Prevention of Significant Air Quality Deterioration Review

Final Determination

February 2013

Facility Name: PyraMax Ceramics, LLC – King's Mill Facility
City: Wrens
County: Jefferson
AIRS Number: 04-13-163-00035
Application Number: 21371
Date Application Received: August 17, 2012

State of Georgia
Department of Natural Resources
Environmental Protection Division
Air Protection Branch

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BACKGROUND

On August 17, 2012, PyraMax Ceramics, LLC-King's Mill Facility (hereafter PyraMax) submitted an application for an air quality permit to construct two additional process lines. The facility is located at County Road 291 in Wrens, Jefferson County. The modifications include the construction of two parallel process/kiln lines. Each consists of material handling, milling, slurry preparation, spray drying/pelletizing, green pellet screening, calcining/sintering, finishing, packaging and shipping operations. Supporting operations at the facility include an emergency generator, R&D and QA/QC labs, fuel and chemical storage tanks. The ceramic proppants will be used in the oil and natural gas industry.

On November 30, 2012, the Division issued a Preliminary Determination stating that the modifications described in Application No. 21371 should be approved. The Preliminary Determination contained a draft Air Quality Permit for the construction and operation of the modified equipment.

The Division requested that PyraMax place a public notice in a newspaper of general circulation in the area of the existing facility notifying the public of the proposed construction and providing the opportunity for written public comment. Such public notice was placed in *The News & Farmer/Jefferson Reporter* (legal organ for Jefferson County) on December 13, 2012. A public hearing was held on January 8, 2013 at the Rabun Community Center in Wrens, Georgia. No comments were received during the hearing. The public comment period expired on January 14, 2013.

Comments were received on January 14, 2013 from the facility. No comments received from the U.S. EPA Region IV, nor the general public.

A copy of the final permit is included in Appendix A.

PyraMax Ceramics, LLC COMMENTS

Comments were received from Mr. Justin Fickas, Managing Consultant of Trinity Consultants on behalf of PyraMax Ceramics, LLC, by email on January 14, 2013.

Comment 1

1. *Condition 1.2.1 of Permit No. 3295-163-0035-P-01-1*

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

- On-site research and development and QA/QC labs;
- Four (4) 30,000 gallon propane storage tanks providing backup fuel for all natural gas fired units;
- One (1) diesel engine powered emergency generator
- One (1) 322 gallon storage tanks for the emergency engines;
- One (1) 15,000 gallon diesel fuel storage tank for facility equipment;
- One (1) 33,000 gallon aqueous ammonia storage tanks for process pH control and control device operation.

The condition above appears to be intended to represent a listing of additional supporting operations as part of Lines 3 and 4. To make sure that there is a total understanding of all planned facility wide supporting operations, site wide supporting operations (including Lines 1-4) will include:

- On-site research and development and QA/QC labs;
- Eight (8) 30,000 gallon propane storage tanks providing backup fuel for all natural gas fired units;
- Two (2) diesel engine powered emergency generators
- Two (2) 322 gallon storage tanks for the emergency engines
- One (1) 180 gallon diesel storage tank for the facility fire pump.
- One (1) 15,000 gallon diesel fuel storage tank for facility equipment
- Three (3) 33,000 gallon aqueous ammonia storage tanks for process pH control and control device operation
- One (1) natural gas fired 5 MMBtu/hr boiler with propane backup

It should also be noted that although Condition 1.1.1 of Permit No. 3295-163-0035-P-01-0 was not amended as part of this permit, that condition listed the facility wide processing capacity of the facility (consistent with Lines 1 and 2) as 635,000 tons per year of clay slurry. That value would now be more appropriately represented as 1,270,000 tons per year of clay slurry if accounting for Lines 1 through 4.

EPD Response

The Division will amend Condition 1.1.1 in Permit No. 3295-163-0035-P-01-0 and Condition 1.2.1 in Permit No. 3295-163-0035-P-01-1. Details of the equipment changes have been removed from Condition 1.2.1. A brief statement about the additional lines proposed will be retained in the condition. The following is amended Condition 1.1.1 reflects the total production of the facility including Lines 1-4.

1.1.1 This greenfield facility is a ceramic proppant manufacturing facility capable of processing 1,270,000 tons per year of clay slurry (mixture of water, grit and additives). The facility will consist of four 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_{10} and $PM_{2.5}$ 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 converses 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_{10} and $PM_{2.5}$. 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_x natural gas burners with a total heat input rate of approximately 75 MMBtu/hr.

