

Prevention of Significant Air Quality Deterioration Review

Final Determination

December 2009

Facility Name: Carbo Ceramics, Inc. – McIntyre

City: McIntyre

County: Wilkinson

AIRS Number: 04-13-319 00027

Application Number: 18304

Date Application Received: June 24, 2008, Revised on February 15, 2009 & August 14, 2009



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

James Capp – Chief, Air Protection Branch

Stationary Source Permitting Program

Planning & Support Program

Eric Cornwell - Program Manager

James Boylan – Modeling Unit Manager

Hamid Yavari - Unit Manager

Pete Courtney - Modeler

Steve Neadow - Engineer

BACKGROUND

On June 24, 2008, Carbo Ceramics, Inc. – McIntyre Plant (hereafter Carbo - McIntyre) submitted an application for an air quality permit to construct and operate a new Raw Material Calciner (CLN2) with associated supporting equipment and a new emergency generator (EDG3). The facility is located at 2295 Witley Road in McIntyre, Wilkinson County. In addition to the new equipment, the application has also proposed Best Available Control Technology (BACT) for the emissions of particulate matter and particulate matter of 10 micrometers or less (PM/PM₁₀), carbon monoxide (CO), nitrogen oxides (NO_x), and sulfur dioxide (SO₂) from the existing kaolin clay process operations. The new Raw Material Calciner (CLN2) with associated supporting equipment and a new emergency generator (EDG3) are subject to the same BACT as applicable to the existing operation.

On October 29, 2009, the Division issued a Preliminary Determination stating that the modifications described in Application No. 18304 should be approved. The Preliminary Determination contained a draft Air Quality Permit for the construction and operation of the equipment.

The Division requested that Carbo - McIntyre 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 *Wilkinson County Post* (legal organ for Wilkinson County) on November 5, 2009. The public comment period expired on December 5, 2009.

During the comment period, comments were received from the facility. There were no comments received from the U.S. EPA Region IV or the general public.

A copy of the final permit is included in Appendix A. A copy of written comments received during the public comment period is provided in Appendix B.

Carbo - McIntyre COMMENTS

Comments were received from Craig Wysong, EHS Manager, by email dated on December 2, 2009. The original comments are reproduced one by one below followed by EPD's responses, and also enclosed as Appendix B.

Comment 1

3.1 Emissions Units

Table 3.1

Various Corresponding Permit Conditions Corrected – See attached red-strike permit.

EPD Response

The Division agrees. Changes made.

Comment 2**Condition 3.3.1 Deleted (Reserved).**

Condition 3.3.1 in existing TV-03-0 should be deleted and reserved. This is the previous NSPS OOO (prior to April 28, 2009 re-promulgation) is no longer relevant and is also superseded by Condition 3.3.9. Some of the conditions in 3.3.1 are no longer valid in the current NSPS OOO rule.

EPD Response

Condition 3.3.1 in Part 70 operating permit 3295-319-0029-V-02-0 currently regulates existing process units along kaolin clay process lines No. 1 and 2 and associated control systems subject to NSPS Subpart OOO that were constructed, modified, or reconstructed after August 31, 1983 but before April 22, 2008. Condition 3.3.9 regulates affected facilities on new process lines No. 3 and 4 which will be constructed after April 22, 2008. Condition 3.3.1 has been revised as requested in the comment in accordance with the Subpart OOO as amended on April 28, 2009, and reproduced below:

“3.3.1 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, for affected facilities/sources subject to Subpart OOO that were constructed, modified, or reconstructed after August 31, 1983 but before April 22, 2008, the Permittee shall comply with the following emissions requirements 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) greater than 15 percent opacity.
- b. stack emissions from capture systems feeding a dry control device which:
 - i. contain particulate matter in excess of 0.05 g/dscm (0.022 grains/dscf) except for individually enclosed storage bins.
 - ii. exhibit greater than 7 percent opacity.

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.
- d. PM emissions from any aforementioned vent shall not:
 - i. contain particulate matter in excess of 0.05 g/dscm (0.022 grains/dscf).
 - ii. exhibit greater than 7 percent opacity.

Note:

- Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this condition
- Any baghouse that controls emissions from only an individually enclosed storage bin is exempt from the stack PM concentration limit (and associated performance testing) in paragraph b.i but shall meet the stack opacity limit in paragraph b.ii.
- The emission limit in paragraph b.ii with associated opacity testing requirements do not apply for affected facilities using wet scrubbers.”

