Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

PERMITTEE

CEMEX Construction Materials Florida, LLC
1200 NW 137th Avenue
Miami, Florida 33182

Authorized Representative:
Mr. Luis Lopez, Plant Manager

Air Permit No. 0250014-062-AC
Miami Cement Plant
Thermal Desorption Mercury Control
Expires: March 31, 2018

PROJECT

This is the final air construction permit which authorizes construction and operation of a Thermal Desorption Gas Reactor (TDGR) system. The TDGR will be added to the pyroprocessing system as an additional method for the control of mercury emissions. The proposed work will be conducted at the existing Miami Cement Plant, which is a Portland cement plant categorized under Standard Industrial Classification No. 3241. The existing facility is located in Miami-Dade County at 1200 NW 137th Avenue in Miami, Florida. The UTM coordinates are Zone 17, 558.04 kilometers (km) East, and 2852.07 km North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C., and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C., for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

David Lyle Read, P.E.

David Lyle Read, P.E.
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For:

Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Construction Permit package was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Luis Lopez, Plant Manager, CEMEX Miami: luisguillermo.lopez@cemex.com
Charles Walz, Environmental Manager, CEMEX Miami: charles.walz@cemex.com
Max Lee, Ph.D., P.E., Koogler and Associates: mlee@kooglerassociates.com
Rick Garcia, Miami-Dade County: garcima@miamidade.gov
Lynn Scearce, DEP OPC, lynn.scearce@dep.state.fl.us

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

Lynn Scearce

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FACILITY DESCRIPTION

CEMEX Construction Materials Florida, LLC, operates the Miami Cement Plant. The Miami Cement Plant consists of a Portland cement manufacturing plant, raw material and cement handling operations, quarry operations, a concrete batch plant, and a coal processing operation. The plant combines raw materials and utilizes a preheater/precalciner kiln with in-line raw mill to produce clinker (nodules of calcium silicate/aluminate, ferrite crystalline compounds). The clinker is milled and combined with gypsum to produce Portland cement.

The plant has a capacity of 162 tons/hour of clinker production, and 1.30 million tons per year of clinker production. In addition to coal processing, the facility also processes alternate fuel materials.

For the In-Line Kiln/Raw Mill and clinker cooler, particulate matter (PM) emissions are controlled by baghouse. The kiln's main stack is equipped with continuous emission monitoring systems (CEMS) to measure total hydrocarbons (THC), nitrogen oxides (NO_X), sulfur dioxide (SO_2), carbon monoxide (CO), and hydrogen chloride (HCl) and a continuous parameter monitoring system (CPMS) to monitor particulate matter emissions. This stack also includes a continuous monitoring system for emissions of mercury.

The facility consists of the following existing emission units (EU):

EU No.	Emissions Unit Description
001	Finish Mill System: Finish Mill No. 1
002	Finish Mill System: Finish Mill No. 2
003	Finish Mill System: Finish Mill No. 3
004	Cement Handling System: (32) Bulk Cement Storage Silos
005	Cement Handling System: Mortar Packhouse
006	Cement Handling System: Cement Packhouse
012	Finish Mill System: Finish Mill No. 4
013	Finish Mill System: Finish Mill No. 5
014	Stone Dryer & Soil Thermal Treatment Facility
015	Cement Handling System: Cement Truck Loading
016	Facility Wide Fugitive Emissions
017	Cement Plant Raw Material Handling (Baghouses)
018	**In-Line Kiln/Raw Mill/Clinker Cooler/TIMS/Alternative Fuel Feeder System**
019	Clinker Handling and Storage System
020	Cement Plant Coal Handling System: Coal Mill System
021	Sweetwater Concrete Block and Concrete Batch Plants
022	Quarry Operations Subject to 40 CFR 60 Subpart OOO: Aggregate Plant Crushers
023	Quarry Operations Subject to 40 CFR 60 Subpart OOO: Other Affected Screening Operations/Belt Conveyors
025	Quarry Operations Not Subject to 40 CFR 60 Subpart OOO
028	Finish Mill System: Finish Mill 6
029	Two (2) Diesel Fuel Limited Use Reciprocating Internal Combustion Engines
030	Quarry Operations: One (1) 800 TPH or Less Portable Crusher with a 600 HP or less Engine

This project affects only EU No. 018, the In-Line Kiln/Raw Mill/Clinker Cooler/TIMS/Alternative Fuel Feeder System.

PROPOSED PROJECT

On December 2, 2016, the applicant submitted a request to install a new mercury control device called a Thermal Desorption Gas Reactor (TDGR) as part of the kiln/raw mill emissions unit (EU No. 018). The current mercury controls for the pyroprocessing system include the judicious selection and sampling of incoming raw materials and fuels, combined with dust shuttling. While dust shuttling is an effective mercury control strategy, it requires storage capacity for the transferred dust. Additionally, for quality control purposes, there are limits on inorganic process additions (such as shuttled baghouse dust) that can be introduced to the final cement product. The MCS TDGR system combines dust removal and wet scrubber methodologies to separate mercury from baghouse dust. After treatment, the baghouse dust can be re-introduced to the process as kiln feed, while mercury is captured in a sorbent slurry. Mercury is captured as insoluble mercury sulfide (HgS, also known as mercuric sulfide or mercury(II) sulfide), which can be safely disposed of or cast into concrete for permanent sequestration.

