

**FINAL DETERMINATION**

Florida Rock Industries, Inc.  
Newberry, Alachua County, Florida

Portland Cement Plant  
AC 01-267311  
PSD-FL-228  
Alachua County

Department of Environmental Protection  
Division of Air Resources Management  
Bureau of Air Regulation

## FINAL DETERMINATION

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PSD-FL-228/AC01-267311  
Alachua County

The Florida Rock Industries (FRI) application for a permit to construct a dry process portland cement kiln with a maximum clinker production capacity of 95.8 tons per hour (TPH) and associated equipment consisting of a clinker cooler, preheater/precalciner, crushers, raw mill, finish mill, material and fuel handling equipment, silos, and shipping facilities near Newberry, Alachua County was reviewed by the Bureau of Air Regulation in Tallahassee. The Technical Evaluation and Preliminary Determination for the permit was distributed on September 29, 1995 together with drafts of the Best Available Control Technology (BACT) determination and permit. The Notice of Intent to Issue was published in the Gainesville Sun on October 3, 1995. Copies of the described package were available for inspection at the Department's offices in Gainesville, Jacksonville, and Tallahassee as well as at the Alachua County Environmental Protection Department and the Alachua County Public Library, Newberry Branch.

No adverse comments were submitted by either the U.S. Department of Interior or the U.S. Environmental Protection Agency. Comments were submitted by the Department's Northeast District Solid Waste Section.

A petition for an administrative hearing was filed by the Haile Community Association on October 30, 1995. A Request for Assignment of Hearing Officer was filed by the Department on November 13, 1995.

An Interim Determination (attached) was prepared and distributed to the interested parties on November 17, 1995. It included revisions of the draft permit conditions related to clinker production rate, coal sulfur content limit, tire feed location, nitrogen oxide emission limit, source test methods, continuous monitors, malfunctions, and reporting procedures. It also included changes in the solid waste provisions as requested by the Northeast District office.

The administrative hearing was held on February 26 through March 1, 1996, and March 6 through March 7, 1996, in Gainesville, Florida. Testimony was taken from the public regarding concerns about health effects, air pollution control, water resources, farming, and truck traffic. A Recommended Order (attached) was entered by the Hearing Officer on July 23, 1996.

The Final Order was issued by the Department on December 12, 1996 and is attached to the permit herewith. The Department's Division of Air Resources Management was directed to "issue to FRI the air construction permit number AC01-267311/PSD-FL-228, subject to the conditions set forth in the Department's Intent to Issue dated September 28, 1995, as modified by the subsequent Interim Determination dated November 17, 1995, and by the additional permit conditions proposed in the Recommended Order and described in more detail in Paragraph G (of the Final Order), and subject to other applicable requirements of law."

Per the Final Order, the draft permit, is modified and finalized as follows in accordance with the Interim Determination and Recommended Order.

### A. SPECIFIC CONDITION 3

Delete hourly production rate on an annualized basis. Specify dry feed rate into kiln as basis for estimating clinker production. Dry feed monitoring is already required by the New Source Performance Standard for Cement Kilns.

Per the Interim Determination Condition 3 is modified as follows:

FROM:

3. The kiln clinker production rate shall not exceed 95.8 tons per hour (TPH) and 2300 tons per day (TPD). On an annual basis, the clinker production rate shall not exceed 81.3 TPH, 1,952 TPD, and 712,500 tons per year (TPY). Continuous operation is allowed (8,760 hours per year) as long as the 712,500 TPY limit is not exceeded. [Rule 62-212.200(58), F.A.C.]

TO:

3. The kiln clinker production rate shall not exceed 95.8 tons per hour (TPH) and 2300 tons per day (TPD). On an annual basis, the clinker production rate shall not exceed 712,500 tons per year (TPY). The clinker production rate will be determined as a function of the preheater dry feed rate. The preheater dry feed rate is limited to 149.9 TPH and 1,114,350 TPY. Continuous operation is allowed (8,760 hours per year) as long as the 712,500 TPY clinker limit is not exceeded. [Rule 62-210.200(225), F.A.C.]

