PEL		ACGHI TLV		NIOSH REL		Unit
		TWA	STEL	TWA	STEL	TWA	STEL	
Crystalline Silica (quartz)	14808-60-7	10 % SiO ₂ +2	None	0.025	None	0.05	None	mg / m ³

If crystalline silica (quartz) is heated to more than 870°C, quartz can change to a form of crystalline silica known as tridymite; if crystalline silica (quartz) is heated to more than 1470°C, quartz can change to a form of crystalline silica known as cristobalite. It OSHA PEL for crystalline silica as tridymite or cristobalite is one-half of the OSHA PEL for crystalline silica (quartz).

Engineering Controls:

Ventilation must be adequate to maintain the crystalline silica concentrations in the workplace air below the exposure limit(s) outlined in Section 8.3.1 of this Safety Data Sheet.

Respiratory Protection

In case of exposure to dust, and in any case if such exposure is above regulatory limits (see above), wear a personal respirator as outlined in Section 8.2 above.

Eye / Face Protection:

If eye contact while using product may be anticipated, wear appropriate safety glasses with side shields or chemical goggles [as described by European Standard EN 166].

Skin Protection

Maintain good industrial hygiene. Protection recommended for workers suffering from dermatitis or sensitive skin.

8.3.2. Environmental Exposure Controls

No special requirements. There is no reported ecotoxicity for silica, a naturally occurring substance abundantly present in nature.

9. Physical and Chemical Properties

9.1. **General Information**

Physical State: White or tan sand: granular, crushed or ground to a powder.
Odor: None

9.2. **Important Health, Safety and Environmental Information**

pH: 6 - 8
Specific Gravity: 2.65 g/cc
Melting Point: 3110°F/1710°C
Freezing Point: Not Applicable
Boiling Point: 4046°F/2230°C
Flashpoint: Not Applicable
Flammability: Not Applicable
Explosive properties: Not Applicable
Oxidizing properties: contact with powerful oxidizing agents such as fluorine, chlorine trifluoride, and oxygen difluoride may cause fires.
Vapor Pressure: None
Relative Density: Not Applicable
Solubility: Silica will dissolve in hydrofluoric acid and produce a corrosive gas, silicon tetrafluoride
Water Solubility: Insoluble
Percent Volatiles by Volume: Not Applicable
Viscosity: Not Applicable

Vapor density:	Not Applicable
Molecular Weight:	60.08
Evaporation rate:	Not Applicable

10. Stability and Reactivity

- 10.1. Chemical Stability:**
Stable
- 10.2. Conditions to Avoid:**
Contact with powerful oxidizing agents such as fluorine, chlorine trifluoride, and oxygen difluoride may cause fires.
- 10.3. Materials / Chemicals to Be Avoided:**
Contact with powerful oxidizing agents, such as fluorine, chlorine trifluoride and oxygen difluoride, may cause fires.
- 10.4. Hazardous Decomposition Products:**
Will not occur.
- 10.5. Hazardous Polymerization:**
Will not occur.

11. Toxicological Information

The method of exposure that can lead to the adverse health effects described below is inhalation.

A. SILICOSIS

The major concern is silicosis, caused by the inhalation of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute.

Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many years (15 to 20 or more) of prolonged repeated inhalation of relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath and cough. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pulmonale).

Accelerated Silicosis can occur with prolonged repeated inhalation of high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that lung lesions appear earlier and progression is more rapid.

Acute Silicosis can occur after the repeated inhalation of very high concentrations of respirable crystalline silica over a short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough, weakness and weight loss. Acute silicosis is fatal.

B. CANCER

IARC - The International Agency for Research on Cancer ("IARC") concluded that "crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)". For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C, "A Review of Human Carcinogens: Arsenic, Metals, Fibres and Dusts " (2011).

The American College of Occupational and Environmental Medicine ("ACOEM") notes: "In 1996, [IARC] re-classified silica as a Class I human lung carcinogen, based on sufficient animal and human data. Although the degree of increased risk varies (with relative risks ranging from 1.3 to 6.9), the risk appears to be greatest in workers with silicosis who smoke. The cancer risk to silica-exposed workers without silicosis (especially if they are not smokers) is less clear despite continuing research, some of which has yielded disparate results." ACOEM, "Medical Surveillance of Workers Exposed to Crystalline Silica", June 2005.

The EU Scientific Committee for Occupational Exposure Limits (SCOEL) concluded in June 2002 (SCOEL Sum Doc. 94-final): "The main effect in humans of inhalation of respirable silica dust is silicosis. There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk."

C. AUTOIMMUNE DISEASES

Several studies have reported excess cases of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis -- among silica-exposed workers.).

D. TUBERCULOSIS

Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to tuberculosis bacteria. Individuals with chronic silicosis have a three-fold higher risk of contracting tuberculosis than similar individuals without silicosis.

E. KIDNEY DISEASE

Several studies have reported excess cases of kidney diseases, including end stage renal disease, among silica-exposed workers. For additional information on the subject, the following may be consulted: "Kidney Disease and Silicosis", Nephron, Volume 85, pp. 14-19 (2000).

F. NON-MALIGNANT RESPIRATORY DISEASES

The reader is referred to Section 3.5 of the NIOSH Special Hazard Review cited below, for information concerning the association between exposure to crystalline silica and chronic bronchitis, emphysema and small airways disease. There are studies that disclose an association between dusts found in various mining occupations and non-malignant respiratory diseases, particularly among smokers. It is unclear whether the observed associations exist only with underlying silicosis, only among smokers, or result from exposure to mineral dusts generally (independent of the presence or absence of crystalline silica, or the level of crystalline silica in the dust).

Sources of information:

The ***NIOSH Hazard Review - Occupational Effects of Occupational Exposure to Respirable Crystalline Silica*** published in April 2002 summarizes and discusses the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable crystalline silica. The *NIOSH Hazard Review* should be consulted for additional information, and citations to published studies on health risks and diseases associated with occupational exposure to respirable crystalline silica. The *NIOSH Hazard Review* is available from NIOSH - Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or through the NIOSH web site, www.cdc.gov/niosh/topics/silica, then click on the link "NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica".

For a more recent review of the health effects of respirable crystalline silica, the reader may consult *Fishman's Pulmonary Diseases and Disorders*, Fourth Edition, Chapter 57. "Coal Workers' Lung Diseases and Silicosis".