The following existing emissions unit will be affected by this project:

EU No.	Emissions Unit Description
018	In-Line Kiln/Raw Mill/Clinker Cooler/TIMS/Alternative Fuel Feeder System

FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- The facility does not operate units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.
- The facility does operate units subject to the New Source Performance Standards (NSPS) of Title 40, Part 60, of the Code of Federal Regulations (CFR).
- The facility does operate units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The Permitting Authority for this project is the Office of Permitting and Compliance in the Division of Air Resource Management of the Department of Environmental Protection (Department). The mailing address for the Office of Permitting and Compliance is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's email address is DARM_Permitting@dep.state.fl.us.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Miami-Dade County Department of Regulatory and Economic Resources, Division of Environmental Resources Management, 701 NW 1st Court, Suite 400, Miami, Florida 33136. The Compliance Authority's telephone number is 305-372-6925.

3. Appendices: The following Appendices are attached as a part of this permit:
   a. Appendix A (Citation Formats and Glossary of Common Terms);
   b. Appendix B (General Conditions);
   c. Appendix C (Common Conditions); and
   d. Appendix D (Common Testing Requirements).

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Construction and Expiration. The expiration date shown on the first page of this permit provides time to complete the physical construction activities authorized by this permit, complete any necessary compliance testing, and obtain an operation permit. Notwithstanding this expiration date, all specific emissions limitations and operating requirements established by this permit shall remain in effect until the facility or emissions unit is permanently shut down. For good cause, the permittee may request that that a permit be extended. Pursuant to Rule 62-4.080(3), F.A.C., such a request shall be submitted to the Permitting Authority in writing before the permit expires. [Rules 62-4.070(4), 62-4.080 and& 62-210.300(1), F.A.C.]

8. Source Obligation:
   a. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.
   b. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4)

through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

[Rule 62-212.400(12), F.A.C.]

9. Title V Permit: This permit authorizes specific modifications and/or new construction on the affected emissions units as well as initial operation to determine compliance with conditions of this permit. A Title V operation permit is required for regular operation of the permitted equipment. If the permittee elects to continue use of the Thermal Desorption Gas Reactor system after March 31, 2018, the permittee shall incorporate the system into the next application for revision or renewal of the facility's Title V operation permit. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to each Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

   {Permitting note: If the TDGR system will be operated after the test period authorized by this permit, it will be incorporated into the next application for revision or renewal of the Title V permit for this facility. However, a separate Title V permit revision application addressing only TDGR is not required.}

A. In-Line Kiln/Raw Mill/Clinker Cooler/TIMS/Alternative Fuel Feeder System (EU 018)

This section of the permit addresses the following emissions unit.

EU No.	Emission Unit Description
018	In-Line Kiln/Raw Mill/Clinker Cooler/TIMS/Alternative Fuel Feeder System

Waste heat from the kiln is used to provide heat to the raw mill and kiln preheater, which is used to drive off moisture from the materials used for making clinker. Emission Point 421-BF1 represents the stack of this emissions unit.

Particulate matter emissions are controlled by a baghouse. Other controls include multistage combustion, lime injection, and a dust shuttling system.

This permit authorizes an additional control device for this emissions unit: a Thermal Desorption Gas Reactor (TDGR) system for the control of mercury emissions. The TDGR system combines dust removal and wet scrubber methodologies to separate mercury from baghouse dust. After thermal treatment, the baghouse dust will be re-introduced to the process as kiln feed, while the separated mercury is captured in a sorbent slurry. Mercury is captured as insoluble mercury sulfide (HgS, also known as mercuric sulfide or mercury (II) sulfide), which can be safely disposed of or cast into concrete for permanent sequestration. The TDGR includes a natural gas- or propane-fired thermal desorber with a heat input rate of less than 10 million Btu per hour (MMBtu/hr).

{Permitting note: The TDGR system is subject to neither NSPS Subpart Dc nor NESHAP Subpart DDDDD. It is not subject to NSPS Subpart Dc because the heat input rate is less than 10 MMBtu/hr. It is not subject to NESHAP Subpart DDDDD because it is being used as a method of compliance with NESHAP Subpart LLL.}

EQUIPMENT

1. TDGR System: The permittee is authorized to install and operate a pilot Thermal Desorption Gas Reactor (TDGR) system for the control of mercury emissions. The system consists of a thermal desorber system, baghouse, gas reactor/scrubber system, and other ancillary equipment for material and gas handling. All gases desorbed from dust in the TDGR system shall be directed through the gas reactor/scrubber system for treatment and returned to the process and vented through the main kiln stack. [Application No. 0250014-062-AC; Design]

2. Replacement with Permanent System: If the permittee elects to replace the trial system with a permanent system, a separate air construction permit shall be required. [Rule 62-4.030, F.A.C.]

3. Thermal Desorber: The thermal desorber component of the TDGR system may be fired only with natural gas, liquefied petroleum gas, or propane. The design heat input for the thermal desorber shall not exceed 10 MMBtu/hr. [Application No. 0250014-062-AC; Design]

REPORTING AND NOTIFICATIONS

4. Project Report: By March 31, 2018, the permittee shall submit to the Permitting and Compliance Authorities a project report that includes the following: a summary of the effectiveness of the TDGR system in reducing mercury emissions, and the permittee's associated plans for future use. [Rule 62-4.030, F.A.C.]