### B. SPECIFIC CONDITION 4

Revise sulfur limit for coal. Describe tire feed point near the kiln calciner burner instead of into the kiln calciner. Limit total input of mercury to 200 pounds per year.

Per the Interim Determination and Paragraphs 49, 84, and 142 of the Recommended Order Condition 4 is modified as follows:

FROM:

4. Fuels fired in the pyroprocessing system (kiln and calciner) shall not exceed a total maximum heat input of 364 MMBtu/hr and shall consist only of coal, whole tires, and unused No. 2 fuel oil which may also be fired in the Raw Mill Air Heater. All fuel usage shall be in compliance with the following limits and conditions: [Rule 62-210.200(225), F.A.C.]
  - a. The maximum sulfur content of the coal fired in the pyroprocessing system shall not exceed 0.75% sulfur, by weight. The coal usage rate shall not exceed 14.0 TPH. The coal sulfur content shall be determined using ASTM Method D-2234, D-3173, D-3176, D-3177 or D-4239.
  - b. Whole tires fired may be fed continuously to the kiln calciner burner at a rate not to exceed 109.2 MMBtu/hr (30% of total kiln fuel input) or 4.2 TPH and 36,792 TPY. Before initiating tire firing, the gases exiting the kiln ahead of the calciner burner shall be maintained at a minimum of 1,440 degrees F for at least one hour.

- c. No. 2 fuel oil fired shall not exceed a maximum sulfur content of 0.05% by weight (certified by fuel supplier) and usage shall not exceed 2,486,000 gallons per year for the Raw Mill Air Heater and 125,000 gallons per year for kiln startup.

TO:

4. Fuels fired in the pyroprocessing system (kiln and calciner) shall not exceed a total maximum heat input of 364 MMBtu/hr and shall consist only of coal (usage rate shall not exceed 14.0 TPH), whole tires, and unused No. 2 fuel oil which may also be fired in the Raw Mill Air Heater. All fuel usage shall be in compliance with the following limits and conditions: [Rule 62-210.200(225), F.A.C.]
  - a. The maximum sulfur content of the coal fired in the pyroprocessing system shall not exceed 1.25% sulfur content, by weight. The coal sulfur content shall be determined using ASTM Method D-2234, D-3173, D-3176, D-3177 or D-4239.
  - b. Whole tires may be used as an alternate fuel. Such tires shall be fed into the kiln system at the transition section between the base of the precalciner and the point where gases exit the kiln. The tire feeder mechanism shall have a double airlock, vertical and horizontal guillotine gates, and a ram. The permitted feed rate shall not to exceed 109.2 MMBtu/hr (30% of total kiln fuel input) or 4.2 TPH (approximately 400 tires per hour) and 36,792 TPY. Before initiating tire firing, the gases exiting the kiln ahead of the calciner burner shall be maintained at a minimum of 1,440 degrees F for at least one hour.
  - c. No. 2 fuel oil fired shall not exceed a maximum sulfur content of 0.05% by weight (certified by fuel supplier) and usage shall not exceed 2,486,000 gallons per year for the Raw Mill Air Heater and 125,000 gallons per year for kiln startup.
  - d. The total input of mercury compounds (as Hg) in all materials and fuel kiln system is limited to less than 200 pound per year. FRI will demonstrate compliance with this condition through monthly sampling and analysis of the raw mill feed, coal and tires.

#### C. SPECIFIC CONDITION 5/Table II

Revision of NO<sub>x</sub> limit from 2.5 to 2.8 lb/ton clinker as well as associated hourly and annual emission rates. Interim limit of 3.8 lb NO<sub>x</sub>/ton during the first two years. Requirement to install additional equipment if plant does not comply with NO<sub>x</sub> limit. Clarification that SO<sub>2</sub> limit may be lowered.

