

# AIR QUALITY PERMIT

**Permit No.:** 3295-163-0035-P-01-0    **Effective Date:**

**Facility Name:** **PyraMax Ceramics, LLC - King's Mill Facility**  
County Road 291  
Wrens, Georgia 30833 (Jefferson County)

**Mailing Address:** 161 Britt Waters Road, N.W.  
Milledgeville, Georgia 31061

**Parent/Holding Company:** PyraMax Ceramics, LLC

**Facility AIRS Number:** 04-13-163-00035

In accordance with the provisions of the Georgia Air Quality Act, O.C.G.A. Section 12-9-1, et seq and the Georgia Rules for Air Quality Control, Chapter 391-3-1, adopted pursuant to and in effect under the Act, the Permittee described above is issued a construction permit for:

The construction and operation of a ceramic proppant manufacturing facility

This Permit is conditioned upon compliance with all provisions of The Georgia Air Quality Act, O.C.G.A. Section 12-9-1, et seq, the Rules, Chapter 391-3-1, adopted and in effect under that Act, or any other condition of this Permit. This Permit may be subject to revocation, suspension, modification or amendment by the Director for cause including evidence of noncompliance with any of the above; or for any misrepresentation made in Application No. 20584 dated July 21, 2011; any other applications upon which this Permit is based; supporting data entered therein or attached thereto; or any subsequent submittals or supporting data; or for any alterations affecting the emissions from this source.

This Permit is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached 42 pages.

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Director  
Environmental Protection Division

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**PART 1.0 FACILITY DESCRIPTION****1.1 Overall Facility Process Description**

- 1.1.1 This greenfield facility is a ceramic proppant manufacturing facility capable of processing 635,000 tons per year of clay slurry (mixture of water, grit and additives). The facility will consist of two identical process/kiln lines which can be operated independently. The manufacturing processes along the process/kiln lines are described briefly below:

**Raw Material Handling**

The facility will receive locally mined raw clay as feedstock via trucks to any of a number of covered storage bays. Expected emissions from this operation are PM, PM<sub>10</sub> and PM<sub>2.5</sub> as fugitive clay particles scattering from the working area. However, such emissions are insignificant due to the high moisture content of the clay (approximately 20% by weight), and, to the use of appropriate control measurement such as timely cleaning of road, working area and/or water spraying.

**Feedstock/Slurry Preparation**

Front-end loaders will move the received clay from storage bays to a shredder/cage mill which breaks the clay into a fine powder. The fine clay powder is then moved by conveyor to a feeder which transfers the clay powder into a mixer. The mixer then converts the clay powder/feedstock clay into a stable suspended mixture/slurry by mixing the clay with water and a small amount of dispersant. The slurry is agitated and then pH balanced using aqueous ammonia, then stored in tanks. The slurry is then wet screened before addition of a binder agent. Expected emissions from this process include VOC (impurities in the additive), PM, PM<sub>10</sub> and PM<sub>2.5</sub>. Similar to raw material handling, the emissions will be insignificant because only wet materials and materials with high moisture content are involved in the operation.

**Pelletization/Spray Drying**

Pelletization of the slurry fed from the storage tanks takes place in spray dryers/pelletizers which are directly heated by burning natural gas with propane as backup fuel. Green clay pellets form from spraying the slurry into the dryer, dry under the heat, then are coated by fresh incoming slurry, and dry again. The process continues until desired bead size is achieved. Each of the process/kiln lines has one (1) spray dryer/pelletizer. Each spray dryer/pelletizer is heated to a desirable temperature by low NO<sub>x</sub> natural gas burners with a total heat input rate of approximately 75 MMBtu/hr.

Expected emissions from this process include PM, PM<sub>10</sub> and PM<sub>2.5</sub>, combustion byproducts (CO, NO<sub>x</sub>, SO<sub>2</sub>, PM, PM<sub>10</sub> and PM<sub>2.5</sub>, VOC and GHG/CO<sub>2</sub>), and VOC when volatile organics in the additives are evaporated (mostly methanol and methyl acetate). All the emissions will be carried by spent drying air/exhaust gas through a baghouse for removal of particulate matter, and then discharged into the atmosphere via a stack.

**Green Pellet Screening**

In this process two multiple-stack screens will separate green pellets conveyed from spray dryers/pelletizers according to their sizes. On-sized pellets are conveyed to calciners/kilns for further processing. Oversized pellets are diverted to a cage mill for size reduction and then re-fed to the pelletizer feed bin for reprocessing; while undersized pellets are sent directly back to the pelletizer feed bin. Only PM, PM<sub>10</sub> and PM<sub>2.5</sub> are emitted from this process, and controlled by baghouses and bin vent filters depending on the operation involved.

**Calcining/Sintering**

On-sized green pellets are conveyed to the calciner/kiln bins via conveyors and bucket elevators, and metered into the charging end of each counter flow dry-process rotary calciner/kiln where they are slowly heated, dried and then calcined/sintered, releasing moisture and other impurities in the process.

The calciner/kiln rotates as heated by a low NO<sub>x</sub> burner fired by natural gas with propane as backup fuel. The burner fires directly onto the kiln feed/green pellets streaming in so that hot exhaust gases travel counter flow to the incoming green proppant pellets/beads. The capacity of the kiln burner is 49.3 MMBtu/hr and can heat the kiln up to 3,000°F.

Each rotary kiln/calciner is closely followed by a separate rotary cooler which introduces cooling air in the discharge end of the cooler.

Expected emissions from the calcination/sintering include criteria pollutants (CO, NO<sub>x</sub>, PM, PM<sub>10</sub> and PM<sub>2.5</sub>, SO<sub>2</sub> and VOC), greenhouse gas (GHG), and hazardous air pollutants (HAPs). Majority of the HAPs emissions are hydrogen chloride (HCl) and hydrogen fluoride (HF) converted from naturally existing chlorides and fluorides contained in the clay and released at high temperature. Almost all the SO<sub>2</sub> emissions are from the conversion of element sulfur and sulfur compounds contained naturally in the clay, which could vary significantly among different mining sites or even geographical locations/formations with the same mining site. Most of the PM, PM<sub>10</sub> and PM<sub>2.5</sub> emissions are from tumbling action of the clay pellets inside the kiln and the rest from fuel combustion. Fuel combustion generates almost all the CO and NO<sub>x</sub> emissions. Due to the use of clean fuels, particulate matter, SO<sub>2</sub>, and VOC emissions from fuel combustion are insignificant. VOC emissions from conversion of naturally occurring carbon compounds in kiln feedstock are minimum because the clay pellets being processed contains little such compounds. Kiln and cooler exhaust gas streams carrying these emissions are routed to a "catalytic baghouse" for multi-pollutant control. The "catalytic baghouse" itself utilizes, instead of fabric filters bags, an array of rigid porous ceramic tubes to filter/capture the particulate matter. In addition, nano-sized fine particles of catalysts are impregnated across the wall of the ceramic tubes to facilitate the reduction of NO<sub>x</sub> to nitrogen (N<sub>2</sub>) in the presence of appropriate reducing agents such as ammonia (NH<sub>3</sub>), which is injected into the exhaust gas strategically upstream of the "catalytic baghouse". Consequently, the ceramic filtration tubes will function together as a "selective catalytic reactor" (SCR) for NO<sub>x</sub> emission control. To reduce acid gas emissions, predominantly SO<sub>2</sub>, HCl and HF, calcium or sodium based powdery alkaline sorbents such as sodium bicarbonate (NaHCO<sub>3</sub>) are injected strategically into the kiln/cooler exhaust air upstream of the "catalytic baghouse" to neutralize the gaseous acids by forming sodium salts such as Na<sub>2</sub>SO<sub>4</sub>, NaCl and NaF. These powdery solids are then captured along

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with other particulate matters by the “catalytic baghouse”/ceramic filter tube system downstream.

### **Finishing**

The calcined/sintered ceramic pellets/proppants are conveyed from the kiln cooler to the final product screens. On-sized pellets/proppants are transferred to quality control bins and off-sized pellets/proppant recycled back to the kiln for further processing. On-size ceramic pellets/proppants are tested for quality and those passing the testing are sent to storage silos awaiting for shipping. Dust collection will occur at transfer points pneumatically and diverted to a common baghouse. Each of the storage silos and bins is equipped with a vent filter to control particulate matter. Finished pellets/proppants are conveyed to a rail car loading spout and into railcars for delivery to customers. Dusts generated during railcar loading are controlled via pneumatic collection at transfer points and then a common baghouse.

### **Supporting operations**

The proposed ceramic proppant manufacturing facility will have the following supporting operations/equipment:

- On-site research and development and QA/QC labs;
- Two (2) natural gas-fired 9.8 MMBtu/hr boilers with propane backup;
- Three (3) 60,000 gallon propane storage tanks providing backup fuel for all natural gas-fired units;
- One (1) 14,250 gallon dispersant storage tank;
- Four (4) 500 kW diesel engine powered emergency generators;
- Two (2) 2,375 gallon storage tanks for the emergency engines;
- One (1) 7,000 gallon aboveground diesel fuel storage tank for site vehicles;
- One (1) 1,000 gallon aboveground diesel fuel storage tank for site vehicles; and
- Two (2) aqueous ammonia storage tanks for process pH control and control device operation.
- One storage silo for sorbent for control device operation.

### **Emission Control**

The facility-wide potential emissions of criteria pollutants (CO, NO<sub>x</sub>, PM, PM<sub>10</sub> and PM<sub>2.5</sub>, SO<sub>2</sub> and VOC) and GHG will exceed the major source thresholds under Federal New Source Review (NSR)/Prevention of Significant Deterioration (PSD) regulations under Clean Air Act (CAA). As required by NSR/PSD regulations, Best Available Control Technology (BACT) is used to control these emissions.

Because the facility-wide potential hazardous air pollutants (HAPs) emissions such as methanol, hydrogen fluoride (HF) and hydrogen chloride (HCl) exceed the major source thresholds under Section 112 of CAA of 1990, Case-By-Case Maximum Achievable Control Technology (MACT) as determined per Section 112(g) of CAA is used to control the HAPs emissions.

**PART 2.0 REQUIREMENTS PERTAINING TO THE ENTIRE FACILITY**

**2.1 Facility Wide General Requirements**

- 2.1.1 At all times, including periods of startup, shutdown, and malfunction, the Permittee shall maintain and operate this source, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection or surveillance of the source.  
[391-3-1-.02(2)(a)10]
  
- 2.1.2 The Permittee shall not build, erect, install or use any article, machine, equipment or process the use of which conceals an emission which would otherwise constitute a violation of an applicable emission standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard that is based on the concentration of a pollutant in the gases discharged into the atmosphere.  
[391-3-1-.03(2)(c)]
  
- 2.1.3 The Permittee shall submit a Georgia Air Quality Permit application to the Division prior to the commencement of any modification, as defined in 391-3-1-.01(pp), which may result in air pollution and which is not exempt under 391-3-1-.03(6). Such application shall be submitted sufficiently in advance of any critical date involved to allow adequate time for review, discussion, or revision of plans, if necessary. The application shall include, but not be limited to, information describing the precise nature of the change, modifications to any emission control system, production capacity and pollutant emission rates of the plant before and after the change, and the anticipated completion date of the change.  
[391-3-1-.03(1) through (8)]
  
- 2.1.4 Unless otherwise specified, all records required to be maintained by this Permit shall be recorded in a permanent form suitable for inspection and submission to the Division and shall be retained for at least five (5) years following the date of entry.  
[391-3-1-.03(2)(c)]
  
- 2.1.5 In cases where conditions of this Permit conflict with each other for any particular source or operation, the most stringent condition shall prevail.  
[391-3-1-.02(2)(a)2]
  
- 2.1.6 At any time that the Division determines that additional control of emissions from the facility may reasonably be needed to provide for the continued protection of public health, safety and welfare, the Division reserves the right to amend the provisions of this Permit pursuant to the Division's authority as established in the Georgia Air Quality Act and the rules adopted pursuant to that Act.  
[391-3-1-.03(3)(a)]

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- 2.1.7 The Permittee shall apply for a Part 70/Title V operation permit within 12 calendar months after commencing the operation of this facility.  
[40 CFR 70.5(a)(1)(ii)]
- 2.1.8 Approval to construct this ceramic proppant manufacturing facility shall become invalid for any of the following reasons:
- a. The construction is not commenced within 18 months after issuance of this permit;
  - b. The construction is discontinued for a period of 18 months or more; or
  - c. The construction is not completed within a reasonable time.