12. Ecological Information

12.1. Ecotoxicological Information:

Crystalline silica (quartz) is not known to be ecotoxic; i.e., no data suggests that crystalline silica (quartz) is toxic to birds, fish, invertebrates, microorganisms or plants.

13. Disposal Considerations

13.1. Waste Disposal Method:

Discard any product, residue, disposable container or liner in full compliance with national regulations.

13.2. Container Handling and Disposal:

Dispose of container and unused contents in accordance with national regulations.

14. Transportation Information

Shipping Name:

ADR/RID/IMO/ICAO /US DOT	Proper Shipping Name	Not Regulated
	Hazard Class	Not Regulated
	ID Number	Not Regulated
	Packaging Group	Not Regulated

Crystalline silica (quartz) is not a hazardous material for purposes of transportation under the U. S. Department of Transportation Table of Hazardous Materials, 49 CFR §172.101.

15. Regulatory Information

Silica sand has no harmonized classification & labeling under Directives 67/548/EEC and 1999/45/EC. Because the respirable fraction is high (10% and more) in ground silica (flour), the preparation is self-classified as Xn (harmful). In such case, the following risk and safety phrases are applicable.

Risk Phrases:

R 48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Safety Phrases:

S 22: Do not breathe dust.

S 38: In case of insufficient ventilation, wear suitable respiratory equipment.

UNITED STATES (FEDERAL AND STATE)

TSCA No.: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Crystalline silica (quartz) is not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

Clean Air Act: Crystalline silica (quartz) mined and processed by U.S. Silica Company is not processed with or does not contain any Class I or Class II ozone depleting substances.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

NTP: Silica, crystalline (respirable size) is classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

California Proposition 65: Crystalline silica (airborne particles of respirable size) is classified as a substance known to the State of California to be a carcinogen.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance at that level.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

Pennsylvania Worker and Community Right to Know Act: Quartz is a hazardous substance under the Act, but it is not a special hazardous substance or an environmental hazardous substance.

CANADA

Domestic Substances List: U. S. Silica Company products, as naturally occurring substances, are on the Canadian DSL.

WHMIS Classification: D2A

OTHER

EINECS No.: 238-878-4

EEC Label (Risk/Safety Phrases): R 48/20, S22, S38

CLP Label (Hazard Class/Hazard Statement/Precaution Statements):
STOT RE 1/ H372/ P260, P285, P501

IARC: Crystalline silica (quartz) is classified in IARC Group 1.

Australian Inventory of Chemical Substances (AICS): All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

Japan Ministry of International Trade and Industry (MITI): All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law Registry Number 1-548.

Korea Existing Chemicals Inventory (KECI) (set up under the Toxic Chemical Control Law):
Listed on the ECL with registry number 9212-5667.

Philippines Inventory of Chemicals and Chemical Substances (PICCS): Listed for PICCS.

National, state, provincial or local emergency planning, community right-to-know or other laws, regulations or ordinances may be applicable--consult applicable national, state, provincial or local laws.

16. Other Information

16.1 Hazardous Material Information System (HMIS):

Health	*
Flammability	0
Reactivity	0
Protective Equipment	E

* For further information on health effects, see Sections 2, 8 and 11 of this MSDS.

16.2 National Fire Protection Association (NFPA):

Health	0
Flammability	0
Reactivity	0

16.3 Web Sites with Information about Effects of Crystalline Silica Exposure:

The U. S. Silica Company web site will provide updated links to OSHA and NIOSH web sites addressing crystalline silica issues: www.ussilica.com, click on "Info Center", then click on "Health & Safety".

The U.S. National Institute for Occupational Safety and Health (NIOSH) and Occupational Safety and Health Administration (OSHA) maintain sites with information about crystalline silica and its potential health effects. For NIOSH, <http://www.cdc.gov/niosh/topics/silica>; for OSHA, <http://www.osha.gov/dsg/topics/silicacrystalline/index>.

The IARC Monograph concerning crystalline silica, Volume 100C, can be accessed in PDF form at the IARC web site, <http://monographs.iarc.fr/ENG/Monographs/PDFs/index.php>.

U. S. Silica Company Disclaimer

The information and recommendations contained herein are based upon data believed to be up-to-date and correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects that may be caused by purchase, resale, use or exposure to our silica. Customers and users of silica must comply with all applicable health and safety laws, regulations, and orders. In particular, they are under an obligation to carry out a risk assessment for the particular work places and to take adequate risk management measures in accordance with the national implementation legislation of EU Directives 89/391 and 98/24.

Date: March 2012

ATTACHMENT I: EMISSIONS UNIT TABLE

ATTACHMENT J: EMISSIONS POINTS DATA SUMMARY SHEET

**Attachment J
EMISSION POINTS DATA SUMMARY SHEET**

Table 1: Emissions Data															
Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ⁴)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
Stack #45	Vertical Stack	AIRSE25	Air classifier	CF#45	Baghouse	N/A	N/A	PM PM ₁₀ PM _{2.5}	3.4 3.4 2.8	15.1 15.1 12.0	0.34 0.34 0.28	1.51 1.51 1.20	Solid	O ^{A, B}	0.014 gr/dscf
Stack #15	Vertical Stack	ELEV25, FEEDB25, FEEDB26, SCREN25, BIN25, PNEU25	bucket elevator, feed belts, screen, feed bin	CF#15	Baghouse	N/A	N/A	PM PM ₁₀ PM _{2.5}	4.3 4.3 3.4	18.8 18.8 15.1	0.43 0.43 0.34	1.88 1.88 1.51	Solid	O ^{A, B}	0.014 gr/dscf
Stack #46	Horizontal Stack	HOPPR25	Feed hopper	CF#46	Baghouse	N/A	N/A	PM PM ₁₀ PM _{2.5}	3.2 3.2 2.6	14.1 14.1 11.3	0.32 0.32 0.26	1.41 1.41 1.13	Solid	O ^{A, B}	0.05 gr/dscf
Stack #47	Horizontal Stack	TANK25	Tank/feed bin	CF#47	Baghouse	N/A	N/A	PM PM ₁₀ PM _{2.5}	1.3 1.3 1.0	5.6 5.6 4.5	0.13 0.13 0.10	0.56 0.56 0.45	Solid	O ^{A, B}	0.05 gr/dscf

A – Controlled emissions calculated using maximum outlet grain loading.