Per the Interim Determination and Paragraphs 30 and 40 of the Recommended Order, Condition 5 and Table II are modified as follows:

FROM:

5. Emissions from the facility shall comply with the pollutant limits specified in attached Tables I and II. Following completion of the performance tests required herein, the interim SO<sub>2</sub> emission limit may be revised based on the test results (and alkali/sulfur materials ratios) such that overall control attained for all air pollutants including, SO<sub>2</sub>, NO<sub>x</sub>, VOC, and CO, is optimized. The Department shall issue the final

SO2 emission limits within 120 days following receipt of all test results required by this permit. Any changes will be publicly noticed.

TO:

- Emissions from the facility shall comply with the pollutant limits specified in attached Tables I and II. Following completion of the performance tests required herein, the interim SO2 emission limit may be revised downward based on the test results (and continuous emission monitoring data) such that overall control attained for all air pollutants including, SO2, NOx, VOC, and CO, is optimized. The Department shall issue the final SO2 emission limits within 120 days following receipt of all test results required by this permit. Any changes will be publicly noticed. FRI will install any additional control equipment during the two year optimization period to insure compliance with the NOx limit of 2.8 lb/ton clinker by the end of the period.

FROM:

Pollutant	BACT EMISSION LIMIT		EMISSION RATE		Basis
	lb/ton clinker	lb/ton dry feed	lbs/hr	tons/yr	
NOx	2.50	1.60	245.17	915.53	BACT
SO2	0.28	0.18	28.82	108.55	BACT

TO:

Pollutant	BACT EMISSION LIMIT		EMISSION RATE		Basis
	lb/ton clinker	lb/ton dry feed	lbs/hr	tons/yr	
NOx (kiln)**	2.8	1.8	268.3	1018.0	BACT
SO2 (KILN)+	0.28	0.18	28.82	108.55	BACT

\*\*Note: During first two years after startup, the kiln shall not exceed a NOx limit of 3.8 lb/ton clinker and 2.8 lb/ton clinker thereafter. The Department may revise the limit to less than 2.8 lb/ton clinker (30-day rolling average) based on compliance test and continuous emission monitoring data.

+ Note: The Department may revise the SO2 limit to less than 0.28 lb/ton clinker based on compliance test and continuous emission monitoring data.

#### D. SPECIFIC CONDITION 6

Clarification of test methods to more accurately indicate their specific purposes - NSPS, BACT limits, process control and optimization, etc.

Per the Interim Determination, Condition 6 is modified as follows:

FROM:

6. EPA-reference methods for sampling pollutants shall consist of 3 consecutive test runs, each of one hour duration, shall be performed on the kiln and cooler stacks for each pollutant specified in Tables I and II.

Continuous monitoring equipment shall be installed, operated, and used to determine compliance for NO<sub>x</sub> and SO<sub>2</sub>. Continuous emission monitors shall be installed and certified, before the initial performance test, and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures (1994 version) or other Department approved QA plan; 40 CFR 60 Appendix B, Performance Specification 1, 2, and 3 (1994 version).

Continuous opacity monitors shall be installed, operated, and maintained at both stacks pursuant to 40 CFR 60.63.

Continuous monitors shall be installed for CO and/or O<sub>2</sub> for use in determining plant operating parameters to optimize emissions of CO, NO<sub>x</sub>, and SO<sub>2</sub> and to set a final SO<sub>2</sub> limit.

Performance tests shall begin within 60 days after achieving and maintaining the permitted production rate, but not later than 180 days after initial operation at that rate, using the following EPA reference methods:

- Method 5 Determination of Particulate Matter Emissions from Stationary Sources
- Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources
- Method 10 Determination of Carbon Monoxide Emissions from Stationary Sources
- Method 22 Visual Determination of Fugitive Emissions from Material Sources
- Method 25 Determination of Volatile Organic Compound Emissions from Stationary Sources
- Method 104 Determination of Beryllium Emissions from Stationary Sources (40 CFR 61, Appendix B)

The manual stack tests shall be conducted while firing both primary fuels at permitted capacity (70% coal and 30% tires) and while all continuous monitoring systems are functioning properly, and with all process units operating at their permitted capacity. Permitted capacity is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the units may be tested at less than 90% of the maximum operating rate allowed by the permit. In this case, subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the units are so limited, then operation at higher capacities (with prior notification provided to the Department) is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. [Rule 62-297.340(1)(a), F.A.C.]