Comment 3

Condition 3.3.9 NSPS Subpart OOO

The particulate matter standards in Conditions 3.3.9a, b., c., and d, are in reference to NSPS Subpart OOO affected facilities that commenced construction, modification, or reconstruction after April 22, 2008. We are requesting that Condition 3.3.9 be modified reflect the applicability date.

EPD Response

Condition 3.3.9 contains emissions limitations applicable to the affected facilities constructed, modified, or reconstructed on or after April 22, 2008. This condition has been revised based on the comment and reproduced below:

- 3.3.9 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, for sources subject to Subpart OOO that were constructed, modified, or reconstructed on or after April 22, 2008, 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.
- 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.
- The emission limit in paragraph b.ii with associated opacity testing requirements do not apply for affected facilities using wet scrubbers).

Comment 4

Conditions 3.3.17 Inclusion of KLN1 and KLN2 for HF Emission Limitation

We are respectfully requesting that the reference to existing kilns KLN1 and KLN2 be removed from this condition due to the margin for compliance with the applicable AAC (as specified in the October 19, 2009 modeling memorandum) and the fact that performance testing for HF from the existing kilns is not required by any other permit condition nor are Kilns 1 and 2 subject to case-by-case MACT applicability. The GA EPD narrative on Condition 3.3.17 the preliminary determination also indicates that the inclusion of the existing kilns in the permit term was an error. We believe that only the new Raw Materials Calciner (CLN2) should be required to have a numerical emission limitation for HF.

EPD Response

The Division agrees. Changes made.

Comment 5

Condition 3.3.17 Numerical Emission Limitation for HF from CLN2

From the August 14, 2009 PSD application update, CLN2 was estimated to have an hourly emission

rate' of 8.28 lb/hr HF, or 36.3 tons per year. At 40 tons per hour kiln feed, this is equivalent to 0.21 pounds HF per ton of kiln feed. We are requesting that the numerical emission limitations for HF be corrected to 0.21 lb/ton of kiln feed and 36.3 tons per year.

EPD Response

The Division agrees. Changes made.

Comment 6

Condition 3.3.18 Inclusion of KLN1 and KLN2 for HCl Emission Limitation

We are respectfully requesting that the reference to existing kilns KLN1 and KLN2 be removed from this condition due to the margin for compliance with the applicable ACC (as specified in the October 19, 2009 modeling memorandum) and the fact that performance testing for HCl from the existing kilns is not required by any other permit condition nor are Kilns 1 and 2 subject to case-by-case -MACT applicability. The GA EPD narrative on Condition 3.3.17 in the preliminary determination also indicates that the inclusion of the existing kilns in the permit term was an error. We believe that only the new Raw Materials Calciner (CLN2) should be required to have a numerical emission limitation for HCl.

EPD Response

The Division agrees. Changes made.

Comment 7

Condition 3.3.18 Numerical Emission Limitation for HCl from CLN2

From the August 14, 2009 PSD application update, CLN2 was estimated to have an hourly emission rate of 1.43 lb/hr HCl. At 40 tons per hour kiln feed, this is equivalent to 0.036 pounds HCl per ton of kiln feed. We are requesting that the numerical emission limitation for HCl be corrected to 0.036 lb/ton of kiln feed.

EPD Response

The Division agrees. Changes made.

Comment 8

Condition 4.2.2 Initial BACT & Case-By-Case MACT Performance Test Requirements

We are respectfully requesting Condition 4.2.2 to also reference the process equipment associated with CLN2 to be tested within 180 days of start-up.

EPD Response

The Division agrees. Changes made.

Comment 9

Conditions 4.2.2c.i. and ii. Initial BACT & Case-By-Case MACT Performance Test Requirements.

Method 9 test duration reduction reflects language similar to that of the previous NSPS Subpart OOO 60.675(c)(3). Conditions 4.2.2c.i. and ii. have been modified to reflect the current NSPS Subpart OOO test methods and procedures. Please refer to 60.675(c)(2).

EPD Response

The Division agrees. Changes made.

Comment 10Condition 4.2.8 CO BACT Performance Test Frequency.