B – Uncontrolled emissions estimated using baghouse collection efficiency and control efficiency of enclosures of emission units

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

¹ Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

³ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. **DO NOT LIST** H₂, H₂O, N₂, O₂, and Noble Gases.

⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁶ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂, use units of ppmv (See 45CSR10).

**Attachment J
EMISSION POINTS DATA SUMMARY SHEET**

Table 2: Release Parameter Data								
Emission Point ID No. <i>(Must match Emission Units Table)</i>	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow ¹ (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level <i>(Height above mean sea level)</i>	Stack Height ² <i>(Release height of emissions above ground level)</i>	Northing	Easting
Stack #45	TBD	193	3,530	TBD	570	TBD	4393.66	739.66
Stack #15	TBD	~80	3,650	TBD	570	TBD	4393.66	739.66
Stack #46	TBD	Ambient	750	TBD	570	TBD	4393.66	739.66
Stack #47	TBD	Ambient	300	TBD	570	TBD	4393.66	739.66

¹ Give at operating conditions. Include inerts.
² Release height of emissions above ground level.

ATTACHMENT K: FUGITIVE EMISSIONS DATA SUMMARY SHEET

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS ¹	Maximum Potential Uncontrolled Emissions ²		Maximum Potential Controlled Emissions ³		Est. Method Used ⁴
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads	N/A	--	--	--	--	--
Unpaved Haul Roads	N/A	--	--	--	--	--
Storage Pile Emissions	N/A	--	--	--	--	--
Loading/Unloading Operations	N/A	--	--	--	--	--
Wastewater Treatment Evaporation & Operations	N/A	--	--	--	--	--
Equipment Leaks	N/A	Does not apply	--	Does not apply	--	--
General Clean-up VOC Emissions	N/A	--	--	--	--	--
Other: Fugitive particulate matter emissions from FEEDB25 and FEEDB26 (feed conveyor belts)	PM PM ₁₀ PM _{2.5}	0.002 0.0008 0.0001	0.009 0.003 0.0005	0.002 0.0008 0.0001	0.009 0.003 0.0005	O ^A

A – Emission factors from U.S. EPA, AP-42 Section 11.19.2 - Crushed Stone Processing and Pulverized Mineral Processing (August 2004), Table 11.19.2-2.

¹ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

² Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

³ Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁴ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

ATTACHMENT L: EMISSIONS UNIT DATA SHEET

Hoppers: HOPPR25	10	10	87,600	1	CF#46
Rock Drills	N/A	N/A	N/A	N/A	N/A
Screens: SCREN25	10	10	87,600	1	CF#15
Enclosed Storage: TANK25	25	25	219,000	1	CF#47
Enclosed Storage: BIN25	10	10	87,600	1	CF#15
Other: Air classifier, AIRSE25	10	10	87,600	1	CF#45

7. Provide a diagram and/or schematic that shows the proposed process of the operation or plant. The diagram and/or schematic is to show all sources, components and facets of the operation or plant in an understandable line sequence of the operation. The diagram should include all the equipment involved in the operation; such as conveyors, transfer points, stockpiles, crushers, facilities, vents, screens, truck dump bins, truck, barge and railcar loading and unloading, etc. Appropriate sizing and specifications of equipment should be included in the diagram. The diagram shall logical follow the entire process load-in to load-out.
See Process Flow Diagram in Attachment F

8. Roads	Paved Miles of Road	Unpaved Miles of Road	Watered		Other Control (Specify)
			Miles	Frequency	
Plant Yard	N/A	N/A	N/A	N/A	N/A
Access Roads	N/A	N/A	N/A	N/A	N/A

9. Vehicle Type	Mean Vehicle Speed in mph	Mean Vehicle Weight in Tons		Number of Wheels	Distance Traveled per Round Trip	
		Empty	Full		Paved Feet or Miles	Unpaved Feet or Miles
Raw Aggregate	N/A	N/A	N/A	N/A	N/A	N/A
Loaders	N/A	N/A	N/A	N/A	N/A	N/A
Product Trucks	N/A	N/A	N/A	N/A	N/A	N/A
Other						
Other						
Other						
Other						

10. Describe all proposed materials storage facilities associated with the **Emission Units** listed.

Proposed project will install two (2) new enclosed storage bins / feed bins (Emission Unit IDs: TANK25 and BIN25) for the in-process storage and dispensing of silica sand. TANK25 will vent to a dedicated baghouse filter system, CF#47. BIN25 will vent to baghouse CF#15.

Storage Activity

ID of Emission Unit	TANK25	BIN25			
Type Storage	Enclosed bin	Enclosed bin			
Material Stored	Silica sand	Silica sand			
Typical Moisture Content (%)	0.10%	0.10%			
Avg % of material passing through 200 mesh sieve	100%	100%			
Maximum Total Yearly Throughput in storage (tons)	219,000	87,600			
Maximum Stockpile Base Area (ft²)	N/A	N/A			
Maximum Stockpile height (ft)	N/A	N/A			
Dust control method applied to storage	Bin vents to dedicated filter	Bin vents to dust collector			
Method of material load-in to bin or stockpile	Bucket elevator	Transfer from screen			
Dust control method applied during load-in	Dust collector	Dust collector			
Method of material load-out to bin or stockpile	Transfer to belt conveyor	Transfer to air classifier			
Dust control method applied during load-out	Dust collector	Dust collector			

Storage piles	Estimated Annual Tons	Turnover Rate (Ton/Month)	Wetted as Piled	Number of Sides Enclosed	Other Dust Control	Loading Method (Loader, Conveyor) IN/OUT
Coarse: over 1"	N/A	N/A	N/A	N/A	N/A	N/A
Fine: 1" to ¼"	N/A	N/A	N/A	N/A	N/A	N/A
¼" and less	N/A	N/A	N/A	N/A	N/A	N/A
MFG. Sand	N/A	N/A	N/A	N/A	N/A	N/A
Other, specify	N/A	N/A	N/A	N/A	N/A	N/A

Conveying and Transfer

Describe the conveying system including transfer points associated with proposed Emission Units (crushers, etc...).

Proposed project to install two (2) new feed belt conveyors (FEEDB25 and FEEDB26), a new bucket elevator (ELEV25) and a new pneumatic conveyor (PNEU25).

Describe any methods of emission control to be used with these proposed conveying systems:

All new conveying systems will be controlled via baghouse CF#15.