The Division may extend the 18-month period upon a satisfactory showing that an extension is justified. . For purposes of this permit, the definition of “commence” is given in 40 CFR 52.21(b)(9).  
[40 CFR 52.21(r)]

- 2.1.9 If any of the emission standards or requirements in this permit are revised by EPA or the state after the issuance of this permit, the Permittee shall comply with the revised standard(s) or requirement(s) on and after its effected date.

### **2.2 Facility Wide Emission Federal RuleStandards**

- 2.2.1 The Permittee shall implement measures, including fencing, sign postings, and routine patrols to restrict public access along the entire Source Boundary utilized in the ambient impact assessment/modeling. Signs shall be posted along the property boundary no further than 100 feet apart, and patrols shall be conducted at least once weekly on boundaries that have public access. The Permittee shall maintain a written plan outlining such measures, and shall be updated as required. The Division reserves the right to require enhancement of the plan.  
[40 CFR 52.21]

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### PART 3.0 REQUIREMENTS FOR EMISSION UNITS

Note: Except where an applicable requirement specifically states otherwise, the averaging times of any of the Emissions Limitations or Standards included in this permit are tied to or based on the run time(s) specified for the applicable reference test method(s) or procedures required for demonstrating compliance.

#### 3.1. Emission Unit & Emission Group Listing

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices			
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	Description	ID No.		
ADS1	Additive Silo – Process/Kiln Line Nos. 1 and 2	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Additive Silo – Process/Kiln Line Nos. 1 and 2	BVS1		
FB1	Feed Bin No. 1			Feed Bin Vent Filter	BV10		
FB2	Feed Bin No. 2			Feed Bin Vent Filter	BV20		
GS11	Process/Kiln Line No. 1 Green Pellet Screen No. 1			Baghouse for Green Pellet Screening No. 1	BHG1		
GS12	Process/Kiln Line No. 1 Green Pellet Screen No. 2						
OE1	Oversize Elevator No. 1						
RBC1	Reversing Belt Conveyor No. 1						
KEF1	Kiln Feed Elevator No. 1						
GS21	Process/Kiln Line No. 2 Green Pellet Screen No. 1					Baghouse for Green Pellet Screening No. 2	BHG2
GS22	Process/Kiln Line No. 2 Green Pellet Screen No. 2						
OE2	Oversize Elevator No. 2						
RBC2	Reversing Belt Conveyor No. 2						
KEF2	Kiln Feed Elevator No. 2						
CM1	Cage Mill No 1			391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Baghouse for Dry Milling No. 1	BHM1
CYC1	Cyclone No. 1	Baghouse for Dry Milling No. 2	BHM2				
SC1	Screw Conveyor No. 1						
CM2	Cage Mill No 2						
CYC2	Cyclone No. 2						
SC2	Screw Conveyor No. 2						
KDR1	Kiln Dust Recycle to Feed Bin No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Baghouse for Dust from Kiln Baghouse to Feed Bin No 1	BHD1		
KDR2	Kiln Dust Recycle to Feed Bin No. 2			Baghouse for Dust from Kiln Baghouse to Feed Bin No 1	BHD2		
KRF1	Kiln Recycle Feed Bin No. 1			Kiln Recycle Feed Bin Vent Filter No. 1	BV11		
KRF2	Kiln Recycle Feed Bin No. 2			Kiln Recycle Feed Bin Vent Filter No. 2	BV21		

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Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices			
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	Description	ID No.		
PEL1	Spray Dryer/Pelletizer No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 40 CFR Part 60, Subpart UUU 40 CFR 52.21 – PSD/BACT 112(g) case-by-case MACT/40 CFR 63, Subpart B	3.2.2, 3.2.3, 3.3.1, 3.2.3, 3.3.4, 3.3.5, 3.3.6, 3.3.8, 3.3.12, 3.3.18, 3.3.19, 4.2.1, 4.2.5, 4.2.6, 4.2.8, 4.2.9, 5.2.1, 5.2.2, 5.2.4, 6.2.1, 6.2.3, 6.2.4, 6.2.5, 6.2.6, 6.2.13, 6.2.20	Process/Kiln Line No. 1 Baghouse for Pelletization	BHP1		
CP1	Conveyor under Pelletizer No. 1						
CSB1	Conveyor to Feed Bin No. 1						
EGP1	Elevator to Green Pellet Screening No. 1			391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 40 CFR Part 60, Subpart UUU 40 CFR 52.21 – PSD/BACT 112(g) case-by-case MACT/40 CFR 63, Subpart B	3.3.1, 3.3.2, 3.3.4, 3.3.5, 3.3.6, 3.3.8, 3.3.12, 3.3.13, 3.3.14, 3.3.15, 3.3.18, 3.3.19, 4.2.1, 4.2.5, 4.2.6, 4.2.7, 4.2.8, 4.2.9, 4.2.10, 4.2.11, 4.2.12, 5.2.1, 5.2.2, 5.2.4, 5.2.8, 5.2.9, 5.2.10, 6.2.1, 6.2.3, 6.2.13, 6.2.15, 6.2.16, 6.2.17, 6.2.18, 6.2.20	Process/Kiln Line No. 2 Baghouse for Pelletization	BHP2
PEL2	Spray Dryer/Pelletizer No. 2						
CP2	Conveyor under Pelletizer No. 2						
CSB2	Conveyor to Feed Bin No. 2						
EGP2	Elevator to Green Pellet Screening No. 2	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 40 CFR Part 60, Subpart UUU 40 CFR 52.21 – PSD/BACT 112(g) case-by-case MACT/40 CFR 63, Subpart B	3.3.1, 3.3.2, 3.3.4, 3.3.5, 3.3.6, 3.3.8, 3.3.12, 3.3.13, 3.3.14, 3.3.15, 3.3.18, 3.3.19, 4.2.1, 4.2.5, 4.2.6, 4.2.7, 4.2.8, 4.2.9, 4.2.10, 4.2.11, 4.2.12, 5.2.1, 5.2.2, 5.2.4, 5.2.8, 5.2.9, 5.2.10, 6.2.1, 6.2.3, 6.2.13, 6.2.15, 6.2.16, 6.2.17, 6.2.18, 6.2.20	Kiln Catalytic Baghouse No. 1	BHK1		
KLN1	Calciner/Kiln No. 1						
KC1	Calciner/Kiln Cooler No. 1						
GRZ1	Grizzly No. 1			391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Baghouse No. 1 for Final Product Screening & QC	BHF1
KLN2	Calciner/Kiln No. 2						
KC2	Calciner/Kiln Cooler No. 2						
GRZ2	Grizzly No. 2						
CE1	Process/Kiln Line No. 1 Final Product Screen No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8				
FS11	Process/Kiln Line No. 1 Final Product Screen No. 2						
FS12	Process/Kiln Line No. 1 Final Product Screen No. 3						
FS13	Process/Kiln Line No. 1 Final Product Screen No. 4						
FS14	Process/Kiln Line No. 1 Reversing Weigh Belt No. 1						
RB11	Process/Kiln Line No. 1 Reversing Weigh Belt No. 2						
RB12	Process/Kiln Line No. 1 Final Product Screen No. 1						
RE1	Process/Kiln Line No. 1 Recycle Elevator No. 1						

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CE2	Process/Kiln Line No. 1 Cooler Elevator No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Baghouse No. 2 for Final Product Screening & QC	BHF2
FS21	Process/Kiln Line No. 2 Final Product Screen No. 1				
FS22	Process/Kiln Line No. 2 Final Product Screen No. 2				
FS23	Process/Kiln Line No. 2 Final Product Screen No. 3				
FS24	Process/Kiln Line No. 2 Final Product Screen No. 4				
FS24	Process/Kiln Line No. 2 Reversing Weigh Belt No. 1				
RB21	Process/Kiln Line No. 2 Reversing Weigh Belt No. 2				
RB22	Process/Kiln Line No. 2 Recycle Elevator No. 2				
RE2	Process/Kiln Line No. 2 Cooler Elevator No. 2				
S11	Process/Kiln Line No. 1 Silo No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Silo No. 1 Bin vent Filter	BV12
S12	Process/Kiln Line No. 1 Silo No. 2			Silo No. 2 Bin vent Filter	BV13
S13	Process/Kiln Line No. 1 Silo No. 3			Silo No. 3 Bin vent Filter	BV14
S14	Process/Kiln Line No. 1 Silo No. 4			Silo No. 4 Bin vent Filter	BV15
S15	Process/Kiln Line No. 1 Silo No. 5			Silo No. 5 Bin vent Filter	BV16
WB1	Weigh Bin No. 1			Weigh Bin No. 1 Bin Vent Filter	BV17
BC1	Belt Conveyor No. 1			391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8
LE1	Loading Elevator No. 1				
LS1	Loading Spout No. 1				
S21	Process/Kiln Line No. 2 Silo No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Silo No. 1 Bin vent Filter	BV22
S22	Process/Kiln Line No. 2 Silo No. 2			Silo No. 2 Bin vent Filter	BV23
S23	Process/Kiln Line No. 2 Silo No. 3			Silo No. 3 Bin vent Filter	BV24
S24	Process/Kiln Line No. 2 Silo No. 4			Silo No. 4 Bin vent Filter	BV25
S25	Process/Kiln Line No. 2 Silo No. 5			Silo No. 5 Bin vent Filter	BV26
WB2	Weigh Bin No. 2			Weigh Bin No. 2 Bin Vent Filter	BV27

## AIR QUALITY PERMIT

PyraMax Ceramics, LLC - King's Mill Facility

Permit No.: 3295-163-0035-P-01-0

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	Description	ID No.
BC2	Belt Conveyor No. 2	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Baghouse for Loading Operations No. 2	BHL2
LE2	Loading Elevator No. 2				
LS2	Loading Spout No. 2				
SBS1	Sodium Bicarbonate Silo No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Sodium Bicarbonate Silo Bin vent Filter No. 1	BV18
FAS1	Fly Ash Silo Bin No. 1			Fly Ash Silo Bin Vent Filter No. 1	BV19
SBS2	Sodium Bicarbonate Silo No. 2	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.12, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.2.1, 6.2.7 & 6.2.8	Sodium Bicarbonate Silo Bin vent Filter No. 2	BV20
FAS2	Fly Ash Silo Bin No. 2			Fly Ash Silo Bin Vent Filter No. 2	BV21
OSB1	Oversize Surge Bin No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.2, 3.3.3, 3.3.6, 3.3.7, 3.3.12, 3.4.1, 4.2.2, 4.2.3, 4.2.4, 6.2.1, 6.2.2, 6.2.7 & 6.2.8	None	N/A
USB1	Undersize Surge Bin No. 1				
OSB2	Oversize Surge Bin No. 2				
USB2	Undersize Surge Bin No. 2				
KFB1	Kiln Feed Bin No. 1				
KFB2	Kiln Feed Bin No. 2				
KRW1	Kiln Recycle Elevator & Weight Belt No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.2, 3.3.3, 3.3.6, 3.3.7, 3.3.12, 3.4.1, 4.2.2, 4.2.3, 4.2.4, 6.2.1, 6.2.2, 6.2.7 & 6.2.8	None	N/A
KRW2	Kiln Recycle Elevator & Weight Belt No. 2				
QC11	Process/Kiln Line No. 1 Product QC Bin No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.2, 3.3.3, 3.3.6, 3.3.7, 3.3.12, 3.4.1, 4.2.2, 4.2.3, 4.2.4, 6.2.1, 6.2.2, 6.2.7 & 6.2.8	None	N/A
QC12	Process/Kiln Line No. 1 Product QC Bin No. 2				
QC13	Process/Kiln Line No. 1 Product QC Bin No. 3				
QC14	Process/Kiln Line No. 1 Product QC Bin No. 4				
RWB1	Recycle Weigh Bin No. 1				
QC21	Process/Kiln Line No. 2 Product QC Bin No. 1	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(n) 40 CFR Part 60, Subpart OOO 40 CFR 52.21 – PSD/BACT	3.3.2, 3.3.3, 3.3.6, 3.3.7, 3.3.12, 3.4.1, 4.2.2, 4.2.3, 4.2.4, 6.2.1, 6.2.2, 6.2.7 & 6.2.8	None	N/A
QC22	Process/Kiln Line No. 2 Product QC Bin No. 2				
QC23	Process/Kiln Line No. 2 Product QC Bin No. 3				
QC24	Process/Kiln Line No. 2 Product QC Bin No. 4				
RWB2	Recycle Weigh Bin No. 2				