TO:

6. EPA-reference methods for sampling pollutants shall consist of 3 consecutive test runs, each of one hour duration, shall be performed on the kiln and cooler stacks for each pollutant specified in Tables I and II.

Continuous monitoring equipment shall be installed, operated, and used to determine compliance with the emission limits for NO<sub>x</sub> and SO<sub>2</sub> from the kiln. Since the emission limits are on a mass basis, a continuous flow monitor will be installed. Continuous emission monitors shall be installed and certified, before the initial performance test, and operated in compliance with 40 CFR 60, Appendix F, Quality

Assurance Procedures (1994 version) or other Department approved QA plan; 40 CFR 60 Appendix B, Performance Specification 1, 2, and 3 (1995 version).

Continuous opacity monitors shall be installed, operated, and maintained at the kiln/raw mill ESP stack and the clinker cooler ESP stack pursuant to 40 CFR 60.63. A continuous monitor for temperature shall be installed, operated, and maintained at the coal mill baghouse exhaust [S-17] pursuant to 40 CFR 60.253.

Continuous monitors shall be installed for CO and/or O2 for use in determining plant operating parameters to optimize emissions of CO, NO<sub>x</sub>, and SO<sub>2</sub> and to set a final SO<sub>2</sub> limit. These monitors (CO and/or O<sub>2</sub>) are process monitors and are not subject to 40 CFR 60, Appendix B.

Performance tests shall begin within 60 days after achieving and maintaining the permitted production rate, but not later than 180 days after initial operation at that rate, using the following EPA reference methods:

- Method 5 Determination of Particulate Matter Emissions from Stationary Sources
- Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources
- Method 10 Determination of Carbon Monoxide Emissions from Stationary Sources
- Method 22 Visual Determination of Fugitive Emissions from Material Sources
- Method 25A Determination of Volatile Organic Compound Emissions from Stationary Sources
- Method 104 Determination of Beryllium Emissions from Stationary Sources (40 CFR 61, Appendix B)

The manual stack tests shall be conducted while firing both primary fuels at permitted capacity (70% coal and 30% tires) and while all continuous monitoring systems are functioning properly, and with all process units operating at their permitted capacity. Permitted capacity is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the units may be tested at less than 90% of the maximum operating rate allowed by the permit. In this case, subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the units are so limited, then operation at higher capacities (with prior notification provided to the Department) is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. [Rule 62-297.310(2)(b), F.A.C.]

At least 30 days prior to conducting the initial performance tests required by this permit, the permittee shall submit to the DEP's Northeast district office, for their review and approval, a protocol outlining the procedures to be followed, test methods and any variations with those required by the reference methods.

The maximum allowable emission rate from the twenty (20) baghouses is limited to 0.01 grains/dscf. Because of the expense and complexity of conducting a stack test on minor sources of particulate matter, and because baghouse control devices are utilized, the Department, pursuant to the authority granted under Rule 62-297.620 (4), F.A.C., hereby allows a visible emission limitation not to exceed an opacity of 5% in lieu of the particulate stack test.

Should the Department have reason to believe the particulate emission standard is not being met, the Department may require that compliance with the particulate emission standard be demonstrated by testing in accordance with Rule 62-297., F.A.C.

## E. BACT DETERMINATION FOR MINOR SOURCES CONTROLLED BY BAGHOUSES

To set an opacity limitation of 5 percent in lieu of stack testing for the twenty baghouses.