We believe that this permit condition should reference the PSD/BACT limitations specified in Condition 3.3.11 of the draft permit (Equipment Federal Rule Standards), consistent with similar conditions such as 4.2.9 through 4.2.12. We also believe that this condition should specifically reference the emissions unit IDs of each calciner/kiln (KIN1, KLN2, CLN1, and CLN2).

EPD Response

The Division agrees. Changes made.

Comment 11Conditions 4.2.9 and 4.2.11 Reference to Each Calciner/Kiln.

We are respectfully requesting that the emission unit identification numbers for each calciner/kiln be added to this permit condition for clarity. The McIntyre Plant does not have any spray dryers. Condition 4.2.9 should be modified to state dryers.

EPD Response

The Division agrees. Changes made.

Comment 12Conditions 4.2.10 Reference to Spray Dryers.

The McIntyre Plant does not have any spray dryers. This condition should be modified to state "rotary" dryers.

EPD Response

The Division agrees. Changes made.

Comment 13Condition 4.2.11 Reference to Each Calciner/Kiln

We are respectfully requesting that the emission unit identification numbers for each calciner/kiln be added to this permit condition for clarity.

EPD Response

The Division agrees. Changes made.

Comment 14Condition 5.2.1 Requirement for COMS on Rotary Dryers

NSPS UUU specifically exempts kaolin rotary dryers with dry control devices from the requirement to continuously monitor opacity. Please see 40 CFR 60.734(c). Please delete Rotary Dryer Nos. 1 and 2 (DRY1 and DRY2) from revised Condition 5.2.1. EPD has previously agreed with CARBO that these dryers are exempt from opacity monitors.

EPD Response

The Division agrees. Changes made.

Comment 15Condition 5.2.10 Fugitive Dust Control Monitoring

Requesting deletion of the requirement to include a description of inspection, maintenance, malfunction, and corrective actions taken in reference to daily operation records of the control equipment used to remove kaolin dust from roads. This requirement is unduly burdensome to the facility.

EPD Response

Condition 5.2.10 has been revised to require Carbo-McIntyre to keep operation records of the fugitive control equipment per event rather than per day.

Comment 16**Condition 5.2.11c. Determination of Weekly NO_x Emission Rate**

We respectfully request that the determination of standard hourly flow rate, Q_{std} for the purpose of determining NO_x emissions include the option to determine Q_{std} using an exhaust flow monitor calibrated in accordance with Method 2 of Appendix A to 40 CFR Part 60.

EPD Response

Condition 5.2.11c has been revised to allow the use of the exhaust flow monitor as an alternative to Method 2. Condition 5.2.12 has been added to establish the operational requirements for the exhaust flow monitor. Both changes are reproduced below:

- “5.2.11 The Permittee shall monitor emissions of nitrogen oxides from the exhaust gases from each kiln stack for each week or portion of week of operation of each calciner/kiln using the following procedures:

.....

- c. NO_x emissions rate (pounds per hour) for all emissions units shall be determined using the following equation;

where:

$$E = K \times C_d \times Q_{std} \times \left(\frac{20.9}{20.9 - O_2} \right)$$

E = Mass emissions of nitrogen oxides (lb/hr);

K = Conversion factor for NO_x = 1.194×10^{-7} ([lb/scf]/ppm)

C_d = Concentration of NO_x (ppm by volume, dry basis)

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 5.2.10 of this permit, taken concurrently with the NO_x measurements can be used.)

O₂ = Exhaust Gas Oxygen Concentration (percent by volume, dry basis)

.....”

- “5.2.12 In lieu of the exhaust flow rate measured by Method 2 for each kiln as per Condition 5.2.9, the Permittee may install, calibrate, maintain, and operate according to all applicable performance specifications a flow monitor to continuously measure the exhaust from each kiln.”

Comment 17**Condition 5.2.11h. NOx Emissions Notification**

We respectfully request that we be given 30 days, in lieu of only 5 days, to submit reports relating weekly NOx emissions measurements from each existing kiln (KLNI and KLN2) and the new calciner (CLN2).

EPD Response

The condition has been revised to allow 15 days for reporting the exceedance.

Comment 18**Condition 6.1.7b.ii Definition of Exceedance for Opacity from Spray/Dryers for Semi-annual Reporting**

The McIntyre Plant does not have any " spray " dryers, nor do the facility's " rotary" dryers required to have COMs under NSPS Subpart UUU. Please remove the reference to "and spray dryers "from this permit term.