## AIR QUALITY PERMIT

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	Description	ID No.
B1	9.8 MMBtu/Hr Boiler- Process/Kiln Line No. 1	391-3-1-.02(2)(d) 391-3-1-.02(2)(g) 40 CFR 52.21 – PSD/BACT	3.3.1, 3.3.2, 3.3.12, 3.3.21, 3.4.2, 5.2.10, 6.2.3 & 6.2.20	None	N/A
B2	9.8 MMBtu/Hr Boiler- Process/Kiln Line No. 2	112(g) case-by-case MACT/40 CFR 63, Subpart B			
G1	Emergency Diesel Generator Set – Process/Kiln Line No. 1	40 CFR 52.21 – PSD/BACT 40 CFR Part 63, Subpart ZZZZ 40 CFR Part 60, Subpart III	3.3.6, 3.3.9, 3.3.10, 3.3.11, 3.3.12, 3.3.16, 3.3.17, 3.3.20, 3.3.21, 5.2.10, 6.2.1, 6.2.9, 6.2.10, 6.2.11, 6.2.12, 6.2.13 & 6.2.20	N/A	N/A
G2	Emergency Diesel Generator Set – Process/Kiln Line No. 2				

\* Only source-specific conditions are listed for reference. Generally applicable requirements/conditions contained in this permit may also apply to emission units listed above.

### 3.3 Equipment Federal Rule Standards

#### *General PSD Requirements*

3.3.1 The Permittee shall fire all boilers, spray dryers/pelletizers and calciners/kilns with natural gas or propane only.

[40 CFR 52.21-PSD/BACT, 391-3-1-.02(2)(g) subsumed]

3.3.2 The Permittee shall use the following technologies and/or procedures to comply with the BACT emission limits:

[40 CFR 52.21-PSD/BACT]

a. NO<sub>x</sub> emissions:

i. Good Combustion Techniques (equipment design, maintenance, and combustion process control such as appropriate combustion temperature, air to fuel ratio, staged and/or controlled combustion that can lower the NO<sub>x</sub> emissions).

ii. Low NO<sub>x</sub> burners.

iii. Use of only “clean fuels”, i.e., natural gas and propane.

iv. In addition to compliance with subparagraphs a.i, a.ii. and a.iii of this condition, each calciner/kiln shall be equipped with a “selective catalytic reduction” (SCR) system, i.e., aqueous ammonia (NH<sub>3</sub>) injection upstream of an array of catalyst-embedded ceramic filters, i.e., “catalytic baghouse”) to abate NO<sub>x</sub> emissions.

b. Stack PM emissions:

## AIR QUALITY PERMIT

- i. Ceramic filters/“catalytic baghouses” for calciners/kilns and fabric filters/baghouse for the other sources as PM emission control.
- c. Fugitive Emissions:
  - i. Paving facility roads with concrete or asphalt;
  - ii. Timely cleaning of roads and working areas;
  - iii. Enclosure of clay handling and storage areas;
  - iv. Restricting clay delivery trucks access to facility roads;
  - v. Operating a truck tire washing station.
- d. SO<sub>2</sub> Emissions:
  - i. Use of only “clean fuels”, i.e., natural gas and propane for external combustion sources including boilers, spray dryers/pelletizers and calciners/kilns.
  - ii. In addition to compliance with subparagraph d.i of this condition, each calciner/kiln shall be equipped with a dry scrubbing system (injection of dry powdery sodium bicarbonate upstream of the “catalytic baghouse”) to abate SO<sub>2</sub> emissions
- e. CO Emissions
  - i. Equipment design, maintenance and combustion process control with good operating practices (i.e., adequate combustion temperature, residence time and/or excess air, etc.) that can lower the CO emissions.
- f. VOC Emissions
  - i. Use only natural gas and propane as fuel for boilers, spray dryers/pelletizers, and calciners/kilns

The Permittee shall develop and submit written operation, inspection and maintenance procedures and work practice plans with regard to the subparagraphs of this condition. These procedures and plans shall be developed and implemented to ensure the satisfaction of the applicable operating requirements in this condition. All inspection and maintenance activities shall be recorded in a permanent form suitable for inspection and submission to the Division.

## AIR QUALITY PERMIT

- 3.3.3 The Permittee shall implement measures to remove clay residue from facility roads, including, at a minimum, cleaning the roads at least weekly. The Permittee may use a vacuum street sweeper(s) and a truck washing station(s) to prevent accumulation of fugitive dusts on paved roads used to haul raw materials into the facility.  
[40 CFR 52.21 - PSD/BACT]
- 3.3.4 The Permittee shall operate all the particulate matter controlling baghouses including the “catalytic baghouses” at all times that associated processing equipment is being operated.  
[40 CFR 52.21 - PSD/BACT]
- 3.3.5 The Permittee shall maintain an adequate inventory of replacement filter bags and ceramic tubes for all the baghouses including “catalytic baghouses”.  
[40 CFR 52.21 - PSD/BACT]

### ***NSPS Requirements***

- 3.3.6 The Permittee shall comply with all applicable provisions of the New Source Performance Standards (NSPS) as found in 40 CFR 60 Subpart A, “*General Provisions*” for operation of all emission sources subject to NSPS standards.  
[40 CFR 60 Subpart A]
- 3.3.7 The Permittee shall comply with the provisions of 40 CFR, Part 60, Subpart OOO, “*Standards of Performance for Nonmetallic Mineral Processing Plants*” as amended on April 28, 2009 for all subject equipment {for reference, see listing in Section 3.1}. In particular, the Permittee shall comply with the following for each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, silo, enclosed truck or railcar loading station or any other affected facilities as defined in 40 CFR 60.670 and 60.671:  
[40 CFR 60.672 (a) thru (f)]

The Permittee shall not discharge or cause the discharge into the atmosphere, from each affected facility/source subject to 40 CFR 60 Subpart OOO, any

- a. fugitive emissions (including those escaping capture systems) exhibiting greater than 7 percent opacity except for any crusher that does not use a capture system, which shall not exhibit fugitive emissions greater than 12 percent opacity.
- b. stack emissions from capture systems feeding a dry control device which contain particulate matter in excess of 0.032 g/dscm (0.014 grains/dscf) except for individually enclosed storage bins.

For any transfer point on a conveyor belt or any other affected facility enclosed in a building, each enclosed affected facility shall comply with the emission limits in paragraphs (a) and (b) of this condition, **or** the building shall comply with the following emission limits:

- c. Fugitive emissions from the building openings (except vents with mechanically induced air flow for exhausting PM emissions from the building) shall not exceed 7 percent opacity.

## AIR QUALITY PERMIT

- d. PM emissions from any building vent with mechanically induced air flow for exhausting PM emissions shall not contain particulate matter in excess of 0.032 g/dscm (0.014 grains/dscf).

Note:

- Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this condition
- 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) in paragraph (b) but shall not exhibit greater than 7 percent stack opacity.

3.3.8 The Permittee shall comply with all the applicable provisions of 40 CFR, Part 60, Subpart UUU, "*Standards of Performance for Calciners and Dryers in Mineral Industries*," for all subject equipment {for reference, see listing in Section 3.1 above}. In particular, sources subject to Subpart UUU, the Permittee shall comply with the following conditions for each calciner and dryer:

[40 CFR 60.732(a) & (b)]

The Permittee shall not discharge or cause the discharge into the atmosphere, from each of the processing equipment subject to 40 CFR, Part 60, Subpart UUU, any gases which:

- a. Contain particulate matter in excess of 0.04 grains/dscf (0.092 grams/dscm) for calciners and dryers installed in series.
- b. Contain particulate matter in excess of 0.025 grains/dscf (0.057 grams/dscm) for dryers.
- c. Exhibit greater than 10 percent opacity.

3.3.9 The Permittee shall comply with all the applicable provisions of 40 CFR, Part 60, Subpart IIII, "*Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*". In particular, the Permittee shall limit the accumulated maintenance check and readiness testing time for each 500 kilowatts (kW) emergency stationary diesel generator to 100 hours per year. The Permittee may petition the Division for approval of additional hours for maintenance checks and readiness testing, but a petition is not required if the Permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of the 500 kW emergency stationary diesel generators beyond 100 hours per year. Any operation other than emergency power generation, and maintenance check and readiness testing is prohibited.

[40 CFR 60.4211(e)]

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- 3.3.10 Each 500 kW emergency stationary diesel generator shall be certified for emission standards for new nonroad compress ignition engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants, operated and maintained according to the manufacturer's written specifications/ instructions or procedures developed by the Permittee that are approved by the engine manufacturer, over the entire life of the engine. The Permittee may only change diesel generator settings that are permitted by the manufacturer.  
[40 CFR 52.21 PSD/BACT, 40 CFR 60.4202(a)(2), 60.4205 subsumed, 60.4206, 60.4211(a) and 60.4211(b)(1)and 60.4211(c)]
- 3.3.11 Each 500 kW emergency stationary diesel generator and any associated control devices shall be installed and configured according to the manufacturer's written instructions.  
[40 CFR 60.4211(c)]
- 3.3.12 Emissions from each of the listed process units shall comply with the following pertinent BACT limits:  
[40 CFR 52.21 - PSD/BACT]

TABLE 3.3.12-1: BACT Emission Limits for Process Units

Operation	Emission <sup>[1]</sup>	Emission Limit	Compliance Method	Averaging Time
Each calciner/kiln	Filterable PM/PM <sub>10</sub>	0.010 gr./dscf	Methods 5 (Method 201/201A)	3 hours
	PM/PM <sub>10</sub> & CPM combined	8.53 lbs./hr	Methods 5 & 202 (Method 201/201A and Method 202)	
	PM <sub>2.5</sub> & CPM combined <sup>[1]</sup>	6.98 lbs./hr	Methods 5 & 202 (Method 201/201A and Method 202)	
Each spray dryer/pelletizer	PM/PM <sub>10</sub>	0.010 gr./dscf	Method 5 (Method 201/201A)	3 hours
	PM <sub>2.5</sub>	0.006 gr./dscf		
Each spray dryer/pelletizer and calciner/kiln	Visible	10% opacity	COMS	6-minute average
Each of the emission units with baghouse control excluding spray dryers/ pelletizers and calciners/kilns	PM/PM <sub>10</sub> /PM <sub>2.5</sub>	0.005 gr./dscf	Methods 5 & 202 (Method 201 or 201A in conjunction with Method 202 if necessary)	3 hours
	Visible	7% opacity	Method 9	6-minute average
All fugitive sources	Fugitive	10% opacity	Method 22 and/or Method 9	Per Method 22 or Method 9
Each calciner/kiln	SO <sub>2</sub>	No less than 90% by weight overall control	Method 6 or 6C; Daily Analyzing of Clay Sulfur Content	3 hours;
		Not to exceed 11.64 lbs/hr.		Daily average