Crushing and Screening

ID of Emission Unit	SCREN25					
Type Crusher or Screen	Scalping screen					
Material Sized	5 micron to 200 mesh					
Material Sized Throughput:						
Tons/hr	10					
Tons/yr	87,600					
Material sized from/to	5 micron to 200 mesh					
Typical moisture content as crushed or screened (%)	0.10%					
Dust control methods applied	Dust collector					
Stack Parameters:						
Height (ft)	TBD					
Diameter (ft)	TBD					
Volume (ACFM)	3,530					
Temp (°F)	Ambient					
Maximum operating schedule:						
Hour/day	24					
Day/year	365					
Hour/year	8,760					
Approximate Percentage of Operation from:						
Jan – Mar	25					
April – June	25					
July – Sept	25					
Oct – Dec	25					
Maximum Particulate Emissions:						
LB/HR	0.43 ¹					
Ton/Year	1.88 ¹					

¹ Emissions listed are from baghouse CF#15. This baghouse controls emissions from multiple sources.

List emission sources with request information:

ID of Emission Unit	Type of Emission Unit and Use	Operating Schedule		Max. Amount of Stone Input to Emission (lb/hr)	Crushed or Screened From/To (size)	Date of Emission Unit was Manufacture
		Actual (hrs/yr)	Design (hrs/yr)			
HOPPR25	Cristobalite feed hopper	8,760	8,760	20,000	N/A	2015
ELEV25	Cristobalite feed bin bucket elevator	8,760	8,760	50,000	N/A	2015
TANK25	Cristobalite feed bin	8,760	8,760	50,000	N/A	2015
FEEDB25	Cristobalite feed conveying belt	8,760	8,760	50,000	N/A	2015
FEEDB26	Cristobalite feed conveying belt	8,760	8,760	20,000	N/A	2015
SCREN25	Scalping screen	8,760	8,760	20,000	5 micron to 200 mesh	2015
BIN25	Feed bin	8,760	8,760	20,000	N/A	2015
AIRSE25	Air classifier	8,760	8,760	20,000	N/A	2015
PNEU25	Pneumatic conveyor	8,760	8,760	20,000	N/A	2015

List emission sources with request information:

ID of Emission Unit	Maximum expected emissions from Emission Unit without Air Pollution Control Equipment				
	PM ₁₀ (lbs/hr) ²	SO ₂ (lbs/hr)	CO (lbs/hr)	NO _x (lbs/hr)	VOC (lbs/hr)
ELEV25	4.3	N/A	N/A	N/A	N/A
FEEDB25		N/A	N/A	N/A	N/A
FEEDB26		N/A	N/A	N/A	N/A
SCREN25		N/A	N/A	N/A	N/A
BIN25		N/A	N/A	N/A	N/A
PNEU25		N/A	N/A	N/A	N/A
FEEDB25	0.0006	N/A	N/A	N/A	N/A
FEEDB26	0.0002	N/A	N/A	N/A	N/A
HOPPR25	3.2	N/A	N/A	N/A	N/A
TANK25	1.3	N/A	N/A	N/A	N/A
AIRSE25	3.4	N/A	N/A	N/A	N/A

² Uncontrolled emissions estimated using baghouse collection efficiency and inherent control efficiency of design emission unit from enclosures.

ID of Emission Unit	Maximum expected emissions from Emission Unit without Air Pollution Control Equipment				
	PM ₁₀ (tons/yr) ³	SO ₂ (tons/yr)	CO (tons/yr)	NO _x (tons/yr)	VOC (tons/yr)
ELEV25	18.8	N/A	N/A	N/A	N/A
FEEDB25		N/A	N/A	N/A	N/A
FEEDB26		N/A	N/A	N/A	N/A
SCREN25		N/A	N/A	N/A	N/A
BIN25		N/A	N/A	N/A	N/A
PNEU25		N/A	N/A	N/A	N/A
FEEDB25		0.0024	N/A	N/A	N/A
FEEDB26	0.001	N/A	N/A	N/A	N/A
HOPPR25	14.1	N/A	N/A	N/A	N/A
TANK25	5.6	N/A	N/A	N/A	N/A
AIRSE25	15.1	N/A	N/A	N/A	N/A

³ Uncontrolled emissions estimated using baghouse collection efficiency and inherent control efficiency of design emission unit from enclosures.

Please fill out a separate Air Pollution Control Device Sheet for each Emission Unit equipped with an air pollution control system.

What type of stone will be quarried at this site?

N/A, no new quarry operations associated with this project.

How will it be quarried? **N/A**

- Sawing
- Blasting
- Other, Specify:

If blasting is checked, complete the following: **N/A**

- Frequency of blasting:
- What method of air pollution control will be employed during drilling and blasting?

ATTACHMENT M: AIR POLLUTION CONTROL DEVICE SHEETS

Attachment M
Air Pollution Control Device Sheet
(BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **CF#15**

Equipment Information and Filter Characteristics

1. Manufacturer: TBD Model No. TBD		2. Total number of compartments: 1	
		3. Number of compartment online for normal operation: 1	
4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.			
5. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input checked="" type="checkbox"/> Closed Pressure <input type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify			
6. Filter Fabric Bag Material: <input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input checked="" type="checkbox"/> Others, specify: Cellulosic		7. Bag Dimension: N/A, Cartridge filter Diameter in. Length ft.	
		8. Total cloth area: ~1,600 ft ²	
		9. Number of bags: Cartridge filter	
		10. Operating air to cloth ratio: ~2.2:1 ft/min	
11. Baghouse Operation: <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Automatic <input type="checkbox"/> Intermittent			
12. Method used to clean bags: <input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet			
13. Cleaning initiated by: <input type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input checked="" type="checkbox"/> Expected pressure drop range 3 in. of water <input type="checkbox"/> Other			
14. Operation Hours: Max. per day: 24 Max. per yr: 8,760		15. Collection efficiency: Rating: 99.90 % Guaranteed minimum: 99.90 %	

Gas Stream Characteristics

16. Gas flow rate into the collector: 3,650 ACFM at -80 °F and Atmospheric PSIA ACFM: Design: 3,650 PSIA Maximum: Atmospheric PSIA Average Expected: Atmospheric PSIA			
17. Water Vapor Content of Effluent Stream: 0 lb. Water/lb. Dry Air			
18. Gas Stream Temperature: 70 °F		19. Fan Requirements: 15 hp OR ft ³ /min	
20. Stabilized static pressure loss across baghouse. Pressure Drop: High 6.0 in. H ₂ O Low 2.0 in. H ₂ O			
21. Particulate Loading: Inlet: 14 grain/scf Outlet: 0.014 grain/scf			