Expected emissions from this process include PM, PM_{10} and $PM_{2.5}$, combustion byproducts (CO, NO_x, SO_2, PM, PM_{10} and $PM_{2.5}$, VOC and GHG/CO_2), 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 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_{10} and $PM_{2.5}$ 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_x 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 65 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_x, PM, PM_{10} and $PM_{2.5}$, SO_2 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_2 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_{10} and $PM_{2.5}$ 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_x emissions. Due to the use of clean fuels, particulate matter, SO_2, 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_x to nitrogen (N_2) in the presence of appropriate reducing agents such as ammonia (NH_3), 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_x emission control. To reduce acid gas emissions, predominantly SO_2, HCl and HF, calcium or sodium based powdery alkaline sorbents such as sodium bicarbonate ($NaHCO_3$) 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_2SO_4, NaCl and NaF. These powdery solids are then captured along 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;
- One (1) natural gas-fired 5 MMBtu/hr boilers with propane backup;
- Eight (8) 30,000 gallon propane storage tanks providing backup fuel for all natural gas-fired units;
- Two (2) 350 kW diesel engine powered emergency generators;
- Two (2) 322 gallon storage tanks for the emergency engines;
- One (1) 180 gallon diesel storage tank for the facility fire pump;
- One (1) 15,000 gallon diesel fuel storage tank for facility equipment;
- Three (3) 33,000 aqueous ammonia storage tanks for process pH control and control device operation.

Emission Control
The facility-wide potential emissions of criteria pollutants (CO, NO_x, PM, PM_{10} and $PM_{2.5}$, SO_2 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.

Comment 2

2. *General Typographical Errors in Condition 3.1.1*

General typographical errors within Condition 3.1.1 that should be corrected include the following;

a. Under ID No. PEL4, SC4, the Spray Dryer/Pelletizer should be indicated as being associated with Line 4.

b. It is requested that source ID No. S3a and S4a be referenced as sorbent silo, as opposed to sodium bicarbonate silo.

It should also be noted that the amended emission unit & emissions group listing is representative of facility equipment associated only with Line 3 and Line 4.

EPD Response

The Division agrees and has made the following highlighted changes.

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	**Description**	**Applicable Requirements/ Standards**	**Corresponding Permit Conditions**	**Description**	**ID No.**
PS3,4	Slurry preparation – Line 3 Slurry Preparation – Line 4	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b)	3.3.4, 3.3.5, 3.3.12, 4.2.5, 5.2.4, 6.2.13	Baghouses	PS 3,4
PEL3, SC3 PEL4, SC4	Spray Dryer/Pelletizer – Line 3 (Pelletizer, Screw Conveyor) Spray Dryer/Pelletizer – Line **4** (Pelletizer, Screw Conveyor)	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 391-3-1-.02(2)(n) 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, 3.3.7, 3.3.8, 3.3.12, 3.3.18, 3.3.19, 4.2.1, 4.2.5, 4.2.6, 4.2.9, 5.2.1, 5.2.2, 5.2.4, 5.2.7, 5.2.10, 6.1.7, 6.2.1, 6.2.3, 6.2.4, 6.2.5, 6.2.6, 6.2.8, 6.2.13, 6.2.20	Baghouses	BHP3,4
GPS3,4 RB3,4 KE3, 4 VC3,4 BC3,4 SC5,6 FH3,4 SE3,4	Green Pellet Screen Reversing Belt Conveyor Kiln Feed Elevator Vibratory Conveyor Belt Conveyor Screw Conveyor Feed Hopper Seed Bin Elevator	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	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.12, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.1.7, 6.2.1, 6.2.7, 6.2.8, 6.2.13	Baghouses	BHG3,4
FS30,40	Final Product Screen	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	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.12, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.1.7, 6.2.1, 6.2.7, 6.2.8, 6.2.13	Baghouses	BHF3,4