## AIR QUALITY PERMIT

Operation	Emission <sup>[1]</sup>	Emission Limit	Compliance Method	Averaging Time
	NO <sub>x</sub>	No less than 80% by weight overall control	Method 7 or 7E	3 hours
		Not to exceed 36.3 lbs/hr.		
	CO	33.0 lbs/hr.	Method 10	3 hours
	VOC	0.54 lbs/hr	Mass balance	Daily average
	CO <sub>2</sub> e	436.0 lbs/ton cooler product	Mss balance calculation based on Division-approved emission factors	12-month rolling
Each spray dryer/pelletizer	NO <sub>x</sub>	Not to exceed 2.25 lbs/hr.	Method 7 or 7E	3 hours
	CO	Not to exceed 13.73 lbs/hr.	Method 10	3 hours
	VOC	Not to exceed 11.78 lbs/hr.	Mass balance calculation	Daily average
	CO <sub>2</sub> e	44,446 tons	Mss balance calculation based on Division-approved emission factors	12-month rolling total
Each 9.8 MMBtu/hr natural gas fired boiler	NO <sub>x</sub>	12 ppmv @ 3% O <sub>2</sub> at dry standard conditions	Manufacturer's written guarantee	N/A
	CO <sub>2</sub> e	5,809 tons	Mss balance calculation based on EPD-approved emission factors	12-month rolling total
All 500 KW Emergency Diesel Generators Combined <sup>[2]</sup>	CO <sub>2</sub> e	153 tons	Mss balance calculation based on Division-approved emission factors	12-month rolling total

[1] CPM: condensable particulate matter

[2] The Tier III NO<sub>x</sub>, CO, PM and VOC emission standards applicable to each 500 kW diesel generator have been determined as BACT for the same unit. Since each generator will be purchased as certified by U.S EPA to be in compliance with these standards, the BACT standards are not listed in this table. Please refer to Table 1 of 40 CFR 89.112 for details.

- a. The following applicable State rules or emission limits are subsumed by the applicable and more stringent BACT or NSPS emission limits:
- Georgia Air Quality Rule 391-3-1-.02(2)(b): “Visible Emissions”
  - Georgia Air Quality Rule 391-3-1-.02(2)(p): “Particulate Emission from Kaolin and Fuller’s Earth Processes”
  - Georgia Rule 391-3-1-.02(2)(g): “Sulfur Dioxide”
  - Georgia Air Quality Rule 391-3-1-.02(2)(n)2: “Fugitive Dust”
- b. Method 201 or 201A in conjunction with Method 202 shall be used to demonstrate compliance with the PM<sub>10</sub> emission limits during the performance testing. As an alternative to Method 201 or 201A, the Permittee may assume that 100% of the PM emissions from the baghouses as determined via Method 5 are PM<sub>10</sub> in the emission compliance demonstration, and use Method 5 in conjunction with Method 202 to demonstrate compliance with the PM<sub>10</sub> emission limits.

## AIR QUALITY PERMIT

- 3.3.13 The Permittee shall operate each calciner/kiln such that the temperature at the inlet of the “catalytic baghouse” serving the calciner/kiln remains at or greater than that established during the most recent Division-approved performance test but below 750°F.  
[40 CFR 52.21 - PSD/BACT]
- 3.3.14 The Permittee shall operate each calciner/kiln such that the current NH<sub>3</sub> injection rate allows the molar ratio between NH<sub>3</sub> and NO<sub>x</sub> in the calciner/kiln exhaust gas at the inlet of the associated “catalytic baghouse” to remain at the level established during the most recent Division-approved performance test. The current NH<sub>3</sub> injection rate shall be determined in accordance with Condition 6.2.16.  
[40 CFR 52.21 - PSD/BACT]
- 3.3.15 The Permittee shall operate each calciner/kiln such that the current sodium bicarbonate injection rate allows the molar ratio between sodium bicarbonate and SO<sub>2</sub> in the calciner/kiln exhaust gas at the inlet of the associated “catalytic baghouse” to remain at the level established during the most recent Division-approved performance test. The current sodium bicarbonate injection rate shall be determined in accordance with Condition 6.2.16.  
[40 CFR 52.21 - PSD/BACT]
- 3.3.16 The Permittee shall operate each 500 kW stationary emergency diesel generator using diesel fuel that has a maximum sulfur content of 15 parts per million (ppm) (0.0015% by weight) and either a minimum cetane index of 40 or maximum aromatic content of 35 volume percent.  
[40 CFR 52.21 – PSD /BACT, 40 CFR 60.4207(a) & 60.4207(b)]
- 3.3.17 The accumulated annual operating time for each 500 kW stationary emergency diesel generator shall not exceed 500 hours per year.  
[40 CFR 52.21-PSD/BACT]

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### ***NESHAP Requirements***

- 3.3.18 The Permittee shall comply with all applicable provisions of the National Emission Standard for Hazardous Air Pollutants (NESHAP) as found in 40 CFR Part 63, Subpart B – “*Requirements for Control Technology Determinations for Major Sources in Accordance With Clean Air Act Sections 112(g)*”.  
[40 CFR 63, Subpart B]
- 3.3.19 Emissions of hazardous air pollutants (HAPs) shall not exceed the following 112(g) case-by-case MACT emission standards:  
[40 CFR 63.40 through 63.44/112(g) case-by-case MACT]

Table

3.3.-1: 112(g) Case-By-Case MACT Emission Limit

Affected Source	HAP	Emission Limit	Averaging Time	Compliance Method
Each Spray Dryer/Pelletizer	Methanol	0.23 lbs/ton of kiln feed	Monthly	Mass balance based on kiln feed and methanol-containing additive input records and MSDS
		Not to exceed 24.0 tons per year	12-month rolling	
Each Calciner/Kiln	HCl	0.029 lbs/ton of kiln feed <u>and</u> no less than 90% by weight reduction	3 hours	Method 26 or 26A
		Not to exceed 2.96 tons per year	12-month rolling	Calculation based on annual testing result & production records
	HF	0.044 lbs/ton of kiln feed <u>and</u> no less than 90% by weight reduction	3 hours	Method 26 or 26A
		Not to exceed 4.49 tons per year	12-month rolling	Calculation based on annual testing result & production records

- 3.3.20 The Permittee shall comply with all the applicable provisions of 40 CFR Part 63, Subpart ZZZZ, “*National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*”. In particular, the Permittee shall operate each 500 kW emergency stationary diesel generator only in an emergency situation such as to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility is interrupted, or to pump water in the case of fire or flood, etc. It may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the diesel generator.  
[40 CFR 63.6590(b)(i)]

## AIR QUALITY PERMIT

- 3.3.21 The Permittee shall submit an Initial Notification for each 500 kW emergency stationary diesel generator no later than 120 days after the startup of the diesel generator, following the applicable requirements under 40 CFR 63.9(b)(2)(i) through (v), and a statement that the diesel generator has no additional requirements and explain the basis of the exclusion.  
[40 CFR 63.6645(d)]
- 3.3.22 The Permittee shall comply with all applicable provisions of the National Emission Standard for Hazardous Air Pollutants (NESHAP) as found in 40 CFR Part 63, Subpart A, “*General Provisions*” and in 40 CFR Part 63, Subpart DDDDD, “*National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters*” for the operation of the 9.8 MMBtu/Hr natural gas fired boilers.

### 3.4 Equipment SIP Rule Standards

- 3.4.1 The Permittee shall take all reasonable precautions to prevent fugitive dust from becoming airborne. Reasonable precautions that should be taken to prevent dust from becoming airborne include, but are not limited to, the following:  
[391-3-1-.02(2)(n)1]
- a. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;
  - b. Application of asphalt, water, or suitable chemicals on dirt roads, materials, stockpiles, and other surfaces that can give rise to airborne dusts;
  - c. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods can be employed during sandblasting or other similar operations;
  - d. Covering, at all times when in motion, open bodied trucks, transporting materials likely to give rise to airborne dusts; and
  - e. The prompt removal of earth or other material from paved streets onto which earth or other material has been deposited.
- 3.4.2 The Permittee shall not cause, let, suffer, permit, or allow any emissions from each 9.8 MMBtu/hr boiler (Emission Unit ID Nos. B1 and B2) which:
- a. Contain fly ash and/or other particulate matter in amounts equal to or exceeding 0.5 pounds per million BTU heat input.  
[391-3-1-.02(2)(d)2.(i)] [Vault GA-001-EL, 02/10]
  - b. Exhibit visible emissions, the opacity of which is equal to or greater than 20 percent except for one six minute period per hour of not more than 27 percent opacity.  
[391-3-1-.02(2)(d)3.] [Vault GA-001-EL, 02/10]

**PART 4.0 REQUIREMENTS FOR PERFORMANCE AND COMPLIANCE TESTING****4.1 General Testing Requirements**

- 4.1.1 Performance and compliance tests shall be conducted and data reduced in accordance with applicable procedures and methods specified in the Division's Procedures for Testing and Monitoring Sources of Air Pollutants. The methods for the determination of compliance with emission limits listed under Sections 3.3 and 3.4 of this permit which pertain to the emission units listed in Section 3.1 are as follows:
- a. Method 1 or 1A for the determination of sample point locations;
  - b. Method 2 for the determination of flow rate;
  - c. Method 3, 3A, or 3B for the determination of stack gas molecular weight, oxygen corrected, and CO<sub>2</sub>;
  - d. Method 4 for the determination of stack gas moisture;
  - e. Method 5 for the determination of PM emissions;
  - f. Method 6 or 6C for the determination of SO<sub>2</sub> concentration.
  - g. Method 7 or 7E for the determination of NO<sub>x</sub>
  - h. Method 9 and the procedures contained in Section 1.3 of the above reference document for the determination of opacity;
  - i. Method 10 for the determination of CO emissions
  - j. Method 22 for the visual determination of fugitive visible emissions;
  - k. Method 201 or 201A in conjunction with Method 202 (if required) for the determination of PM<sub>10</sub>/PM<sub>2.5</sub> emissions. As an alternative, the Permittee may assume that 100% of the PM emissions from the baghouses determined by Method 5 in conjunction with Method 202 are PM<sub>10</sub>.
  - l. Method 19, when applicable, to convert if necessary PM, CO, SO<sub>2</sub> and NO<sub>x</sub> concentrations (e.g., gr./dscf for PM, ppm for gaseous pollutants), as determined using other methods specified in this section, to emission rates (e.g., lb/MMBtu).
  - m. Method 26 or 26A for the determination of HCl and HF emissions.
  - n. Method 5I of 40 CFR part 60, Appendix A for the determination of Particulate Matter concentration for sources operating less than 1 hour as allowed by NSPS 40 CFR 60 Subpart OOO.
  - o. Method 18 for the determination of CH<sub>4</sub> emissions.

