Facility Name: **U.S. Silica Company**
City: Millen
County: Jenkins
AIRS #: 04-13-165-00012 Application #: TV-769512

Date SIP Application Received: N/A
Date Title V Application Received: October 27, 2023
Permit No: 3295-165-0012-V-04-1

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Introduction

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and draft operating permit amendment. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1) and 391-3-1-.03(10) of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the public comment period and EPA review process will be described in an addendum to this narrative.

I. Facility Description

A. Existing Permits

Table 1 below lists the current Title V permit, and all administrative amendments, minor and significant modifications to that permit, and 502(b)(10) attachments.

Table 1: Current Title V Permit and Amendments

Permit/Amendment Number	Date of Issuance	Description
3295-165-0012-V-04-0	April 1, 2024	Title V Renewal Permit

B. Regulatory Status

1. PSD/NSR/RACT

Currently the facility's potential emissions for all NSR-regulated pollutants are less than the major source threshold of 250 tpy. As such, the facility is a true minor with respect to PSD regulations.

2. Title V Major Source Status by Pollutant

Table 2: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	✓			✓
PM_{10}	✓			✓
$PM_{2.5}$	✓			✓
SO_2	✓			✓
VOC	✓			✓
NO_x	✓	✓		
CO	✓	✓		
Individual HAP	✓	✓		
Total HAPs	✓	✓		

II. Proposed Modification

A. Description of Modification

U.S. Silica manufactures two categories of high-end products for clients in the asphalt roofing (Cool Roof Granules or CRG) and synthetic quartz (Cristobalite) markets. U.S. Silica is proposing a plant expansion project to construct a second production line to manufacture additional cristobalite. For this purpose, U.S. Silica is proposing to install a second kiln (Kiln No. 2) and associated bins, belt feeders, bucket elevators, screeners, and conveyors. Kiln Line 2 will not process CRG; therefore, a spray dryer will not be installed as part of this project.

The Permittee also requested an update (decrease) to the potential to emit (PTE) for Kiln No. 1 (EU ID KLN1) based on recent engineering data. There are no modifications or changes in throughputs to Kiln No. 1 as a result of this update.

B. Emissions Change

Table 3: Emissions Change Due to Modification

Pollutant	Is the Pollutant Emitted?	Net Actual Emissions Increase (Decrease) (tpy)	Net Potential Emissions Increase (Decrease) (tpy)	Facilitywide PTE (tpy)
PM	✓	20.2	20.2	93.4
PM_{10}	✓	20.2	20.2	93.4
$PM_{2.5}$	✓	19.1	19.1	77.9
SO_2	✓	36.7	36.7	77.8
VOC	✓	7.2	7.2	53.4
NO_x	✓	45.3	45.3	121.5
CO	✓	17.4	17.4	131.3
Individual HAP Hexane	✓	0.3	0.3	12.6
Total HAPs	✓	0.4	0.4	39.8

C. PSD/NSR Applicability

Not applicable since the facility is a PSD minor source and will continue to remain a PSD minor source after the proposed change. Per Section 2.1 of EPD's Toxic Impact Assessment Guidelines, the facility is not required to demonstrate compliance with the Acceptable Ambient Concentrations (ACCs) because the facility has previously demonstrated compliance with the ACCs, will not be modifying existing equipment that increases TAP emissions, and will not be emitting any additional previously unmodeled TAPs as a result of this application. The previous modeling analysis was conducted for four kiln lines and demonstrated compliance with the AACs. U.S. Silica is only proposing a second kiln line with this permit application and will only be emitting natural gas combustion and diesel emergency generator TAPs.

CRG will not be produced on Kiln Line 2 and thus, there will not be additional HCl or HF emissions. Therefore, additional modeling is not required.