22. Type of Pollutant(s) to be collected (if particulate give specific type):

Particulate matter (silica sand)

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: _____ ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant: Particulate Matter	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
	430	14	0.43	0.014

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector		Fraction Efficiency of Collector
	Weight % for Size Range		Weight % for Size Range
0 – 2	Information not available		99.90
2 – 4			99.90
4 – 6			99.90
6 – 8			99.90
8 – 10			99.90
10 – 12			99.90
12 – 16			99.90
16 – 20			99.90
20 – 30			99.90
30 – 40			99.90
40 – 50			99.90
50 – 60			99.90
60 – 70			99.90
70 – 80			99.90
80 – 90			99.90
90 – 100			99.90
>100			99.90

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency: **See Attachment O for detailed monitoring plan.**
- Other, specify:

27. Describe any recording device and frequency of log entries:

Manual at a daily frequency.

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Return to Mill Feed

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? **Yes**

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

See Attachment O for detailed monitoring plan.

RECORDKEEPING:

See Attachment O for detailed recordkeeping plan.

REPORTING:

See Attachment O for detailed reporting plan.

TESTING:

See Attachment O for detailed testing plan.

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

99.90%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

99.90%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

Regular maintenance to be performed according to manufacturer's specifications.

22. Type of Pollutant(s) to be collected (if particulate give specific type):

Particulate matter (silica sand)

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: _____ ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant: Particulate Matter	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
	340	14	0.34	0.014

Particulate Size Range (microns)	Particle Size Distribution at Inlet to Collector		Fraction Efficiency of Collector
	Weight % for Size Range		Weight % for Size Range
0 – 2	Information not available		99.90
2 – 4			99.90
4 – 6			99.90
6 – 8			99.90
8 – 10			99.90
10 – 12			99.90
12 – 16			99.90
16 – 20			99.90
20 – 30			99.90
30 – 40			99.90
40 – 50			99.90
50 – 60			99.90
60 – 70			99.90
70 – 80			99.90
80 – 90			99.90
90 – 100			99.90
>100			99.90

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency: **See Attachment O for detailed monitoring plan.**
- Other, specify:

27. Describe any recording device and frequency of log entries:

Manual at a daily frequency.

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Into Pneumatic conveyor transfer system (PNEU25)

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? **Yes**

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

See Attachment O for detailed monitoring plan.

RECORDKEEPING:

See Attachment O for detailed recordkeeping plan.

REPORTING:

See Attachment O for detailed reporting plan.

TESTING:

See Attachment O for detailed testing plan.

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

100%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

99.90%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

Regular maintenance to be performed according to manufacturer's specifications.

Attachment M
Air Pollution Control Device Sheet
(BAGHOUSE)

Control Device ID No. (must match Emission Units Table): **CF#46**

Equipment Information and Filter Characteristics

1. Manufacturer: TBD Model No. TBD		2. Total number of compartments: 1	
		3. Number of compartment online for normal operation: 1	
4. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.			
5. Baghouse Configuration: <input type="checkbox"/> Open Pressure <input checked="" type="checkbox"/> Closed Pressure <input type="checkbox"/> Closed Suction (check one) <input type="checkbox"/> Electrostatically Enhanced Fabric <input type="checkbox"/> Other, Specify			
6. Filter Fabric Bag Material: <input type="checkbox"/> Nomex nylon <input type="checkbox"/> Wool <input type="checkbox"/> Polyester <input type="checkbox"/> Polypropylene <input type="checkbox"/> Acrylics <input type="checkbox"/> Ceramics <input type="checkbox"/> Fiber Glass <input type="checkbox"/> Cotton Weight oz./sq.yd <input type="checkbox"/> Teflon Thickness in <input checked="" type="checkbox"/> Others, specify: Cellulosic		7. Bag Dimension: N/A, Cartridge filter Diameter in. Length ft.	
		8. Total cloth area: ~300 ft ²	
		9. Number of bags: Cartridge filter	
		10. Operating air to cloth ratio: ~2.5:1 ft/min	
11. Baghouse Operation: <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Automatic <input type="checkbox"/> Intermittent			
12. Method used to clean bags: <input type="checkbox"/> Mechanical Shaker <input type="checkbox"/> Sonic Cleaning <input type="checkbox"/> Reverse Air Jet <input type="checkbox"/> Pneumatic Shaker <input type="checkbox"/> Reverse Air Flow <input type="checkbox"/> Other: <input type="checkbox"/> Bag Collapse <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Manual Cleaning <input type="checkbox"/> Reverse Jet			
13. Cleaning initiated by: <input type="checkbox"/> Timer <input type="checkbox"/> Frequency if timer actuated <input checked="" type="checkbox"/> Expected pressure drop range 3 in. of water <input type="checkbox"/> Other			
14. Operation Hours: Max. per day: 24 Max. per yr: 8,760		15. Collection efficiency: Rating: 99.90 % Guaranteed minimum: 99.90 %	

Gas Stream Characteristics

16. Gas flow rate into the collector: 750 ACFM at 70 °F and Atmospheric PSIA ACFM: Design: 750 PSIA Maximum: Atmospheric PSIA Average Expected: Atmospheric PSIA			
17. Water Vapor Content of Effluent Stream: 0 lb. Water/lb. Dry Air			
18. Gas Stream Temperature: 70 °F		19. Fan Requirements: 5 hp OR ft ³ /min	
20. Stabilized static pressure loss across baghouse. Pressure Drop: High 6.0 in. H ₂ O Low 2.0 in. H ₂ O			
21. Particulate Loading: Inlet: 50 grain/scf Outlet: 0.05 grain/scf			

22. Type of Pollutant(s) to be collected (if particulate give specific type):

Particulate matter (silica sand)

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: _____ ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant: Particulate Matter	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
	321	50	0.32	0.05

25. Complete the table:

Particle Size Distribution at Inlet to Collector

Fraction Efficiency of Collector

Particulate Size Range (microns)	Weight % for Size Range	Weight % for Size Range
0 – 2	Information not available	99.90
2 – 4		99.90
4 – 6		99.90
6 – 8		99.90
8 – 10		99.90
10 – 12		99.90
12 – 16		99.90
16 – 20		99.90
20 – 30		99.90
30 – 40		99.90
40 – 50		99.90
50 – 60		99.90
60 – 70		99.90
70 – 80		99.90
80 – 90		99.90
90 – 100		99.90
>100		99.90

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency: **See Attachment O for detailed monitoring plan.**
- Other, specify:

27. Describe any recording device and frequency of log entries:

Manual at a daily frequency.