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Minor changes in methodology may be specified or approved by the Director or his designee when necessitated by process variables, changes in facility design, or improvement or corrections that, in his opinion, render those methods or procedures, or portions thereof, more reliable. [391-3-1-.02(3)(a)]

- 4.1.2 All required continuous monitoring system(s) shall be installed, calibrated and operating in accordance with the applicable manufacturer specifications and/or specifications in applicable federal and/or state regulations when any performance test(s) is conducted. [391-3-1-.02(3)(a)]
- 4.1.3 The Permittee shall cause to be conducted a performance test at any specified emission unit when so directed by the Environmental Protection Division ("Division"). The test results shall be submitted to the Division within 60 days of the completion of the testing. Any tests shall be performed and conducted using methods and procedures that have been previously specified or approved by the Division. [391-3-1-.02(6)(b)1(i)]
- 4.1.4 The Permittee shall provide the Division thirty (30) days (or sixty (60) days for tests required by 40 CFR Part 63) prior written notice of the date of any performance test(s) to afford the Division the opportunity to witness and/or audit the test, and shall provide with the notification a test plan in accordance with Division guidelines. [391-3-1-.02(3)(a) and 40 CFR 63.7(b)(1)]

### 4.2 Specific Testing Requirements

- 4.2.1 Within 60 days after achieving the maximum production rate at which each of the spray dryers/pelletizers (Emission Unit ID Nos. PEL1 and PEL2) and each of the calciners/kilns (Emission Unit ID Nos. KLN1 and KLN2) will be operated, but no later than 180 days of the initial startup of the sources, the Permittee shall determine compliance with the NSPS Subpart UUU PM and visible emission limits in Condition 3.3.8 under 40 CFR 60.732 as follows:  
[40 CFR 60.736]
- a. Method 5 or Method 17 shall be used to determine the PM concentration. The sampling time and volume for each test run shall be at least 2 hours and 1.70 dscm (60 dscf).
  - b. Method 9 and the procedures in 40 CFR 60.11, including the use of COMS in lieu of Method 9 if preferred, shall be used to determine opacity from stack emissions.

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- 4.2.2 Within 60 days after achieving the maximum production rate at which each process/kiln line will be operated, but no later than 180 days of the initial startup of the affected source(s), the Permittee shall conduct performance tests as required below:  
[40 CFR 60.675(a), (b), (c), (d) and (e)]
- a. Determining compliance with the NSPS Subpart OOO visible emission standards in Condition 3.3.7 using Method 9 and the procedures 40 CFR 60.11, with the following additions:
    - i. The minimum distance between the observer and the emission source shall be 4.57 meters (15 feet).
    - ii. The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources (e.g., road dust). The required observer position relative to the sun (Method 9, Section 2.1) shall be followed.
    - iii. When a water mist caused by wet dust suppression/water spray is present, the observation of fugitive emissions is to be made at a point in the plume where the mist is no longer visible.
    - iv. In determining compliance with the opacity limit for stack emissions from any baghouse that controls emissions only from an individual enclosed storage bin under 40 CFR 60.672(f) using Method 9, the duration of the Method 9 observations shall be 1 hour (ten 6-minute averages).
    - v. 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 1 hour at a time.
    - vi. The duration of the Method 9 observations must be 30 minutes (five 6-minute averages) for fugitive PM emissions from any affected facilities subject to the opacity limit(s) of 40 CFR Part 60, Subpart OOO as amended on April 28, 2009.
  - b. Determining compliance with the NSPS Subpart OOO particulate matter concentration standards in Condition 3.3.7 with Method 5 or Method 17. The sample volume shall 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.
  - c. To demonstrate compliance with the fugitive emission limits for buildings specified in Condition 3.3.7, the Permittee shall conduct an initial Method 9 testing according to this condition and 40 CFR 60.11. This performance tests shall be conducted while all affected facilities inside the building are operating.

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- d. Subsequent testing shall be performed as required by Table 3 to 40 CFR 60 Subpart OOO as applicable.
- 4.2.3 The Permittee may use the following as alternatives to the reference methods and procedures specified in Condition 4.2.2:  
[40 CFR 60.675(e)]
- a. If the fugitive emissions from two or more facilities continuously interfere so that the opacity from an individual affected facility cannot be read, the Permittee may use either the following as alternatives to the reference methods and procedures specified in Condition 4.2.2.
- i. Use for the combined emission stream the highest fugitive opacity standard applicable to any of the individual affected facilities contributing to the emissions stream.
- ii. Separate the emissions so that the opacity of emissions from each affected facility can be read.
- b. A single visible emission observer may conduct visible emission observations for up to three fugitive, stack, or vent emission points within a 15-second interval if the following conditions are met:
- i. No more than three emission points may be read concurrently.
- ii. All three emission points shall be within a 70 degree viewing sector or angle in front of the observer such that the proper sun position can be maintained for all three points.
- iii. If an opacity reading for any one of the three emission points equals or exceeds the applicable standard, then the observer shall stop taking readings for the other two points and continue reading just that single point.
- c. Method 5I may be used to determine the PM concentration as an alternative to method 5 or method 17 for affected facilities that operate for less than 1 hour at a time such as (but not limited to) storage bins or enclosed truck or railcar loading stations.
- d. In case velocities of exhaust gases from building vents may be too low to measure accurately with the type S pitot tube specified in EPA Method 2 [ i.e., velocity head <1.3 mm H<sub>2</sub>O (0.05 in. H<sub>2</sub>O)] and referred to in Method 5, the Permittee may determine the average gas flow rate produced by the power fans ( e.g., from vendor-supplied fan curves) to the building vent. The Permittee may calculate the average gas velocity at the building vent measurement site using the following and use this average velocity in determining and maintaining isokinetic sampling rates.

$$V_e = Q_f/A_e$$

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Where:

$V_e$  = average building vent velocity (feet per minute);

$Q_f$  = average fan flow rate (cubic feet per minute); and

$A_e$  = area of building vent and measurement location (square feet).

- 4.2.4 For performance tests required in Condition 4.2.2 involving only Method 9 testing, the Permittee may reduce the 30-day advance notification of performance test to a 7-day advance notification.  
[40 CFR 60.675(g)]
- 4.2.5 Within 180 days after the initial startup of this facility, the Permittee shall conduct initial performance tests as specified in the Table 4.2.5-1 to demonstrate initial compliance with the BACT, MACT and SIP emissions limits using applicable test methods and/or procedures specified in Condition 4.1.1 through 4.1.5. The tests shall be conducted under the conditions that exist when the affected source(s) is operating at the representative performance conditions. In lieu of the testing required by this condition, the appropriate testing results from Conditions 4.2.1 and 4.2.2, can be used to demonstrate initial compliance with the PM and visible emission limits for the same affected sources under the pertinent PSD/BACT and State rules in Sections 3.3 and 3.4 of this permit provided that the testing methodology meet the requirement of this condition.  
[391-3-1-.02(3) and 3-1-3-1-.03(2)(c)]

**Table 4.2.5-1: Initial BACT & Case-By-Case MACT Performance Test for Process/Kiln Lines**

Emission Unit	Emission Unit ID	Emissions & Parameters <sup>[1]</sup>
Calciner/Kiln No. 1	KLN1	Visible, CO, NO <sub>x</sub> , particulate matter as specified, SO <sub>2</sub> , HCl, HF and Reduction/control efficiency of NO <sub>x</sub> , SO <sub>2</sub> , HCl & HF
Calciner/Kiln No. 2	KLN2	
Spray Dryer/Pelletizer No. 1	PEL1	Visible, CO, NO <sub>x</sub> and particulate matter as specified
Spray Dryer/Pelletizer No. 2	PEL2	
Other stack emission sources excluding spray dryers/pelletizers, calciners/kilns and silos with dedicated bin vents.	(refer to Table 3.1)	Visible & particulate matter as specified
Silos with dedicated bin vents	(refer to Table 3.1)	Visible

[1] CPM: condensable particulate matter; HCl and HF emissions should be determined in lbs/ton of kiln feed for use in Condition 6.2.17.

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- 4.2.6 The visible emissions from each spray dryer/pelletizer and calciner/kiln during the Method 5 performance tests required by Condition 4.2.5 shall be determined using COMS following the requirements of 40 CFR 60.11(e) or applicable procedures and methods specified in the Division's Procedures for Testing and Monitoring Sources of Air Pollutants. The COMS readings from a Division-approved test(s) conducted following the requirements of 40 CFR 60.11(e), as required by Condition 4.2.1 may be used in lieu of the visible emission determination using Method 9. [391-3-1-.02(3) and 3-1-3-1-.03(2)(c)]
- 4.2.7 The Permittee shall conduct annual HCl and HF emission performance tests on each calciner/kiln to demonstrate that the calciner/kiln is in compliance with the case-by-case MACT emission limits in Condition 3.3.19.  
[391-3-1-.02(3) and 3-1-3-1-.03(2)(c)]
- 4.2.8 The CO performance tests required for calciners/kilns under Condition 4.2.5 shall be repeated annually.  
[391-3-1-.02(3) and 3-1-3-1-.03(2)(c)]
- 4.2.9 From the initial performance testing as required by Condition 4.2.5, the Permittee shall conduct subsequent particulate matter emission performance tests on each calciner/kiln and each spray dryer/pelletizer to demonstrate compliance with the BACT emission limits in Condition 3.3.12 every 36 months.  
[391-3-1-.02(3) and 3-1-3-1-.03(2)(c)]
- 4.2.10 The Permittee shall conduct annual NO<sub>x</sub> and SO<sub>2</sub> emission performance tests on each calciner/ kiln to demonstrate compliance with the BACT emission limits in Condition 3.3.12.  
[40 CFR 52.21, 391-3-1-.02(3) and 3-1-3-1-.03(2)(c)]
- 4.2.11 During the performance tests required by Conditions 4.2.5, 4.2.7 and/or 4.2.10, the Permittee shall monitor and/or record the following operating parameters for each calciner/kiln:
- a. The ammonia injection rate (lbs/hr.) to the NO<sub>x</sub> SCR (catalytic baghouse) serving the calciner/kiln.
  - b. The powdery sodium bicarbonate injection rate (lbs./hr) to the dry scrubbing system (catalytic baghouse) serving the calciner/kiln. And
  - c. The temperature at the inlet of the NO<sub>x</sub> SCR (catalytic baghouse) serving the calciner/kiln.
- 4.2.12 The Permittee shall determine, during each of the performance tests as required by Conditions 4.2.5, 4.2.7 and/or 4.2.10, the following parameters;
- a. The NO<sub>x</sub>, SO<sub>2</sub>, HCl and HF control efficiencies achieved by each of the "catalytic baghouses" serving the calciners/kilns.

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- b. The molar ratio between sodium bicarbonate and  $\text{SO}_2$  in the calciner/kiln exhaust gas before or at the inlet of the “catalytic baghouse” serving the calciner/kiln. And
- c. The molar ratio between  $\text{NH}_3$  and  $\text{NO}_x$  in the calciner/kiln exhaust gas at the inlet of “catalytic baghouse”.

**PART 5.0 REQUIREMENTS FOR MONITORING (Related to Data Collection)**

**5.1 General Monitoring Requirements**

5.1.1 Any continuous monitoring system required by the Division and installed by the Permittee shall be in continuous operation and data recorded during all periods of operation of the affected facility except for continuous monitoring system breakdowns and repairs. Monitoring system response, relating only to calibration checks and zero and span adjustments, shall be measured and recorded during such periods. Maintenance or repair shall be conducted in the most expedient manner to minimize the period during which the system is out of service.  
[391-3-1-.02(6)(b)1]

**5.2 Specific Monitoring Requirements**

5.2.1 The Permittee shall install, calibrate, maintain, and operate a system to continuously monitor and record the indicated emissions or parameters on the following equipment listed. Each system shall meet the applicable performance specification(s) of the Division's monitoring requirements and be operated in a manner sufficient to demonstrate continuous compliance with the applicable emission standards in this permit.  
[40 CFR 60.734(a) and 391-3-1-.02(6)(b)1]

Emission Unit Being Monitored	Emission Unit ID	Emissions or Parameters Being Monitored	Monitoring System Being Used & Installation Location
Kiln No. 1	KLN1	Visible	A Continuous Opacity Monitoring System (COMS) at the outlet of the Kiln Catalytic Baghouse No. 1 (BHK1)
Kiln No. 2	KLN2	Visible	A Continuous Opacity Monitoring System (COMS) at the outlet of the Kiln Catalytic Baghouse No. 2 (BHK2)
Spray Dryer/Pelletizer No. 1	PEL1	Visible	A COMS at the outlet of the Process/Kiln Line No. 1 Baghouse for Pelletization (BHP1)
Spray Dryer/Pelletizer No. 1	PEL1	Visible	A COMS at the outlet of the Process/Kiln Line No. 2 Baghouse for Pelletization (BHP2)

The sources shall be maintained such that the 6-minute average opacity for any 6-minute period for any COMS does not exceed the visible emission limit in Conditions 3.3.8 or 3.3.12. If the average opacity for any 6-minute period exceeds any of the opacity limits in these conditions, this shall constitute a violation of the visible emission standard.