EPD Response

The Division agrees. Changes made.

Comment 19**Condition 6.1.7b.v Definition of Exceedance for EDG Operating Hours**

Please correct this condition to reference Condition 3.2.5 and not 3.2.6.

EPD Response

The Division agrees. Changes made.

Comment 20**Condition 6.1.7d.i Requirement to Submit All NOx Measurements**

Requesting that we be required to submit only a summary of the monitoring notifications required by Condition 5.2.11h for each semi-annual reporting period. This would be more in line with what is required of reporting under Condition 6.1.4.

EPD Response

The monitoring results shall be submitted in accordance with the condition. No change has been made to the Permit as a result of the comment.

Comment 21**Conditions 6.2.5, 6.2.12, 6.2.13, and 6.2.14 Notification Postmark Dates**

Requesting that we be given until the 30th day of the following calendar month to submit the required notifications.

EPD Response

The current notification deadline is a standard reporting requirement. No changes have been made to these conditions as a result of the comment.

Comment 22**Condition 6.2.11 Records of Kiln Feed for Calculation of SO₂ Emissions for Calciners/Kilns**

Record keeping of kiln feed for E_{SO₂} in Condition 6.2.12 should reflect the averaging period (daily average) of M_{kt,i} (tons/day). We respectfully request that "hourly" input rate be changed to "daily".

EPD Response

Requested change has been made to the condition.

Comment 23**Condition 6.2.11 Reference to Slurry Tanks**

Please delete the reference to "each kaolin clay slurry tank or" in this condition. There are no tanks of this type at the McIntyre Plant.

EPD Response

Requested change has been made to the condition.

Comment 24**Condition 6.2.12 Calculation of SO₂ Emissions from Calciners/Kilns**

We respectfully request that the calculation of SO₂ emissions from each calciner/kiln for any calendar day be "as averaged over a 7-day period".

EPD Response

The Division disagrees. The Division believes since daily samples of kaolin are taken everyday prior to operation of the calciner/kilns, there is no need to average emissions of SO₂. Condition 3.2.12 is an hourly emission rate as requested by the Carbo Ceramics as part of their submitted PSD BACT analysis. No changes made.

Comment 25**Conditions 6.2.13 and 6.2.14 Calculation of Monthly and 12-month Rolling Total HF and HCl emissions**

We are requesting that the reference to the existing kilns (KLN1 and KLN2) be removed from these permit conditions. Please refer to our above comments on Condition 3.3.17 and 3.3.18.

EPD Response

The Division agrees. Changes made.

Comment 26**Compliance Scheduling Progress Reports Associated with this Amendment**

We are respectfully requesting that Conditions 7.7.1 and 7.7.2 be declared as "Deleted (Reserved)". The compliance has been satisfied by receiving the PSD permit.

EPD Response.

The Division agrees. Changes made.

Other Additional EPD CHANGES

None.

Special Note:

Carbo Ceramics made several comments with regard to the Preliminary Determination. EPD has reviewed each comment and have listed them below:

1.0 Introduction – Facility Information and Emissions Data**Table 1-1: Title V Major Status.**

Please correct Table 1-1 in the draft PSD PD to reflect major source status for individual and combined HAP

Table 1-3: Emissions Increases from Project.

Please correct emissions of non-HF fluorides in Table 1-3 to be less than 0.1 tons per year (<0.1) and not subject to PSD review.

2.0 Process Description**Last Two Paragraphs of Section 2.0, Pages 2-3: Process Description**

We are respectfully requesting some minor edits to the narrative for clarity in reference to NSPS Subpart IIII and Case-By-Case MACT applicability for EDG3 and CLN2, respectively as detailed in the attached red-strike.

3.0 Review of Applicable Rules and Regulations**First and Last Paragraphs of New Source Performance Standards Section, Page 5: MACT Subparts A and ZZZZ**

We have several corrections regarding the designation of EDG1, EDG2, and EDG3 as new or existing under MACT Subpart ZZZZ. In addition, no initial notification is required for these units under 40 CFR Part 63 Subpart A. Please refer to 63.6590(b)(3) and (c).