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Return to hopper (HOPPR25)

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? **Yes**

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

See Attachment O for detailed monitoring plan.

RECORDKEEPING:

See Attachment O for detailed recordkeeping plan.

REPORTING:

See Attachment O for detailed reporting plan.

TESTING:

See Attachment O for detailed testing plan.

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

100%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

99.90%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

Regular maintenance to be performed according to manufacturer's specifications.

22. Type of Pollutant(s) to be collected (if particulate give specific type):

Particulate matter (silica sand)

23. Is there any SO₃ in the emission stream? No Yes SO₃ content: _____ ppmv

24. Emission rate of pollutant (specify) into and out of collector at maximum design operating conditions:

Pollutant: Particulate Matter	IN		OUT	
	lb/hr	grains/acf	lb/hr	grains/acf
	129	50	0.13	0.05

25. Complete the table:

Particle Size Distribution at Inlet to Collector

Fraction Efficiency of Collector

Particulate Size Range (microns)	Weight % for Size Range	Weight % for Size Range
0 – 2	Information not available	99.90
2 – 4		99.90
4 – 6		99.90
6 – 8		99.90
8 – 10		99.90
10 – 12		99.90
12 – 16		99.90
16 – 20		99.90
20 – 30		99.90
30 – 40		99.90
40 – 50		99.90
50 – 60		99.90
60 – 70		99.90
70 – 80		99.90
80 – 90		99.90
90 – 100		99.90
>100		99.90

26. How is filter monitored for indications of deterioration (e.g., broken bags)?

- Continuous Opacity
- Pressure Drop
- Alarms-Audible to Process Operator
- Visual opacity readings, Frequency: **See Attachment O for detailed monitoring plan.**
- Other, specify:

27. Describe any recording device and frequency of log entries:

Manual at a daily frequency.

28. Describe any filter seeding being performed:

None

29. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

None

30. Describe the collection material disposal system:

Return to feed bin (TANK25)

31. Have you included **Baghouse Control Device** in the Emissions Points Data Summary Sheet? **Yes**

32. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

See Attachment O for detailed monitoring plan.

RECORDKEEPING:

See Attachment O for detailed recordkeeping plan.

REPORTING:

See Attachment O for detailed reporting plan.

TESTING:

See Attachment O for detailed testing plan.

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

33. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

100%

34. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

99.90%

35. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

Regular maintenance to be performed according to manufacturer's specifications.

ATTACHMENT N: SUPPORTING EMISSIONS CALCULATIONS

Summary of Emissions

U.S. Silica Company

Berkeley Springs Plant Ecutech Project R-13 Permit Application

Unit ID	Unit Description	Release Point	PM (filt) (tpy)	PM ₁₀ (filt) (tpy)	PM _{2.5} (filt) (tpy)	PM (filt) (pph)	PM ₁₀ (filt) (pph)	PM _{2.5} (filt) (pph)
ELEV25	Cristobalite feed bin bucket elevator - Controlled Emissions	CF#15	1.88	1.88	1.51	0.43	0.43	0.34
FEEDB25	Cristobalite feed conveying belt - Controlled Emissions							
FEEDB26	Cristobalite feed conveying belt - Controlled Emissions							
SCREN25	Scalping screen - Controlled Emissions							
BIN25	Feed bin - Controlled Emissions							
PNEU25	Pneumatic conveyor - Controlled Emissions							
HOPPR25	Cristobalite feed hopper - Controlled Emissions	CF#46	1.41	1.41	1.13	0.32	0.32	0.26
TANK25	Cristobalite feed bin - Controlled Emissions	CF#47	0.56	0.56	0.45	0.13	0.13	0.10
AIRSE25	Air classifier - Controlled Emissions	CF#45	1.51	1.51	1.20	0.34	0.34	0.28
FEEDB25	Cristobalite feed conveying belt - Fugitive Emissions	Fugitive	0.0066	0.0024	0.0004	0.0015	0.0006	8.33E-05
FEEDB26	Cristobalite feed conveying belt - Fugitive Emissions	Fugitive	0.0026	0.0010	0.0001	0.0006	0.0002	3.33E-05
Total:			5.37	5.36	4.29	1.23	1.22	0.98

Fugitive Emissions Summary

U.S. Silica Company
Berkeley Springs Plant Ecutech Project R-13 Permit Application

Unit ID	Unit Description	Control Method	Control Factor ^A	Actual Throughput (tons/year)	Emission Factor ^B (lb/ton)			Emission Rate ^D (tpy)			Emission Rate ^D (pph)		
					PM	PM ₁₀	PM _{2.5} ^C	PM	PM ₁₀	PM _{2.5}	PM	PM ₁₀	PM _{2.5}
FEEDB25	TANK25 to FEEDB25 Cristobalite feed conveying belt drop point - Fugitive Emissions	Full enclosure, building enclosure	0.01	219,000	0.00300	0.00110	0.000167	0.0033	0.0012	0.0002	0.0008	0.0003	4.16E-05
FEEDB25	FEEDB25 to MILL6 Cristobalite feed conveying belt drop point - Fugitive Emissions	Full enclosure, building enclosure	0.01	219,000	0.00300	0.00110	0.000167	0.0033	0.0012	0.0002	0.0008	0.0003	4.16E-05
FEEDB26	TANK25 to FEEDB26 Cristobalite feed conveying belt drop point - Fugitive Emissions	Full enclosure, building enclosure	0.01	87,600	0.00300	0.00110	0.000167	0.0013	0.0005	0.0001	0.0003	0.0001	1.67E-05
FEEDB26	FEEDB26 to MILL6 Cristobalite feed conveying belt drop point - Fugitive Emissions	Full enclosure, building enclosure	0.01	87,600	0.00300	0.00110	0.000167	0.0013	0.0005	0.0001	0.0003	0.0001	1.67E-05
Total:								0.00920	0.00337	0.00051	0.00210	0.00077	0.00012

A. Assuming 90% control efficiency each from full enclosure and enclosure by building. Guidance from Texas Council on Environmental Quality (TCEQ) Air Permits Division, Rock Crusher Emission Calculations spreadsheet, https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/rocks/nsr_fac_rock.html.