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- 5.2.2 The Permittee shall install a device to continuously monitor the temperature at the inlets of baghouses that receive gases at a temperature higher than ambient air, and record the time and date of each incident when the temperature exceeds the fabric filter bag design temperature. In lieu of monitoring temperature at the baghouse inlet, the Permittee may monitor a surrogate temperature (e.g., clay temperature or dryer/pelletizer outlet temperature). For each baghouse monitored by a surrogate temperature, the Permittee shall determine the equivalent fabric filter bag design temperature and record each incident when the surrogate temperature exceeds the equivalent fabric filter bag design temperature. The Permittee shall record the fabric filter bag design temperature or the equivalent filter bag design temperature for each fabric baghouse listed. Such records and any supporting calculations shall be made available for inspection.  
[391-3-1-.02(6)(b)1 and 40 CFR 52.21- PSD/BACT]
- 5.2.3 The Permittee shall perform a check of visible emissions from all baghouses (including process baghouses) controlling emissions from sources listed in Section 3.1 of this permit, and from sources added or replaced in accordance with this permit and Rule 391-3-1-.03. Emission units monitored using COMS are exempt from this condition. Baghouses controlling emissions from silos with dedicated bin vents, wet screening operations, bucket elevators, screw conveyors, bagging operations, and pneumatic conveyors are exempt from this condition. The Permittee shall retain a record in a daily visible emissions (VE) log suitable for inspection or submittal. The check shall be conducted at least once for each day or portion of each day of operation using procedures a through d below except when atmospheric conditions or sun positioning prevents any opportunity to perform the daily VE check. Any operational day when atmospheric conditions or sun position prevents a daily reading shall be reported as monitor downtime in the report required by Condition 6.1.4. The Permittee shall schedule a daily VE check only when an emission unit is in operation.  
[391-3-1-.02(6)(b)1]
- a. Determine, in accordance with the procedures specified in paragraph d of this condition, if visible emissions are present at the discharge point to the atmosphere from each of the sources and record the results in the daily VE log. For sources that exhibit visible emissions, the Permittee shall comply with paragraph b or c of this condition.
  - b. For each source determined to be emitting visible emissions, the Permittee shall determine whether the emissions equal or exceed the opacity action level using the procedure specified in paragraph d of this condition, except that the person performing the determination shall have received additional training acceptable to the Division and be Method 9 certified to recognize the appropriate opacity level and the determination shall cover a period of 3 minutes. The opacity action level is 5 percent. The results shall be recorded in the daily VE log. For sources that exhibit visible emissions of greater than or equal to the opacity action level, the Permittee shall comply with paragraph c of this condition.

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- c. For each source that requires action in accordance with paragraphs a or b of this condition, the Permittee shall determine the cause of the visible emissions and correct the problem in the most expedient manner possible. The Permittee shall note the cause of the visible emissions, the pressure drop, any other pertinent operating parameters, and the corrective action taken in the maintenance log.
- d. The person performing the determination shall stand at a distance of at least 15 feet which is sufficient to provide a clear view of the plume against a contrasting background with the sun in the 140° sector at his/her back. Consistent with this requirement, the determination shall be made from a position such that the line of vision is approximately perpendicular to the plume direction. Only one plume shall be in the line of sight at any time when multiple stacks are in proximity to each other.
- e. When a quarterly 30-minute visible emissions inspection required by Condition 5.2.7 has been conducted on any affected baghouse during the day, no daily VE check on the same baghouse is necessary for that day.

5.2.4 The Permittee shall develop and implement a Preventive Maintenance Program for all the baghouses including “catalytic baghouses” to assure that the provisions of Condition 2.1.1 are met. The program shall be subject to review and modification by the Division and shall include the pressure drop ranges that indicate proper operation for each baghouse. At a minimum, the following operation and maintenance checks shall be made on at least a weekly basis, and a record of the findings and corrective actions taken shall be kept in a maintenance log:

[391-3-1-.02(6)(b)1 and 40 CFR 52.12 – PSD/BACT]

- a. Record the pressure drop across each baghouse and ensure that it is within the appropriate range.
- b. For baghouses equipped with compressed air cleaning systems, check the system for proper operation. This may include checking for low pressure, leaks, proper lubrication, and proper operation of timer and valves.
- c. For baghouses equipped with reverse air cleaning systems, check the system for proper operation. This may include checking damper, bypass, and isolation valves for proper operation.
- d. For baghouses equipped with shaker cleaning systems, check the system for proper operation. This may include checking shaker mechanism for loose or worn bearings, drive components, mountings, proper operation of outlet/isolation valves, and proper lubrication.
- e. Check dust collector hoppers and conveying systems for proper operation.

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5.2.5 Once each day or portion of each day of operation, the Permittee shall inspect all stack emission points from the emission units listed in Table 3.1 for which no air pollution control device (APCD) is utilized and all emission points from emission units added or replaced in accordance with any applicable provision(s) of Georgia Rules For Air Quality Control 391-3-1-.03(6) for which no APCD is utilized. Boilers, wet processes, stationary engines, and emission units monitored in accordance with Conditions 5.2.1 or 5.2.3 are exempt from this condition. The inspection shall be conducted by performing a walkthrough of the facility and noting the occurrence of the following in a daily VE log:

- a. Any visible emissions.
- b. Any mechanical failure or malfunction that results in increased air emissions.

For each emission point noted with visible emissions, mechanical problems or malfunctions, the Permittee shall take corrective action in the most expedient manner possible and re-inspect the unit within 24 hours to verify that no visible emissions exist. Failure to eliminate the visible emissions or to correct the mechanical failure or malfunction specified in paragraph a and paragraph b within 24 hours shall constitute an excursion.

[40 CFR 52.21 – PSD/BACT or 391-3-1-.02(6)(b)1]

5.2.6 Each 500 kW stationary emergency diesel generator shall be equipped with a non-resettable hour meter to track the number of hours operated during any type of operation and during each calendar month. The Permittee shall record the time of operation and the reason the generator(s) was in operation during that time.

[40 CFR 60.4209(c) and 60.4214(b)]

5.2.7 The Permittee shall conduct quarterly 30-minute visible emissions inspections using EPA Method 22 for any affected facility that is subject to 40 CFR Part 60, Subpart OOO, constructed, modified, or reconstructed on or after April 22, 2008, and uses a baghouse to control emissions. The Method 22 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 Permittee shall initiate corrective action within 24 hours to return the baghouse to normal operation. The Permittee shall record each Method 22 test, including the date and any corrective actions taken, in the logbook required under 40 CFR 60.676(b).

The Permittee 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 Condition 4.2.2 per 40 CFR 60.675(b) simultaneously with a Method 22 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 Condition 3.3.7 per Table 2 of 40 CFR part 60, Subpart OOO as amended on April 28, 2009. Once established, the revised visible emissions success level shall be incorporated into the permit for the affected facility.

As an alternative to the quarterly Method 22 inspections, the Permittee may use a bag leak detection system that is installed, operated, and maintained according to per 40 CFR 60.674(d). [40 CFR 60.674(c) and (d)]

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5.2.8 The Permittee shall monitor the NO<sub>x</sub> concentrations in calciner/kiln exhaust gas before and after each "catalytic baghouse" for each week or portion of week of operation of each calciner/kiln using the following procedures:  
[40 CFR 52.21 – PSD/BACT and 391-3-1-.02(6)(b)1]

- a. Within 60 days of the commence of operation of each calciner/kiln, the Permittee shall begin to conduct measurements of NO<sub>x</sub> and oxygen (O<sub>2</sub>) concentration in the exhaust gas of each calciner/kiln. The initial measurement period shall consist of three (3) test runs each thirty (30) minutes in duration. Subsequent measurement periods shall consist of one (1) test run thirty minutes in duration.
- b. Measurements of the NO<sub>x</sub> and O<sub>2</sub> concentration in calciner/kiln exhaust gas shall be conducted both upstream and downstream of the "catalytic baghouse" serving the calciner/kiln using the procedures of the American Society for Testing and Materials Standard (ASTM) Test Method for Determination of NO<sub>x</sub>, Carbon Monoxide(CO), and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers, ASTM D 6522; or procedures of Gas Research Institute Method GRI-96/0008, EPA/EMC Conditional Test Method (CTM-30) Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Emissions from Natural Gas-Fired Engines, Boilers and Process Heaters Using Portable Analyzers, or Procedures of EPA Reference Methods 7E and 3A.
- c. NO<sub>x</sub> emissions rate (pounds per hour) for all emissions units shall be determined using the following equation;  
where:

$$E_{NO_x} = K \times C_d \times Q_{std}$$

$E_{NO_x}$  = Mass emissions rate of NO<sub>x</sub> (lb/hr) upstream or downstream of the "catalytic baghouse";

$K$  = Conversion factor for NO<sub>x</sub> =  $1.194 \times 10^{-7}$  ([lb/scf]/ppm)

$C_d$  = Concentration of NO<sub>x</sub> (ppm by volume, dry basis) upstream or downstream of the "catalytic baghouse";

$Q_{std}$  = Standard hourly flow rate from kiln exhaust as measured by Method 2, dscfh

(Note: In lieu of a standard hourly flow rate from the kiln exhaust measured by Method 2, data from a continuous flow monitor, installed as per Condition 5.2.9 of this permit, taken concurrently with the NO<sub>x</sub> measurements can be used).

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- d. Following the initial measurement, the Permittee shall conduct same measurements each calendar week or portion of calendar week for each kiln/calciner. Weekly measurements shall continue until three (3) consecutive weekly measurements are each less than 27.2 lbs./hr (75% of the BACT emission limit in Condition 3.3.12). Following three (3) consecutive weekly measurements that are each less than 27.2 lbs./hr, the measurements may be performed at a frequency of one per calendar quarter (quarters ending March 31, June 30, September 30, and December 31).
  - e. Following any quarterly measurement that is greater than 27.2 lbs./hr, the Permittee shall conduct a new measurement within one unit operating day. Following this measurement, subsequent measurements shall be conducted weekly and quarterly measurements may be resumed as prescribed by Condition 5.2.8(d).
  - f. A record of NO<sub>x</sub> monitoring shall be kept in a form suitable for inspection or submittal for a period of five (5) years. The record shall at a minimum contain the cause and corrective action for all excursions and, for each test run, the mass emission rate and concentration of NO<sub>x</sub>, the concentration of oxygen, measured stack gas flow rate.
  - g. A unit operating day shall be defined as any day that the unit is operated for more than 30 minutes between 12:00 midnight and the following midnight.
  - h. Any measured NO<sub>x</sub> emissions exceeding 36.3 lbs./hr shall be reported to the Division in writing with 15 working days of measurement. The report shall include calciner/kiln exhaust flow rate and kiln feed rate during the NO<sub>x</sub> measurement.
- 5.2.9 In lieu of the exhaust flow rate measured by Method 2 for each calciner/kiln as per Condition 5.2.8, the Permittee may install, calibrate, maintain, and operate according to all applicable performance specifications a flow monitor to continuously measure the exhaust gas flow rate from each calciner/kiln.  
[391-3-1-.02(6)(b)1]
- 5.2.10 The Permittee shall install, calibrate, maintain, and operate a system to continuously monitor and record each of the indicated parameters on the following equipment in accordance with the manufacturer's recommendations. Where such performance specification(s) exist, each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.  
[391-3-1-.02(6)(b)1]
- a. The exhaust gas temperature at the inlet of each of the "catalytic baghouse" systems serving calciners/kilns.
  - b. The ammonia injection rate (1-hour block average) to each of the "catalytic baghouse" systems serving calciners/kilns.