Per the Interim Determination, the 5 per cent opacity limitation is included in Table I., Allowable Opacity Limitation which is part of the permit and the final BACT Determination.

## F. SPECIFIC CONDITION 9

To allow the quarterly submittal of records be applied to the excess emission report only in accordance with 40 CFR 60.7.

Per the Interim Determination, Condition 9 is modified as follows:

FROM:

9. All measurements, records, and other data required to be maintained by the permittee shall be reported to the Northeast District office on a quarterly basis with the start of commercial operation in accordance with 40 CFR 60.7. All measurements, records and other data required to be maintained by the permittee shall be retained for at least 5 years following the date on which such measurements, records, or data are recorded. The data shall be available to Department staff as requested. [40 CFR 60.7]

TO:

9. An excess emission report shall be supplied to the Northeast District office on a quarterly basis with the start of commercial operation in accordance with 40 CFR 60.7. All measurements, records and other data required to be maintained by the permittee shall be retained for at least 5 years following the date on which such measurements, records, or data are recorded. The data shall be available to Department staff as requested. [40 CFR 60.7]

## G. SPECIFIC CONDITIONS 10 AND 11:

To change this condition since the coal shipped and received is wet.

Per the Interim determination and paragraphs 73,74,75, 76,77, 78 and 154 of the Recommended Order, these conditions 10 and 11 will be modified as follows:

FROM:

10. Unconfined particulate matter emissions shall be minimized by dust suppressing techniques, such as covering and/or application of water or chemicals to the affected areas. These provisions apply to any source of fugitive emissions, including but not limited to vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or related activities such as loading, unloading, storing and handling. [Rule 62-296.310(3), F.A.C.]
11. Particulate emissions from coal handling facilities shall be minimized by following the procedures listed below: [Rule 62-296.310(3)]



- a. All conveyers and transfer points shall be enclosed to preclude particulate emissions (except those directly associated with coal stacking/reclaiming).
- b. Coal storage piles shall be shaped, compacted and oriented to minimize wind erosion.
- c. Water sprays or chemical wetting agents and stabilizers shall be applied to storage piles, handling equipment, etc., during dry periods and as necessary to all facilities to maintain an opacity of less than 5 percent, except when adding, moving or removing coal from the coal pile, during which the opacity shall be no more than 20 percent.

TO:

10. The provisions of Rule 62-296.320 (4) (c)F.A.C., shall apply to all sources of unconfined particulate emissions, including but not limited to vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or related activities such as loading, unloading, storing and handling.

FRI shall follow the following protocol for the unconfined particulate matter (UPM, Fugitive Emissions):

The material handling activities at the plant covered by this protocol include loading and unloading, storage, and conveying of:

- o Limestone and overburden
- o Iron oxide source (coal ash, iron ore, or other)
- o Gypsum
- o Coal

The following reasonable precautions shall be implemented at the facility:

- o All materials at the plant will be stored under roof on compacted clay or concrete.
- o The plant area will be paved to limit the generation of UPM from truck and equipment traffic.
- o A sweeper truck will be maintained and operated at the plant to limit dust buildup on paved surfaces.
- o All materials are to be received and used with excess surface moisture.
- o Water supply lines, hoses and sprinklers will be located near all material stockpiles.
- o All plant equipment operators will be trained in basic environmental compliance, and will perform visual inspections of materials before handling. If the visual inspections indicate a lack of excess surface moisture, the materials will be wetted with the sprinklers. Such wetting will continue until the materials can be handled without generating UPM.

10A. The permittee shall "immediately collect" any spilled CKD to prevent fugitive emissions.

11. Particulate emissions from coal handling facilities shall be minimized by the procedures listed in specific condition No.10 and below: [Rule 62-296.320(4))(c) F.A.C]

- a. All conveyers and transfer points shall be enclosed to preclude particulate emissions (except those directly associated with coal stacking/reclaiming).