First Paragraph of Section 112(g)(2)(B) Section, Page 6: CLN2

We are respectfully requesting minor additions to reference CLN2 in this section.

4.1 Fugitive PM Emissions**1st Paragraph, Page 6: Determining PSD Applicability**

The first paragraph/sentence under Section 4.1 is incorrect. CARBO Ceramics McIntyre is not one of the listed source categories required to calculate quantifiable fugitive emissions as part of determining PSD applicability. Please delete this paragraph/sentence accordingly.

4.2 PM Emissions from Diesel Generators/Engines**Table 4.2-2, Page 10: Proposed PM BACT for EDG3**

The BACT limits for EDG3 should be corrected to 0.15 g/bhp-hr. This is the correct Tier 3 standard specified in 40 CFR 89.112.

4.3 BACT Determination for NOx**Last Bullet Point, Page 13: Proposed NOx BACT for EDG1, EDG2, and EDG3.**

We are respectfully requesting the last bullet point in this section be deleted. This is consistent with the Toomsboro preliminary determination.

5.0 Testing and Monitoring Requirements**5th Paragraph, Page 19: Baghouse Pressure Drop Monitoring.**

Please delete “continuously” from the first sentence of this paragraph. This is not a requirement of the existing TV-03-0 or -1 and is not required under draft TV-03-2.

6.0 Ambient Air Quality Review

We have several edits in the section. We have modified the narrative to be consistent with the October 19, 2009 modeling memorandum. We are respectfully requesting that this section be corrected to reflect the memorandum as detailed in the attached red-strike.

7.0 Additional Impacts Analysis**Soils and Vegetation.**

The date of the modeling memorandum should be corrected to October 19, 2009.

Visibility.

There appears to be an entire section dedicated to VISCREEN when no Class II analysis was required as part of the PSD application. Please delete the paragraphs identified in the attached red-strike.

Georgia Toxic Air Pollutant Modeling Analysis.**2nd Complete Paragraph, Page 29: Reference to Ammonia and Methanol.**

Kaolin processing at the McIntyre Plant does not involve the utilization or discharge to the atmosphere of ammonia or methanol. Please correct the last sentence of this paragraph.

4th Complete Paragraph, Page 29: Kiln Feed Rate.

The kiln feed rate should be corrected to “15” tons kiln feed. CLN2 is 40 tph.

Table 7-1: Air Toxic Assessment – Ambient Acceptable Concentrations.

We are respectfully requesting that it be acknowledged that the annual HF AAC is an alternative standard approved by the division.

8.0 Explanation of Draft Permit Conditions**Section 4.0, Page 32: Condition 4.2.2.**

We are respectfully requesting that the first part of the second sentence be deleted. We believe this may be in reference to Toombsboro. Plus, we believe it is unnecessary.

Section 6.0, Page 35: Conditions 6.2.13 and 6.2.14.

Please correct these explanations to reflect only CLN2. Please refer to our above comments on Conditions 3.3.17, 3.3.18, 6.2.13, and 6.2.14.

NOTICE OF MACT APPROVAL (APPENDIX A)**Pages 5 and 7. Minor Edits**

We noticed a minor spelling error on Page 5 and are requesting clarification with respect to “construction of a major source” on Page 7.

Section 5.2. Potential Control Options Review

We have recommended several edits to the 2nd, 3rd, and 4th paragraphs of this section. This is to clarify which emissions units are subject to a Case-By-Case MACT analysis.

Section 5.3. Technology Feasibility Review – Step 8 Establish the MACT Emission Limitation

Please correct the tons of kiln feed per hour for CLN2 to 40. This will affect the HCl and HF performance based limitations. These should be corrected to 0.036 lbs HCl/ton kiln feed and 0.21 lbs HF/ton kiln feed.

Table 5-7.1: Section 112(g) Case-by-Case MACT Determinations

Please correct the lbs HCl and lbs HF per ton kiln feed limitations to 0.036 and 0.21, respectively. Please refer to our comment above on Section 5.3, Step 8.

1st Paragraph below Table 5-7.1: Reference to Fuel and HAP Containing Materials

Please delete this paragraph. This is in reference to the Toomsboro Plant.

APPENDIX A

AIR QUALITY PERMIT

3295-319-0027-V-03-2

APPENDIX B

WRITTEN COMMENTS RECEIVED DURING COMMENT PERIOD