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- c. The injection rate (1-hour block average) of powdery sodium bicarbonate to each of the “catalytic baghouse” systems serving calciners/kilns.
- d. The slurry input rate (1-hour block average) to each spray dryer/pelletizer.
- e. The kiln feed input rate (1-hour block average) to each calciner/kiln.
- f. Monthly total output of cooler product for each calciner/kiln
- g. Monthly fuel usage for each spray dryer/pelletizer, calciner/kiln, and 9.8 MM/Btu natural gas fired boiler., and all 500 kW emergency diesel generator combined.
- h. Monthly fuel usage for all the 500 kW emergency generators combined.

**PART 6.0 RECORD KEEPING, COMPLIANCE DEMONSTRATION AND REPORTING REQUIREMENTS**

**6.1 General Record Keeping and Reporting Requirements**

6.1.1 Unless otherwise specified, all records required to be maintained by this Permit shall be recorded in a permanent form suitable for inspection and submission to the Division and to the EPA. The records shall be retained for at least five (5) years following the date of entry.

[391-3-1-.02(6)(b)1(i)]

6.1.2 In addition to any other reporting requirements of this Permit, the Permittee shall report to the Division in writing, within seven (7) days, any deviations from applicable requirements associated with any malfunction or breakdown of process, fuel burning, or emissions control equipment for a period of four hours or more which results in excessive emissions.

The Permittee shall submit a written report that shall contain the probable cause of the deviation(s), duration of the deviation(s), and any corrective actions or preventive measures taken.

[391-3-1-.02(6)(b)1(iv)]

6.1.3 The Permittee shall submit written reports of any failure to meet an applicable emission limitation or standard contained in this permit and/or any failure to comply with or complete a work practice standard or requirement contained in this permit which are not otherwise reported in accordance with Conditions 6.1.4 or 6.1.2. Such failures shall be determined through observation, data from any monitoring protocol, or by any other monitoring which is required by this permit. The reports shall cover each semiannual period ending June 30 and December 31 of each year, shall be postmarked by August 29 and February 28, respectively following each reporting period, and shall contain the probable cause of the failure(s), duration of the failure(s), and any corrective actions or preventive measures taken.

6.1.4 The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each quarterly period ending March 31, June 30, September 30, and December 31 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, April 30, July 30, October 30, and January 30, respectively. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring Sources of Air Pollutants and shall contain the following:

[391-3-1-.02(6)(b), NSPS, MACT, and BACT/NSR]

- a. A summary report of excess emissions, exceedances and excursions, and monitor downtime, in accordance with Section 1.5(c) and (d) of the above referenced document, including any failure to follow required work practice procedures.
- b. Total process operating time during each reporting period.

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- c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of occurrence.
- d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken or preventive measures adopted.
- e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.
- f. Certification by a Responsible Official that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

6.1.5 Where applicable, the Permittee shall keep the following records:  
[391-3-1-.02(6)(b), NSPS, MACT, and BACT/NSR]

- a. The date, place, and time of sampling or measurement;
- b. The date(s) analyses were performed;
- c. The company or entity that performed the analyses;
- d. The analytical techniques or methods used;
- e. The results of such analyses; and
- f. The operating conditions as existing at the time of sampling or measurement.

6.1.6 The Permittee shall maintain files of all required measurements, including continuous monitoring systems, monitoring devices, and performance testing measurements; all continuous monitoring system or monitoring device calibration checks; and adjustments and maintenance performed on these systems or devices. These files shall be kept in a permanent form suitable for inspection and shall be maintained for a period of at least five (5) years following the date of such measurements, reports, maintenance and records.  
[391-3-1-.02(6)(b), NSPS, MACT, and BACT/NSR]

6.1.7 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition 6.1.4, the following excess emissions, exceedances, and excursions shall be reported:  
[391-3-1-.02(6)(b)1, 40 CFR 52.21, 40 CFR Part 60, Subparts Dc, OOO, UUU and IIII, 40 CFR Part 63, Subpart ZZZZ and 40 CFR 63.40 through 63.44/112(g) case-by-case MACT]

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- a. Excess emissions: (means for the purpose of this Condition and Condition 6.1.4, any condition that is detected by monitoring or record keeping which is specifically defined, or stated to be, excess emissions by an applicable requirement)

None.

- b. Exceedances: (means for the purpose of this Condition and Condition 6.1.4, any condition that is detected by monitoring or record keeping that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) do not meet the applicable emission limitation or standard consistent with the averaging period specified for averaging the results of the monitoring)
- i. Each exceedance of the SO<sub>2</sub> emission limit of 11.64 lbs/hr for calciners/kilns in Condition 3.3.12, as determined per Condition 6.2.15.
  - ii. Each exceedance of visible emission limit of 10% opacity (6-minute block average) in Condition 3.3.12 for calciners/kilns and spray dryers/pelletizers, as indicated by COMS required by Condition 5.2.1.
  - iii. Firing any of the boilers, spray dryers/pelletizers and calciners/kilns with fuel(s) other than natural gas and propane.
  - iv. Any monthly average of methanol emissions from any spray dryer/pelletizer that exceed the limit of 0.23 lbs per ton of kiln feed in Condition 3.3.19.
  - v. Any 12-month rolling total of methanol emissions from any spray dryer/pelletizer that exceeds the 24.0 tons limit in Condition 3.3.19.
  - vi. Any instance of firing any of the stationary emergency diesel generators subject to Condition 3.3.16 with diesel fuel that:
    - Contains more than 0.05% sulfur by weight; contains either more than 35% by volume of aromatic content or has a cetane index of less than 40; or
    - Contains more than 0.0015% sulfur by weight; contains either more than 35% by volume of aromatic content **or** has a cetane index of less than 40 on and after October 1, 2010.
  - vii. Any 12-month rolling total of HCl emissions from any calciner/kiln that exceeds the 2.96 tons limit in Condition 3.3.19.
  - viii. Any 12-month rolling total of HF emissions from any calciner/kiln that exceeds the 4.49 tons limit in Condition 3.3.19.

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- ix. Any hourly VOC emission rate from any spray dryer/pelletizer that exceeds the limit of 11.78 lbs./hr in Condition 3.3.12.
- x. Any CO<sub>2</sub>e emissions as determined by Condition 6.2.20 that exceed the corresponding limit in Condition 3.3.12.
- c. Excursions: (means for the purpose of this Condition and Condition 6.1.4, any departure from an indicator range or value established for monitoring consistent with any averaging period specified for averaging the results of the monitoring)
  - i. Any 3-hour rolling average temperature at the inlet of any “catalytic baghouse” that falls below the temperature established during the most recent Division-approved performance test or exceeds 750°F.
  - ii. For the sources specified in Condition 5.2.3, any two consecutive required daily determinations of visible emissions from the same source for which visible emissions are equal to or exceed the opacity action level.
  - iii. Any visible emissions or mechanical failure or malfunction discovered by the walk through described in Condition 5.2.5 that are not eliminated or corrected within 24 hours of first discovering the visible emissions or mechanical failure or malfunction.
  - iv. Each event that the quarterly 30-minute visible emissions inspection required by Condition 5.2.7 was not conducted.
  - v. Each instance that the recorded ammonia injection rate (1-hour block average) deviated more than  $\pm 5\%$  from the “current injection rate ( $W_{\text{NH}_3}$ )” as determined per Condition 6.2.16.
  - vi. Each instance that the recorded sodium bicarbonate injection rate (1-hour block average) dropped more than 5% below the “current injection rate ( $W_{\text{NaHCO}_3}$ )” as determined per Condition 6.2.16.
  - vii. Any instance of operating any of the stationary emergency diesel generators for more than 500 hours during any period of 12 rolling/consecutive months.
  - viii. Any instance of the accumulated maintenance check and readiness testing time for any 500 kW emergency stationary diesel generator exceeding 100 hours during any period of 12 rolling/consecutive months as limited by Condition 3.3.9.
- d. In addition to the excess emissions, exceedances and excursions specified above, the following should also be included with the report required in Condition 6.1.4:
  - i. The results of all NO<sub>x</sub> monitoring conducted per Condition 5.2.8 during the quarterly reporting period.

**6.2 Specific Notification, Record Keeping, Compliance Demonstration & Report Requirements**

- 6.2.1 The Permittee shall comply with the general provisions of 40 CFR, Part 60, “Standards of Performance for New Stationary Sources (NSPS).” In particular, for sources subject to NSPS, the Permittee shall comply with the reporting and record keeping requirements of 40 CFR, Part 60, Subpart A (unless otherwise directed in another applicable Subpart) and furnish the Division written notification as follows:  
[40 CFR 60.7(a)(1) thru (4) & 60.676(g & h)]
- a. A notification of the date construction or reconstruction of NSPS equipment is commenced postmarked no later than 30 days after such date.
  - b. Except for equipment which is subject to 40 CFR, Part 60, Subpart OOO, a notification of the anticipated date of initial startup of NSPS equipment postmarked not more than 60 days nor less than 30 days prior to such date.
  - c. A notification of the actual date of initial startup of NSPS equipment postmarked within 15 days after such date.
  - d. A notification of any physical or operational change to an existing NSPS equipment which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted in the applicable Subpart of 40 CFR, Part 60. This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the equipment before and after the change, and the expected completion date of the change. The Division may request additional relevant information subsequent to this notice.
- 6.2.2 The Permittee shall maintain a record of all actions taken in accordance with Condition 3.3.3 to control fugitive dust from roads, storage piles, or any other source of fugitive dust. Such record shall include, but not being limited to, the following information if applicable:  
[391-3-1-.02(6)(b)1]
- a. Inspection and maintenance activities taken;
  - b. Daily operating log of each of the dust/fugitive control systems;
  - c. The sources (e.g. sections of the roads) that were controlled;
  - d. Ambient conditions (dry, wet, precipitation, temperature, etc.).
- 6.2.3 To demonstrate compliance with the limitations specified in this permit, the Permittee shall maintain the following records on site:  
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]
- a. Daily and monthly calciner/kiln feed input rates for each of the calciners/kilns.

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- b. Monthly usage rate of additive(s)/chemical(s) containing methanol and/or VOC compounds used for each of the process/kiln lines. Such records shall also include MSDS, Product Data Certification Sheet or other manufacturer/supplier certified records indicating the methanol and/or VOC content(s) of the additive(s) or chemical(s) used.
- c. Daily and monthly operating hours of each spray dryer/pelletizer and calciner/kiln.
- d. Monthly fuel usage records for boilers, spray dryers/pelletizers and calciners/kilns.

Unless otherwise specified, all records required above shall be recorded in a permanent form suitable for inspection and submission to the Division and to the EPA. The records shall be retained for at least five (5) years following the date of entry.