In 2019, under the previous owner, this facility was permitted as a PSD major source because the facility-wide potential emissions of one or more criteria pollutants had been estimated to exceed the major source threshold of 250 tpy. Since US Silica (USS) acquired the facility, an application was submitted to remove previously permitted, but uninstalled and un-operated equipment (three of the four permitted kilns), as well as revise emissions factors for the kiln and spray dryers to account for the newly proposed operations. Following the proposed modifications, the facility's potential emissions for all NSR-regulated pollutants were permitted to be less than the major source threshold of 250 tpy. As such, the status of the facility changed to a true minor with respect to PSD regulations.

III. Facility Wide Requirements

A. Emission and Operating Caps:

Not applicable.

B. Applicable Rules and Regulations

Rules and Regulations Assessment – No change to existing facility wide applicable rules and regulations.

Emission and Operating Standards – Not applicable.

C. Compliance Status

In compliance.

D. Permit Conditions

No new facility wide permit conditions are included in this permit amendment.

IV. Regulated Equipment Requirements

A. Brief Process Description

The proposed Kiln Line 2 will only process Cristobalite and **will not process** CRG. The Cristobalite product uses sand as a raw material which is delivered by trucks and stored in silos. The sand is mixed in a paddle mixer with a 1 percent by weight sodium hydroxide solution which is added through a metering pump. The mixture is then calcined in the kiln. The Cristobalite product is grinded before being sold to the synthetic quartz market. HCl and HF emissions do not result from the Cristobalite production process.

U.S. Silica is proposing to install two conveyors and one bucket elevator to transfer sand from existing silos to the proposed Kiln Line 2. PM emissions from the new equipment will be captured by a ventilation system and controlled by the existing Sand Unloading Nuisance baghouse. The new conveyors will be enclosed to minimize any fugitive emissions.

The mixture will be fed into proposed Kiln No. 2 via proposed conveyors. The Kaolin rotary calciner will slowly dry the material to drive off moisture and other impurities. The Kiln rotates as it fires a burner that will be rated at 40 MMBtu/hr and will be capable of heating the raw materials at a very slow rate to release bound moisture and volatiles. The kiln will be heated by a natural-gas, low nitrogen oxides (NO_x) burner.

The Kiln No. 2 will also include a rotary cooler that introduces cooling air in the discharge end of the cooler. Emissions from the proposed Kiln No. 2 will be routed to the proposed Kiln No. 2 Baghouse for PM control. The cristobalite product will be sent from the proposed Kiln No. 2 to a series of new equipment including bucket elevators, feed bins, conveyors, and feeders. The new equipment will be captured by a ventilation system and controlled by the existing Sand Unloading Nuisance baghouse. Ultimately, the product will be sent to one screen for specification sizing before entering one of two proposed product QC bins. After, the material will be sorted through a product screen.

PM emissions from the QC and screen process will be controlled by a proposed dust collector. From the QC bins, the Cristobalite will pass through a pneumatic transporter which will send the product to existing storage silos which are controlled by a bin vent filer. From the silos, the product will be transported off-site.

An existing bucket elevator receives the final Cristobalite products and loads products to the trucks in the truck loadout area. PM emissions from the belt/bucket elevator and loadout area are controlled by a baghouse.

The facility is proposing to install one 9.8 MMBtu/hr natural gas-fired boiler to provide steam for the second production line.

The facility is proposing to install one 1,500 kW diesel powered emergency generator to provide back-up power to the facility to account for the additional Kiln Line No. 2. The unit will be considered an insignificant activity.