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	**Description**	**Applicable Requirements/ Standards**	**Corresponding Permit Conditions**	**Description**	**ID No.**
KLN3	Calciner/Kiln Line 3 (Kiln, Kiln Cooler)	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 391-3-1-.02(2)(n) 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, 4.2.2, 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, 6.1.7, 6.2.1, 6.2.3, 6.2.13, 6.2.14, 6.2.15, 6.2.16, 6.2.17, 6.2.18, 6.2.20	Catalytic Baghouse	BHK3
KLN4	Calciner/Kiln – Line 4 (Kiln, Kiln Cooler)	391-3-1-.02(2)(p)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 391-3-1-.02(2)(n) 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, 4.2.2, 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, 6.1.7, 6.2.1, 6.2.3, 6.2.13, 6.2.14, 6.2.15, 6.2.16, 6.2.17, 6.2.18, 6.2.20	Catalytic Baghouse	BHK4
BC3,4 LE3,4 WB3,4 LS3,4	Belt Conveyor Loading Elevator Weigh Bin Loading Spout	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	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.12, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.1.7, 6.2.1, 6.2.7, 6.2.8, 6.2.13	Baghouse	BHL3,4
S3a S4a	Control System –Line 3,4 **Sorbent Silo**	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	3.3.6, 3.3.7, 3.3.12, 4.2.5, 5.2.7, 6.2.1, 6.2.2, 6.1.7, 6.2.7, 6.2.8, 6.2.13	Bin Vent Filter	S3a,S4a
CB	Conveyor Baghouse	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	3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.12, 4.2.5, 5.2.3, 5.2.4, 5.2.7, 6.1.7, 6.2.1, 6.2.7, 6.2.8, 6.2.13	Baghouse	CB
B1	**5.0 MMBtu/Hr Boiler**	**391-3-1-.02(2)(d) 391-3-1-.02(2)(g) 40 CFR 52.21 – PSD/BACT 112(g) case-by-case MACT/40 CFR 63, Subpart B**	**3.3.1, 3.3.2, 3.3.12, 3.3.22, 3.4.2, 5.2.10, 6.2.3 & 6.2.20**	**None**	**None**
EG2	Emergency Generator 2	40 CFR 52.21 – PSD/BACT 40 CFR Part 63, Subpart ZZZZ 40 CFR Part 60, Subpart IIII	3.3.9, 3.3.10, 3.3.11, 3.3.12, 3.3.16, 3.3.17, 3.3.20, 3.3.21, 5.2.6, 5.2.10, 6.1.7, 6.2.9, 6.2.10, 6.2.11, 6.2.12, 6.2.13, 6.2.20	None	None

Comment 3

3. *Permit Condition 6.2.14 and 6.2.15 of Permit No.* 3295-163-0035-P-01-0

These permit conditions were referenced within Permit No. 3295-163-0035-P-01-1, and pertain to specific recordkeeping/monitoring requirements for SO_2 emissions for the facility kilns (KLN1-KLN4). PyraMax would like to request that these permit conditions be modified as indicated below. These changes will remove the burdensome requirement for monitoring of sulfur content of the kiln output streams, and will be consistent with similar permit conditions established as part of Permit No. 3295-165-0012-P-01-0 issued to the Carbo Ceramics, Inc. Millen facility.

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_2 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_2 emissions from each calciner/kiln:

$$E_{SO2,i} = \frac{(2)(M_{KF,i})(C_{S,i})(2000)}{(100)(T_i)}$$

$$W_{SO2,i} = (E_{SO2,i})(1 - K_{C,i})$$

where:

$E_{SO2,i}$ = Daily averaged pre-control SO_2 emission rate from the i^{th} 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^{th} 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^{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^{th} calciner/kiln during the calendar day, hour.

$W_{SO2,\,i}$ = Daily averaged post-control SO_2 emission rate from the i^{th} calciner/kiln, lbs/hr;

$K_{c,i}$ = SO_2 control efficiency of the "catalytic baghouse" for the i^{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 **Error! Reference source not found.**.
[40 CFR 52.21-PSD/BACT and 391-3-1-.02(6)(b)1]

EPD Response

The Division agrees in part. Condition 6.2.15 will remain the same. If the Permittee chooses too, it can report 0% by weight as the value for the daily sulfur output sample as revised in Condition 6.2.14 below. The output sample will remain in the Condition 6.2.15 equation.

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 sample from the output stream can be reported as zero percent by weight if the Permittee chooses.** 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_2 emissions as required by Condition 6.2.15.
[391-3-I-.02(6)(b)1 and 40 CFR 52.21 - PSD/BACT]

Comment 4

4. *Permit Condition 6.1.7(c)(ix) of Permit No.* 3295-163-0035-P-01-0

PyraMax would request that the above listed condition be removed and replaced with the following under Condition 6.1.7;

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 NOx monitoring conducted per Condition 5.2.8 during the quarterly reporting period.

These changes will be consistent with similar permit conditions established as part of Permit No. 3295-165-0012-P-01-0 issued to the Carbo Ceramics, Inc. Millen facility, and will remove the burden of consideration of NOx measurements obtained as part of Condition 5.2.8 being considered excursions as part of reporting required under Condition 6.1.4.

EPD Response

The Division disagrees with the changes requested. The BACT NOx value must have a reporting requirement associated with it. The condition will remain the same.