B. Emission factors from U.S. EPA, AP-42 Section 11.19.2 - Crushed Stone Processing and Pulverized Mineral Processing (August 2004), Table 11.19.2-2.

C. PM_{2.5} emission factor is calculated by dividing the PM₁₀ emission factor by the ratio of PM10 to PM2.5 particle size multipliers (k). The Particle size multipliers are from U.S. EPA, AP-42 Section 13.2.4 - Aggregate Handling and Storage Piles (November 2006), table following Equation 1.

k for PM10	0.35
k for PM2.5	0.053
Ratio of PM10 to PM2.5	6.6

D. PM/PM₁₀/PM_{2.5} Emission Rate Sample Calculation:

$$\begin{aligned}
 &\text{FEEDB25 PM Emission Rate (tpy)} = \frac{0.01 \times 3.00\text{E-}3 \text{ lb PM}}{\text{ton}} \times \frac{219,000 \text{ ton}}{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lb}} = 0.0033 \text{ tpy} \\
 &\text{FEEDB25 PM Emission Rate (pph)} = \frac{0.01 \times 3.00\text{E-}3 \text{ lb PM}}{\text{ton}} \times \frac{25 \text{ tons}}{\text{hour}} = 0.0008 \text{ pph}
 \end{aligned}$$

Summary of Emissions - Uncontrolled^A

U.S. Silica Company
Berkeley Springs Plant Ecutech Project R-13 Permit Application

Unit ID	Unit Description	Release Point	Control Device Efficiency	Enclosure Control Efficiency ^B	PM (filt) (tpy)	PM ₁₀ (filt) (tpy)	PM _{2.5} (filt) (tpy)	PM (filt) (pph)	PM ₁₀ (filt) (pph)	PM _{2.5} (filt) (pph)
ELEV25	Cristobalite feed bin bucket elevator - Uncontrolled Emissions	CF#15	99.9%	99%	18.8	18.8	15.1	4.3	4.3	3.4
FEEDB25	Cristobalite feed conveying belt - Uncontrolled Emissions									
FEEDB26	Cristobalite feed conveying belt - Uncontrolled Emissions									
SCREN25	Scalping screen - Uncontrolled Emissions									
BIN25	Feed bin - Uncontrolled Emissions									
PNEU25	Pneumatic conveyor - Uncontrolled Emissions	CF#46	99.9%	99%	14.1	14.1	11.3	3.2	3.2	2.6
HOPPR25	Cristobalite feed hopper - Uncontrolled Emissions	CF#47	99.9%	99%	5.6	5.6	4.5	1.3	1.3	1.0
TANK25	Cristobalite feed bin - Uncontrolled Emissions	CF#45	99.9%	99%	15.1	15.1	12.0	3.4	3.4	2.8
AIRSE25	Air classifier - Uncontrolled Emissions	Fugitive	--	--	0.0066	0.0024	0.0004	0.0015	0.0006	8.33E-05
FEEDB25	Cristobalite feed conveying belt - Fugitive Emissions	Fugitive	--	--	0.0026	0.0010	0.0001	0.0006	0.0002	3.33E-05
FEEDB26	Cristobalite feed conveying belt - Fugitive Emissions									
Total:					53.61	53.60	42.88	12.24	12.24	9.79

A. Uncontrolled emissions estimated from controlled emissions, estimated baghouse control efficiency and emission unit enclosure control efficiency.

B. Assuming 90% efficiency each from full enclosure and enclosure by building. Guidance from Texas Council on Environmental Quality (TCEQ) Air Permits Division, Rock Crusher Emission Calculations spreadsheet, https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/rocks/nsr_fac_rock.html.

ATTACHMENT O: MONITORING/RECORDKEEPING/REPORTING/TESTING PLANS

ATTACHMENT O - Monitoring/Recordkeeping/Reporting Testing Plans

Table O-1. Monitoring Plan

Unit ID	Control Device/Emission Point	Citation	Monitoring Plan
ELEV25, FEEDB25, FEEDB26, SCREN25, BIN25, PNEU25	Stack #15/CF#15	40 CFR 60.674(c)	Quarterly 30-minute visible emissions inspections using EPA Method 22 (40 CFR part 60, Appendix A-7). The Method 22 (40 CFR part 60, Appendix A-7) test shall be conducted while the baghouse is operating. The test is successful if no visible emissions are observed. If any visible emissions are observed, the owner or operator of the affected facility must initiate corrective action within 24 hours to return the baghouse to normal operation. U.S. Silica may establish a different baghouse-specific success level for the visible emissions test (other than no visible emissions) by conducting a PM performance test according to §60.675(b) simultaneously with a Method 22 (40 CFR part 60, Appendix A-7) to determine what constitutes normal visible emissions from that affected facility's baghouse when it is in compliance with the applicable PM concentration limit in Table 2 of this subpart. The revised visible emissions success level must be incorporated into the permit for the affected facility.
AIRSE25	Stack #45/CF#45	Facility Title V Permit No. R30- 06500001- 2014	Visible emissions will be observed visually at least each calendar week during periods of facility operation for a sufficient time interval to determine if the unit has any visible emissions using 40 C.F.R. 60 Appendix A, Method 22. If visible emissions are observed during these weekly observations, or at any other time, that appear to exceed the allowable visible emission requirement, visible emissions evaluations in accordance with 45 CSR 7A shall be conducted as soon as practicable, but no later than 24 hours from the time of the observation. A visible emissions evaluation in accordance with 45 CSR 7A shall not be required if the visible emissions condition is corrected in a timely manner; the Process Source Operation is operating at normal operating conditions; and, the cause and corrective measures taken are recorded.
TANK25	Stack #47/CF#47	Condition 3.2.1	

Unit ID	Control Device/Emission Point	Citation	Monitoring Plan
ELEV25, FEEDB25, FEEDB26, SCREN25, BIN25, PNEU25	Stack #15/CF#15	Facility Title V Permit No. R30- 06500001- 2014 Condition 3.2.2	Inspect all fugitive dust control systems monthly to ensure that they are operated and maintained in conformance with their designs.
AIRSE25	Stack #45/CF#45		
TANK25	Stack #47/CF#47		
HOPPR25	Stack #46/CF#46	Facility Title V Permit No. R30- 06500001- 2014 Condition 3.2.1	Visible emissions will be observed visually at least each calendar week during periods of facility operation for a sufficient time interval to determine if the unit has any visible emissions using 40 C.F.R. 60 Appendix A, Method 22. If visible emissions are observed during these weekly observations, or at any other time, that appear to exceed the allowable visible emission requirement, visible emissions evaluations in accordance with 45CSR7A shall be conducted as soon as practicable, but no later than 24 hours from the time of the observation. A visible emissions evaluation in accordance with 45CSR7A shall not be required under condition Section 3.2.1 if the visible emissions condition is corrected in a timely manner; the Process Source Operation is operating at normal operating conditions; and, the cause and corrective measures taken are recorded.
		Facility Title V Permit No. R30- 06500001- 2014 Condition 3.2.2	Inspect all fugitive dust control systems monthly to ensure that they are operated and maintained in conformance with their designs.