B. Equipment List for the Process

Emission Units		Applicable Requirements/Standards	Air Pollution Control Devices	
ID No.	Description		ID No.	Description
KLN2	Kiln No. 2	391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 391-3-1-.02(2)(p)1 40 CFR 60 Subpart UUU 40 CFR 60 Subpart A	206-DSC 145,150,155,160	Kiln No. 2 Baghouses
L206-ELV-005	Kiln No. 2 Feed Bin Bucket Elevator	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 391-3-1-.02(2)(p)1 40 CFR 60 Subpart OOO 40 CFR 60 Subpart A	Existing L205-DPIT-115A	Existing Sand Unloading Nuisance Baghouse
L206-BIN-015	Kiln No. 2 Feed Bin			
L206-BIN-080	Kiln No. 2 Recycle Feed Bin			
L206-ELV-075	Kiln No. 2 Recycle Feed Bucket Elevator			
L206-VCV-030	Kiln No. 2 Feed Conveyor			
L206-VCV-010	Kiln No. 2 Feed Bin Vibratory Conveyor			
L206-WCV-029	Kiln No. 2 Weigh Belt Feeder No. 1			
L206-WCV-096	Kiln No. 2 Weigh Belt Feeder No. 2			
L206-SCR-030	Flux Mixing Screw Conveyor			
L206-SCR-071	Kiln No. 2 Feed Hood Rejects Screw Conveyor			
206-BCV-830	Raw Sand Feed K2 Belt Conveyor			
106-ELV-830	Raw Sand Feed Bucket Elevator			
206-BCV-835	Raw Sand Feed K1 Belt Conveyor			
206-SCR-115	Kiln No. 2 Cooler Discharge Screw Conveyor	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 391-3-1-.02(2)(p)1 40 CFR 60 Subpart OOO 40 CFR 60 Subpart A	Proposed 306-DSC-965	Proposed Product Screen No. 3 Nuisance Dust Collector
306-SCN-943	Product Screen No. 3			

Emission Units		Applicable Requirements/Standards	Air Pollution Control Devices	
ID No.	Description		ID No.	Description
306-BIN-950	Product QC Bin 3A			
306-BIN-955	Product QC Bin 3B			
306-ELV-940	Kiln No. 2 QC 3 Bucket Elevator			
BLR2	Boiler No. 2 9.8 MMBTU/hr gas fired boiler	391-3-1-.02(2)(d) 40 CFR 63 Subpart DDDDD 40 CFR 63 Subpart A	N/A	N/A

* Generally applicable requirements contained in this permit may also apply to emission units listed above. The lists of applicable requirements/standards are intended as a compliance tool and may not be definitive.

C. Equipment & Rule Applicability

Emission and Operating Caps –

None for equipment in the proposed Line 2 for Cristobalite production.

Applicable Rules and Regulations -

The natural gas fired boiler BLR2 is rated less than 10 MMBTU/hr and therefore is not subject to the boiler NSPS 40 CFR 60 Subpart Dc. The boiler is subject to all applicable requirements of 40 CFR 63 Subpart DDDDD.

40 CFR 60 Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants. Each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station that commences construction, modification, or reconstruction after August 31, 1983, is subject to this NSPS. Sand and Clay are classified as non-metallic minerals per 40 CFR 60.71.

Per 40 CFR 60.672(d), truck dumping operations into any screening operation, feed hopper, or crusher are exempt from the requirements of this condition. Additionally, any dry control device that controls emissions from an individually enclosed storage bin is exempt from the stack PM concentration limit (and associated performance testing) but shall not exhibit greater than 7 percent opacity, per 40 CFR 60.672(f). The storage silos are subject to the 7% opacity limit of this NSPS.

Standards of Performance for Calciners and Dryers in Mineral Industries NSPS 40 CFR 60 Subpart UUU is applicable to Calciners and dryers that commenced construction, modification, or reconstruction after April 23, 1986. The proposed Kiln 2 in the new Line 2 is subject to this NSPS.

The proposed emergency generator is subject to the engine NSPS 40 CFR 60 Subpart IIII. The emergency generators are classified as compression ignition (CI) reciprocating internal combustion engines (RICE).

NESHAP: RICE MACT (40 CFR 63 Subpart ZZZZ) – RICE MACT - The proposed diesel-fired emergency generator is subject to the provisions of the RICE MACT.