Comment 5

5. *Permit Condition 5.2.10(f) of Permit No. 3295-163-0035-P-01-0*

   It is requested that the permit requirement for monitoring of the monthly total output of cooler product for each calciner/kiln be removed.

EPD Response

The Division disagrees with the changes requested. The company may request these changes be made during the Title V application process. At that time test data will be available to prove that a change is warranted.

General Public COMMENTS

No comments were received from the General Public.

EPD CHANGES

Additional comments were received on January 29, 2013 by email from Justin Fickas as a representative for PyraMax. Justin noted that the boiler rating had changed. The permit amendment makes references to the original permit No. 3295-163-0035-P-01-0 boiler rating of 9.8 MMBtu/hr. The new boiler rating is 5.0 MMBtu/hr. Below are the changes made to the permit amendment and added in conditions from the original permit No. 3295-163-0035-P-01-0 that note the boiler rating.

The boiler is also mentioned in the equipment list, Condition 3.1.1 and the overall facility description, Condition 1.1.1. Corrections made to these conditions can be found in the previous section under Company Comments. Here are the conditions not previously mentioned.

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[1]	Emission Limit	Compliance Method	Averaging Time
Each calciner/kiln	Filterable PM/PM_{10}	0.010 gr./dscf	Methods 5 (Method 201/ 201A)	3 hours
	PM/PM_{10}& CPM combined	8.53 lbs./hr	Methods 5 & 202 (Method 201/201A and Method 202)	
	$PM_{2.5}$& CPM combined[1]	6.98 lbs./hr	Methods 5 & 202 (Method 201/201A and Method 202)	
Each spray dryer/pelletizer	PM/PM_{10}	0.010 gr./dscf	Methods 5 & 202 (Method 201 or 201A in conjunction with Method 202 if necessary)	3 hours
	$PM_{2.5}$	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	$PM/PM_{10}/PM_{2.5}$	0.005 gr./dscf	Method 5 (Method 201/201A)	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_2	No less than 90% by weight overall control	Method 6 or 6C; Daily Analysis of Clay Sulfur Content	3 hours;
		Not to exceed 11.64 lbs/hr.		Daily average

Operation	Emission[1]	Emission Limit	Compliance Method	Averaging Time
	NO_x	No less than 80% by weight overall control Not to exceed 36.3 lbs/hr.	Method 7 or 7E	3 hours
	CO	33.0 lbs/hr.	Method 10	3 hours
	VOC	0.71 lbs/hr	Method 25 or 25A	3 hours
	CO_2e	436.0 lbs/ton cooler product	Mass balance calculation based on Division-approved emission factors	12-month rolling
Each spray dryer/pelletizer	NO_x	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	Monthly Average
	CO_2e	44,446 tons	Mass balance calculation based on Division-approved emission factors	12-month rolling total
5 MMBtu/hr natural gas fired boiler	**NOx**	**12 ppmv@ 3% O_2 at dry standard conditions**	**Manufacturer's written guarantee**	**N/A**
	CO_2e	**5,809 tons**	**Mass balance calculation based on EPD-approved emission factors**	**12-month rolling total**
Each Emergency Diesel Generator	CO_2e	153 tons	Mass balance calculation based on Division-approved emission factors	12-month rolling total

[1] CPM: condensable particulate matter
[2] The Tier III NO_x, CO, PM and VOC emission standards applicable to the diesel generators have been determined as BACT. Since the 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_{10} 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_{10} in the emission

compliance demonstration, and use Method 5 in conjunction with Method 202 to demonstrate compliance with the PM_{10} emission limits.

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 **5.0 MMBtu/Hr** natural gas fired boiler.

3.4.2 The Permittee shall not cause, let, suffer, permit, or allow any emissions from the **5.0 MMBtu/hr** boiler (Emission Unit ID No. B1) 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]

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 to each of the "catalytic baghouse" systems serving calciners/kilns.

c. The injection rate of powdery sorbent 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, the **5 MMBtu/hr** boiler, and all emergency diesel generators combined.

6.2.20 The Permittee shall utilize the appropriate records in Condition 5.2.10 to calculate the CO_2e emissions from <u>each</u> spray dryer/pelletizer, calciner/kiln, **5 MMBtu/hr** natural gas fired boiler, and <u>all</u> diesel generators combined during each period of twelve (12) consecutive months. The results of the calculated CO_2e 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 CO_2e emissions calculated exceed its corresponding limit specified in Condition 3.3.12. This notification shall be postmarked by the 15th 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 52.21 - PSD/BACT]

APPENDIX A

AIR QUALITY PERMIT
3295-163-0035-P-01-1

WRITTEN COMMENTS
RECEIVED DURING
COMMENT PERIOD