Table O-2. Recordkeeping Plan

Unit ID	Control Device/Emission Point	Regulatory Citation	Recordkeeping Plan
ELEV25, FEEDB25, FEEDB26, SCREN25, BIN25, PNEU25	Stack #15/CF#15	40 CFR 60.674(c)	Record each Method 22 (40 CFR part 60, Appendix A-7) test, including the date and any corrective actions taken, in the logbook required under 40 CFR 60.676(b).
AIRSE25	Stack #45/CF#45	40 CFR 676(b)(1)	Record of each periodic inspection required under 40 CFR 60.674(c), including dates and any corrective actions taken, in a logbook (in written or electronic format). Keep the logbook onsite and make hard or electronic copies (whichever is requested) of the logbook available to the Director upon request.
TANK25	Stack #47/CF#47	Facility Title V Permit No. R30-06500001-2014 Condition 3.4.4	Record of each visible emissions observation will be maintained, including any data required by 40 C.F.R. 60 Appendix A, Method 22 or 45CSR7A, whichever is appropriate. The record will include, at a minimum, the date, time, name of the emission unit, the applicable visible emissions requirement, the results of the observation, and the name of the observer. Records will be maintained on site for a period of no less than five (5) years stating any maintenance or corrective actions taken as a result of the weekly inspections, and the times the fugitive dust control system(s) are inoperable and any corrective actions taken.
HOPPR25	Stack #46/CF#46	Facility Title V Permit No. R30-06500001-2014 Condition 3.4.4	Record of each visible emissions observation will be maintained, including any data required by 40 C.F.R. 60 Appendix A, Method 22 or 45CSR7A, whichever is appropriate. The record will include, at a minimum, the date, time, name of the emission unit, the applicable visible emissions requirement, the results of the observation, and the name of the observer. Records will be maintained on site for a period of no less than five (5) years stating any maintenance or corrective actions taken as a result of the weekly inspections, and the times the fugitive dust control system(s) are inoperable and any corrective actions taken.

Table O-3. Reporting Plan

Unit ID	Control Device/Emission Point	Regulatory Citation	Reporting Plan
ELEV25, FEEDB25, FEEDB26, SCREN25, BIN25, PNEU25	Stack #15/CF#15	40 CFR 60.676(f)	Written reports will be submitted of the results of all performance tests conducted to demonstrate compliance with the standards set forth in 40 CFR 60.672, including reports of opacity observations made using Method 9 to demonstrate compliance with 40 CFR 60.672(f).
AIRSE25	Stack #45/CF#45		
TANK25	Stack #47/CF#47	40 CFR 60.676(i)	The actual date of the initial startup of each affected facility will be submitted to the Administrator.
HOPPR25	Stack #46/CF#46	--	--

Table O-4. Testing Plan

Unit ID	Control Device/Emission Point	Regulatory Citation	Testing Plan
ELEV25, FEEDB25, FEEDB26, SCREN25, BIN25, PNEU25	Stack #15/CF#15	40 CFR Subpart 60, Table 2	An initial performance test in accordance with 40 CFR 60.8 and 40 CFR 60.675 will be conducted.
AIRSE25	Stack #45/CF#45	40 CFR Subpart 60, Table 3	An initial performance test in accordance with 40 CFR 60.11 and 40 CFR 60.675 will be conducted.
TANK25	Stack #47/CF#47	40 CFR 60.675(b)(1) 40 CFR 60.675(b)(2), 675(c)(1) 40 CFR 60.675(c)(3)	<p>Except as specified in 40 CFR 60.675 paragraphs (e)(3) and (e)(4), Method 5 (or Method 5I) of 40 CFR 60 Appendix A-3 of or Method 17 of Appendix A-6 of 40 CFR 60 will be used to determine the particulate matter concentration. The sample volume will be at least 1.70 dscm (60 dscf). For Method 5, if the gas stream being sampled is at ambient temperature, the sampling probe and filter may be operated without heaters. If the gas stream is above ambient temperature, the sampling probe and filter may be operated at a temperature high enough, but no higher than 121°C (250°F), to prevent water condensation on the filter.</p> <p>Method 9 of Appendix A-4 of 40 CFR 60 and the procedures in 40 CFR 60.11 will be used to determine opacity, with the following additions:</p> <ul style="list-style-type: none"> ➤ The minimum distance between the observer and the emission source shall be 4.57 meters (15 feet); ➤ The observer shall, when possible, select a position that minimizes interference from other fugitive emissions sources (e.g., road dust). The required observer position relative to the sun (Method 9 of Appendix A-4 of 40 CFR 60, Section 2.1) must be followed. <p>When determining compliance with the fugitive emissions standard for any affected facility described under 40 CFR 60.672(b) or 60.672(e)(1), the duration of the Method 9 (40 CFR 60, Appendix A-4) observations must be 30 minutes (five 6-minute averages). Compliance with the applicable fugitive emission limits in Table 3 of this subpart must be based on the average of the five 6-minute averages.</p>

Unit ID	Control Device/Emission Point	Regulatory Citation	Testing Plan
TANK25	Stack #47/CF#47	40 CFR 60.675(c)(2)	In determining compliance with the opacity of stack emissions from any baghouse that controls emissions only from an individual enclosed storage bin under 60.672(f) of 40 CFR 60, using Method 9 (40 CFR 60, Appendix A-4), the duration of the Method 9 observations shall be one (1) hour (ten 6-minute averages). The duration of the Method 9 observations may be reduced to the duration the affected facility operates (but not less than 30 minutes) for baghouses that control storage bins or enclosed truck or railcar loading stations that operate for less than one (1) hour at a time.
HOPPR25	Stack #46/CF#46	--	--