- b. Coal storage piles shall be shaped, compacted and oriented to minimize wind erosion.
- c. Water sprays or chemical wetting agents and stabilizers shall be applied to storage piles, handling equipment, etc., during dry periods and as necessary to all facilities to maintain an opacity of less than 5 percent, except when adding, moving or removing coal from the coal pile, during which the opacity shall be no more than 20 percent.

#### H. SPECIFIC CONDITION 12

Per the Recommended Order, "the presence of tires in the kiln at the time of a malfunction will not affect emissions because the tires will completely burn in five to six seconds." (par. 98, page 27)

Per the Interim Determination Condition 12 will be modified as follows:

#### FROM:

- 12. In the event of any malfunction resulting in failure of emission control equipment or any malfunction of process equipment resulting in kiln emissions exceeding limits set forth in Tables I and II, the operator shall immediately stop the feeding of tires into the kiln and shall not resume the firing of tires until the emission control equipment has been put into proper working order.  
[Rules 62-212.200(58); 62-212.200(107)].

#### TO:

- 12. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions and shall be prohibited. [Rule 62-210.200(176), F.A.C.]

#### I. SPECIFIC CONDITIONS 16, and 20 - SOLID WASTE REVIEW

The Recommended Order states: "FRI intends to recycle 100 percent of its cement kiln dust (CKD). This recycling will not affect the performance of the pollution control device." Also, "FRI has agreed to special permit conditions requiring it to immediately collect any spilled CKD to prevent fugitive emissions."

Per the Interim Determination and the Recommended Order paragraphs 68 and 78 Conditions 16 and 20 will be modified as follows:

#### FROM:

- 16. The permittee shall limit the number of tires on site in order to protect against fires and mosquitoes. The permittee shall develop a program, for review and approval by the Department, which prevents breeding of mosquitoes due to tire handling at the site. The plan will include at least receiving, handling, treatment, storage, and inventory turnover provisions. This program shall be a condition of the operating permit.

20. In the event that baghouse or ESP catches come in contact with the soil, the waste shall be collected and a hazardous waste determination performed for metals in accordance with 40 CFR 262.11 and FAC Rule 62-730.160. If the material is not hazardous, it shall be reused, sold or disposed a permitted lined landfill. If the material is hazardous, it shall be disposed in a permitted hazardous waste disposal facility.

TO:

16. The Permittee shall not place waste tires on the ground. Waste tires shall be received in closed vans and unloaded directly into the tire feeding hopper. Also, in order to control mosquitoes at the site, waste tires shall be sprayed with an insecticide prior to receipt at the facility.
20. In the event that baghouse or ESP catches come in contact with the soil, the waste shall be collected and a hazardous waste determination performed for metals in accordance with 40 CFR 262.11 and FAC Rule 62-730.160. If the hazardous waste determination indicates that the material is hazardous, it shall be disposed of in a permitted hazardous waste disposal facility. If the material is not hazardous, the waste material is a solid waste as defined in FAC Chapter 62-701 and must be disposed of in a permitted, lined landfill. The Permittee shall contact the Solid Waste Section, Northeast District Office, at telephone number (904) 448-4320, prior to disposal of the fugitive baghouse or ESP catches which are to be disposed of as solid waste.

#### J. NEW SPECIFIC CONDITION 26 - PARTICULATE CONTROL EQUIPMENT

Final designs and the manufacturer's guarantee for electrostatic precipitators.

Per Paragraphs 72, 103, and 151 of the Recommended Order, the following condition is added:

26. Particulate control equipment for emissions from the kiln and cooler will consist of electrostatic precipitators (ESPs). FRI shall provide the Department with the final designs and the manufacturer's guarantee for the ESPs before construction begins.

#### K. NEW SPECIFIC CONDITION 27--CONSTRUCTION SCHEDULE

Per Paragraphs 97 and 157 of the Recommended Order, the following condition is added:

27. FRI shall provide to the Department a final construction schedule after selection of the contractor and before commencement of construction.