- 6.2.4 The Permittee shall utilize the appropriate records in Condition 6.2.3 and mass balance to calculate the methanol emission rates for each spray dryer/pelletizer during each calendar month. For the purpose of this condition, 100% of the methanol contained in the chemicals added to the clay slurry is assumed to be emitted into the atmosphere from the spray dryer/pelletizer. The Permittee shall notify the Division in writing if any monthly average methanol emission rate exceeds 0.23 lbs/ton of kiln feed or any monthly total methanol emissions exceed the notification level of 2.0 tons, i.e. 1/12 of the annual emission limit in Condition 3.3.19. This notification shall be postmarked by the 15<sup>th</sup> day of the following month and shall include an explanation of how the Permittee intends to attain or maintain compliance with the emission limit.  
[391-3-1-.02(6)(b)1, 40 CFR 52.21, and 40 CFR 63.40 through 63.44/112(g) case-by-case MACT]

- 6.2.5 The Permittee shall use the monthly methanol emission data in Condition 6.2.3 to calculate the 12-month rolling total of methanol emissions from each spray dryer/pelletizer. The Permittee shall notify the Division in writing if any 12-month rolling total exceeds the annual methanol emission limit of 24.0 tons in Condition 3.3.19. This notification shall be postmarked by the 15<sup>th</sup> day of the following month and shall include an explanation of how the Permittee intends to attain future compliance with the annual emission limit involved.  
[391-3-1-.02(6)(b)1, 40 CFR 52.21 – PSD/BACT, and 40 CFR 63.40 through 63.44/112(g) case-by-case MACT]

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- 6.2.6 The Permittee shall utilize the appropriate records in Condition 6.2.3 to calculate the 24-hour average of VOC emissions (lbs/hr) from each spray dryer/pelletizer based on mass balance. For the purpose of this condition, it is assumed that 100% of the VOC compounds contained in the additive(s) or chemical(s) added to the clay slurry are assumed to be emitted into the atmosphere from the spray dryer/pelletizer. The emission calculation for each spray dryer/pelletizer shall sum the VOC emissions from the use of all VOC-containing chemicals and from the fuel combustion. All the emission calculations, including any AP-42 and/or Division-approved emission factors used, shall be kept as part of the records required in Condition 6.2.3. The Permittee shall notify the Division in writing if any 24-hour average VOC emission rate exceeds the corresponding limit in Condition 3.3.12. This notification shall be postmarked by the 15<sup>th</sup> day of the following month and shall include an explanation of how the Permittee intends to attain future compliance with the relevant emission limit.  
[391-3-1-.02(6)(b)1, 40 CFR 52.21 – PSD/BACT]
- 6.2.7 The Permittee shall submit written reports of the results of all performance tests conducted to demonstrate compliance with the applicable NSPS Subpart OOO standards in Condition 3.3.7 per 40 CFR 60.672, including reports of opacity observations made using Method 9 or Method 22 to demonstrate compliance with Condition 3.3.7.  
[40 CFR 60.676(f)]
- 6.2.8 For all the new or modified sources subject to NSPS Subpart OOO, the Permittee shall submit to the Division a written notification of the actual date of initial startup of each affected facility, or a single notification of startup for a combination of affected facilities in a production line that begin actual initial startup on the same day. The notification shall be postmarked within 15 days after such date and shall include a description of each affected facility, equipment manufacturer, and serial number of the equipment, if available.  
[40 CFR 60.676(i) and (l)(1)]
- 6.2.9 The Permittee shall maintain monthly operating records of each 500 kW stationary emergency diesel generator, including operating hours and reasons of the operation, e.g., emergency power generation and/or fire distinguishing, readiness testing and/or maintenance check. These records shall be kept available for inspection or submittal for 5 years from the date of record.  
[40 CFR 60.4211(e) & 40 CFR 52.21-PSD/BACT]
- 6.2.10 The Permittee shall use monthly operating time records required by Condition 6.2.9 to calculate the 12 month rolling total of the operating and/or maintenance check and readiness testing time for each diesel generator specified in Condition 6.2.9 for each calendar month. All the calculations shall be kept as part of the records required in Condition 6.2.9. The Permittee shall notify the Division in writing if any of the 12 month rolling total of maintenance check and readiness testing time or operating time exceeds 100 or 500 hours. This notification shall be postmarked by the 15<sup>th</sup> day of the following month and shall include an explanation of how the Permittee intends to attain future compliance with Conditions 3.3.9 and 3.3.17.  
[40 CFR 60.4211(e) & 40 CFR 52.21-PSD/BACT]

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- 6.2.11 The Permittee shall keep records verifying that each shipment of diesel fuel received for firing each 500 kW stationary emergency diesel generator complies with the applicable requirements in Condition 3.3.16. Verification shall consist of the fuel oil receipts and fuel supplier certifications or results of analyses of the fuel oils conducted by methods of sampling and analysis which have been specified or approved by the EPA or the Division. These records shall be kept available for inspection or submittal for 5 years from the date of record.  
[40 CFR 60.4207 and 40 CFR 52.21 – PSD/BACT]
- 6.2.12 The Permittee shall comply with all the applicable requirements of the General Provisions of 40 CFR Part 60 as listed in Table 8 to 40 CFR Part 60, Subpart IIII.  
[40 CFR 60.4218]
- 6.2.13 The Permittee shall furnish the Division written notification of the date of the initial startup of each process/kiln line, including associated boilers and emergency stationary diesel generators within 15 days after such date.  
[391-3-1-.03(2)(c)]
- 6.2.14 The Permittee shall obtain a representative sample daily from each clay slurry tank or each calciner/kiln's feed stream feeding any calciner/kiln and analyze the sample for the sulfur in percent by weight. The Permittee shall also obtain a respective sample daily from each calciner/kiln's output product stream and analyze the sample for the sulfur in percent by weight. The daily samples shall be acquired and analyzed for sulfur content by methods acceptable to the Division. The sulfur content results shall be used to determine SO<sub>2</sub> emissions as required by Condition 6.2.15.  
[391-3-I-.02(6)(b)1 and 40 CFR 52.21 - PSD/BACT]
- 6.2.15 The Permittee shall use the equations below to determine the hourly SO<sub>2</sub> emissions from each calciner/kiln:

$$E_{SO_2,i} = \frac{(2)(M_{KF,i})(C_{S,i} - C_{SP,i})(2000)}{(100)(T_i)}$$

$$W_{SO_2,i} = (E_{SO_2,i})(K_{C,i})$$

where:

$E_{SO_2,i}$  = Daily averaged pre-control SO<sub>2</sub> emission rate from the i<sup>th</sup> calciner/kiln, lbs/hr;

2 = Mass conversion constant from sulfur to sulfur dioxide;

$M_{kf,i}$  = Quantity of the kiln feed processed by the i<sup>th</sup> calciner/kiln during the calendar day, ton/day;

$C_{S,i}$  = Sulfur content of the kaolin slurry or calciner/kiln feed processed by the i<sup>th</sup> calciner/kiln during the calendar day, percent by weight;

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$C_{SP,i}$  = Sulfur content of the calciner/kiln product processed by the  $i^{\text{th}}$  calciner/kiln during the calendar day, percent by weight;

2000 = Conversion constant from ton to pound;

100 = Conversion constant from mass percentage to mass ratio;

$T_i$  = Total operating time of the  $i^{\text{th}}$  calciner/kiln during the calendar day, hour.

$W_{SO_2,i}$  = Daily averaged post-control  $SO_2$  emission rate from the  $i^{\text{th}}$  calciner/kiln, lbs/hr;

$K_{c,i}$  =  $SO_2$  control efficiency of the "catalytic baghouse" for the  $i^{\text{th}}$  calciner/kiln as determined by the most recent Division-approved performance test, weight percent.

The Permittee shall notify the Division in writing if any of daily averaged hourly post-control  $SO_2$  emissions exceeds 11.64 pounds for any calendar day. This notification shall be submitted within 15 working days of the calculation and shall include a plan(s) of how the Permittee intends to attain future compliance with the  $SO_2$  emission limit as specified in Condition 3.3.12.

[40 CFR 52.21-PSD/BACT and 391-3-1-.02(6)(b)1]

- 6.2.16 The Permittee shall determine the current ammonia ( $NH_3$ ) and sodium bicarbonate ( $NaHCO_3$ ) injection rate required to maintain the molar ratio of  $NH_3/NO_x$  and  $NaHCO_3/SO_2$  at the level established during the most recent Division-approved performance test(s) using the equations specified below:

$$W_{NH_3} = (0.567)(X_{NH_3/NO_x})(E_{NO_x})$$

$$W_{NaHCO_3} = (2.625)(X_{NaHCO_3/SO_2})(E_{SO_2,i})$$

Where:

$W_{NH_3}$  = Current ammonia inject rate (lbs./hr) for the calciner/kiln involved;

0.567 = Conversion constant from molar ratio to mass ratio;

$X_{NH_3/NO_x}$  = The molar ratio of  $NH_3/NO_x$  established during the most recent Division-approved performance test;

$E_{NO_x}$  = Current pre-control  $NO_x$  emission rate (lbs./hr) from the calciner/kiln as determined in Condition 5.2.8;

$W_{NaHCO_3}$  = Current sodium bicarbonate inject rate (lbs./hr) for the calciner/kiln involved;

2.625 = Conversion constant from molar ratio to mass ratio;

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$X_{\text{NaHCO}_3/\text{SO}_2}$  = The molar ratio of  $\text{NaHCO}_3/\text{SO}_2$  established during the most recent Division-approved performance test;

$E_{\text{SO}_2, i}$  = Daily average pre-control  $\text{SO}_2$  emission rate (lbs./hr) from the calciner/kiln as determined in Condition 6.2.15.

- 6.2.17 The Permittee shall utilize the monthly calciner/kiln feed input rate records (ton per month) in Condition 6.2.3, the HCl and HF emission factors (pounds of HCl or HF emitted per ton of kiln feed), and control efficiencies established during the most recent Division-approved performance tests to calculate the monthly HCl and HF emission rates for each calciner/kiln during each calendar month. The Permittee shall notify the Division in writing if any monthly HCl or HF emission rate exceeds the notification level of one-twelfth (1/12) of the annual HCl or HF emission limit in Condition 3.3.19. This notification shall be postmarked by the 15<sup>th</sup> day of the following month and shall include an explanation of how the Permittee intends to attain or maintain compliance with the emission limit.  
[391-3-1-.02(6)(b)1 and 40 CFR 63.40 through 63.44/112(g) case-by-case MACT]
- 6.2.18 The Permittee shall use the monthly HCl and HF emission data in Condition 6.2.17 to calculate total HCl and HF emissions from each calciner/kiln during each period of 12 consecutive months. The Permittee shall notify the Division in writing if any 12-month rolling total of the HCl or HF emissions exceed the 2.96 tons or 4.49 ton limit in Condition 3.3.19. This notification shall be postmarked by the 15<sup>th</sup> day of the following month and shall include an explanation of how the Permittee intends to attain future compliance with the annual HCl or HF emission limit.  
[391-3-1-.02(6)(b)1 and 40 CFR 63.40 through 63.44/112(g) case-by-case MACT]
- 6.2.19 When controlling fugitive dust via weekly cleaning, the use of a vacuum street sweeper(s) or a truck washing station(s) as specified in Condition 3.3.3, the Permittee shall keep operation records of the control equipment involved. Description of inspection, maintenance, malfunction and corrections taken shall be included with the records.  
[391-3-1-.02(6)(b)1]
- 6.2.20 The Permittee shall utilize the appropriate records in Condition 5.2.10 to calculate the  $\text{CO}_2\text{e}$  emissions from each spray dryer/pelletizer, calciner/kiln, 9.8 MMBtu/hr natural gas fired boiler, and all 500 kW diesel generators combined during each period of twelve (12) consecutive months. The results of the calculated  $\text{CO}_2\text{e}$  emissions shall be expressed in the same units as the corresponding BACT limits listed in Condition 3.3.12. In the emissions calculation, the Permittee shall use GHG emission factors used in the Application supporting this permit, and keep records of the calculations and all the emission factors. The Permittee shall notify the Division in writing if any of the  $\text{CO}_2\text{e}$  emissions calculated exceed its corresponding limit specified in Condition 3.3.12. This notification shall be postmarked by the 15<sup>th</sup> day of the following month and shall include an explanation of how the Permittee of how the Permittee intends to attain or maintain compliance with the emission limit.  
[391-3-1-.02(6)(b)1 and 40 CFR 52.21 - PSD/BACT]