The engine is constructed after December 19, 2002, and therefore, is considered new units under this subpart. Because the engines are rated at greater than 500 hp and is located at a major source of HAPs, it is subject to the RICE MACT. The only requirements are to burn fuel with a sulfur content of less than 15 parts per million (ppm) and the submittal of a Notification of Compliance Status (NOCS). The facility burns ultra-low sulfur diesel (ULSD).

Major Source Boiler MACT 40 CFR 63 Subpart DDDDD - Since the boiler is constructed after June 4, 2010, and has a maximum heat input of less than 10 MMBtu/hr, the boiler is considered a new unit and is subject to the small gaseous fueled subcategory.

Pursuant to 40 CFR 63.7540(a)(11), the only applicable work practice standard is a biennial tune-up of the boiler. There are no applicable emission standards for this boiler under this subpart.

D. Permit Conditions

Existing Condition 3.3.8 is amended to add the new proposed boiler BLR2 as being subject to the major source boiler MACT 40 CFR 63 Subpart DDDDD.

Existing Conditions 3.4.3 and 3.4.4 are amended to add the new proposed boiler BLR2 as being subject to the opacity and PM emission limits of Georgia Rule (d).

V. Testing Requirements (with Associated Record Keeping and Reporting)

Not applicable.

VI. Monitoring Requirements (with Associated Record Keeping and Reporting)

Existing Condition 5.2.8 is amended to add the proposed Kiln 2 to the baghouse inlet temperature monitoring and the feed input rate monitoring.

Existing Condition 5.2.10 is amended to add the proposed boiler BLR2 to the monitoring requirements of the major source boiler MACT 40 CFR 63 Subpart DDDDD and biennial tune up requirement.

Existing Condition 5.2.11 is amended to add the proposed Kiln 2 to the bypass monitoring requirement for the baghouse inlet temperature.

VII. Other Record Keeping and Reporting Requirements

Existing Condition 6.1.7 is amended to add the reporting of exceedance for new kiln KLN2 (opacity) and boiler BLR2 and excursion reporting for the new kiln KLN2 baghouse inlet temperature.

Existing Condition 6.2.2 is amended to correct the reference to Condition 3.2.2.

Existing Condition 6.2.3 is amended to add Kiln 2 to the feed input rate monitoring.

Existing Condition 6.2.15 is amended to add the proposed kiln KLN2 and boiler BLR2 to the fuel usage recordkeeping requirement.

Existing Condition 6.2.16 is amended to require submission of Notification of Compliance Status (NOCS) according to 40 CFR 63.9(h)(2)(ii) for the new boiler BLR2 to report completion of all required performance tests per 40 CFR 63.10(d)(2).

Existing Condition 6.2.17 is amended to add the new boiler BLR2 to the requirement to submit biennial or 5-year compliance reports as per the requirements of the major source boiler MACT 40 CFR 63 Subpart DDDDD.

Existing Condition 6.2.18 is amended to correct the reference to Condition 6.2.17.

VIII. Specific Requirements

Discuss any of the following specific requirements as they apply to the modification.

A. Operational Flexibility

Not Applicable.

B. Alternative Requirements

Not Applicable.

C. Insignificant Activities

The proposed emergency generator is added as an insignificant activity in this amendment.

D. Temporary Sources

Not Applicable.

E. Short-Term Activities

Not Applicable.

F. Compliance Schedule/Progress Reports

Not Applicable.

G. Emissions Trading

Not Applicable.

H. Acid Rain Requirements/CAIR/CSPAR

Not Applicable.

I. Prevention of Accidental Releases

Not Applicable.

J. Stratospheric Ozone Protection Requirements

Not Applicable.

K. Pollution Prevention

Not Applicable.

L. Specific Conditions

Not Applicable.

Addendum to Narrative

The 30-day public review started on September 18, 2024 and ended on October 17, 2024. No comments were received by the Division. No change was made to the issued draft permit amendment.