

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **05 2007 - 006** Project Number: 2007-02-020

Parent Company: Holcim (US) Inc.

Parent Company Address: 6211 Ann Arbor Road, Dundee, MI 48131

Installation Name: Holcim (US) Inc.

Installation Address: 14378 Highway 79, Clarksville, MO 63336

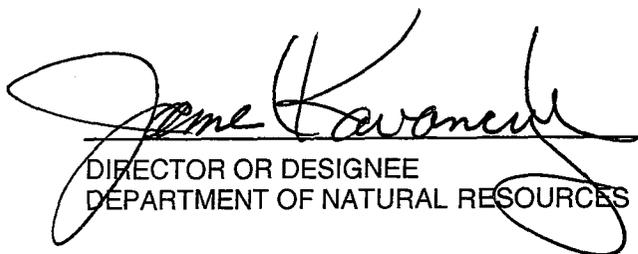
Location Information: Pike County, S13, T53N, R1E

Application for Authority to Construct was made for:
Reconstruction of the Clinker Cooler system by replacing the existing reciprocating grate cooler with an η (eta)-cooler. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

-
- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

MAY 14 2007

EFFECTIVE DATE


DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located with 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: Project Number: 2007-02-020

Parent Company: Holcim (US) Inc.

Parent Company Address: 6211 Ann Arbor Road, Dundee, MI 48131

Installation Name: Holcim (US) Inc.

Installation Address: 14378 Highway 79, Clarksville, MO 63336

Location Information: Pike County, S13, T53N, R1E

Application for Authority to Construct was made for:
Reconstruction of the Clinker Cooler system by replacing the existing reciprocating grate cooler with an η(eta)-cooler. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

-
- Standard Conditions (on reverse) are applicable to this permit.
 - Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

EFFECTIVE DATE

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located with 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

Page No.	3
Permit No.	
Project No.	2007-02-020

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Holcim (US) Inc.
Pike County, S13, T53N, R1E

1. Stack Testing Requirements – Clinker Cooler
 - A. Holcim (US) Inc. shall conduct performance testing to quantify the emission rates of particulate matter less than 10-microns in diameter (PM₁₀) from the new Clinker Cooler (EP21) by applying the Environmental Protection Agency's (EPA) Method 5 test (assuming all PM as PM₁₀). This test shall be done in accordance with the procedures outlined below.
 - B. A completed Proposed Test Plan (form enclosed) must be submitted to the Air Pollution Control Program at least 30 days prior to the proposed test date of any such performance tests so that a pretest meeting may be arranged, if necessary, and to assure that the test date is acceptable for an observer to be present. The Proposed Test Plan must include specification of test methods to be used and be approved by the Director prior to conducting the required emissions testing.
 - C. Within 60 days of achieving the maximum production rate, or within 180 days of start-up, the owner/operator shall have conducted the required performance tests.
 - D. Any required performance testing shall be conducted during periods of representative conditions and should also be conducted at the maximum process/production rates or within ten percent (10%) of this stated capacity, not to include periods of start-up, shutdown, or malfunction. However, if performance testing is conducted at a production rate which is less than 90% of the maximum stated capacity of the equipment, then ten percent (10%) above the production rate at which the performance test was conducted shall become the new maximum allowable hourly production rate for the unit. Should the clinker cooler operating rate averaged over a 30 day period exceed the rate established during the performance test by greater than 10%, the Air Pollution Control Program will be notified. If the Air Pollution Control Program determines a new performance test is required, the special conditions as outlined under Stack Testing Requirements will be followed.

Page No.	4
Permit No.	
Project No.	2007-02-020

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- E. Two (2) copies of a written report of the performance test results must be submitted to the Director within 90 days of completion of the performance testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required EPA Method 5 for at least one (1) sample run for air pollutant tested.
 - F. No later than thirty (30) days after the performance test results are submitted, Holcim (US) Inc. shall provide the Director with a report that provides the actual emissions of PM₁₀ tested in Special Conditions No. 1.A. This report shall report the actual emission rates in pounds per hour, as well as any revisions to the projected actual emission increase calculations in tons per year provided in the construction permit application, and the pounds of PM₁₀ per ton of clinker produced from the modified system, in order that the Air Pollution Control Program may verify the project emission increase calculations from this project.
 - G. If the results of the performance test evaluation from Special Condition No. 1.F. indicate that the projected actual emission increase of PM₁₀ from the project is greater than the PSD significance level (15 tons per year), Holcim (US) Inc. shall evaluate the impact of the higher emission rates on the permit applicability of this project. Holcim (US) Inc. shall submit the results of any such evaluation within 30 days for Air Pollution Control Program review and approval.
 - H. The above time frames associated with this performance testing condition may be extended upon request of Holcim (US) Inc. and approval by the Director.
2. **Record Retention Requirements**
Holcim (US) Inc. shall maintain all records required as outlined in 40 CFR 52.21 supporting the findings of the actual-to-projected-actual applicability test used in this project. Post-change emissions must be tracked for the five-year period.
 3. **Baghouse Conditions**
Holcim (US) Inc. shall control emissions from the Clinker Cooler (EP21) using a baghouse as specified in the permit application. Holcim (US) Inc. shall utilize a Continuous Opacity Monitor (COM) to ensure proper operation of the baghouse per the requirements in the Maximum Achievable Control Technology standard, 40 CFR Part 63, Subpart LLL, *National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry*.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2007-02-020
Installation ID Number: 163-0001
Permit Number:

Holcim (US) Inc.
14378 Highway 79
Clarksville, MO 63336

Complete: February 9, 2007
Reviewed: March 23, 2007

Parent Company:
Holcim (US) Inc.
6211 Ann Arbor Road
Dundee, MI 48131

Pike County, S13, T53N, R1E

REVIEW SUMMARY

- Holcim (US) Inc. has applied for authority to reconstruct the Clinker Cooler system by replacing the existing reciprocating grate cooler with an η(eta)-cooler at the Clarksville, Missouri facility.
- Hazardous Air Pollutant (HAP) emissions are not expected from the proposed equipment.
- As the new equipment will be subject to the Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart LLL, *National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry*, the equipment will not be subject to Subpart F, *Standards of Performance for Portland Cement Plants*, of the New Source Performance Standards (NSPS).
- An existing baghouse (fabric filter - high temperature) is being used to control the particulate matter emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀ from the project are above the de minimis level. However, emissions of PM₁₀ are below de minimis levels based on the actual-to-projected actual test per 40 CFR 52.21.
- This installation is located in Pike County, an attainment area for all criteria air pollutants.
- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2], Number 3, *Portland Cement Plants*.
- Ambient air quality modeling was not performed for PM₁₀ since the actual-to-

projected actual emissions of the application are below de minimis levels.

- Emissions testing is required for the equipment/source.
- A revision to Part 70 Operating Permit is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Holcim (US) Inc. operates a Portland cement manufacturing plant in Clarksville, Missouri. The installation quarries both limestone and shale for use as raw material in the production of Portland cement. The quarried stone is processed through crushers and screens until acceptable dimensions are achieved. The crushed stone is then conveyed to the rotary kiln, along with mineral additives, for the formation of cement clinker. The installation is an existing major source of all criteria air pollutants. Holcim has received a Part 70 Operating Permit (Permit Number OP2004-002). The following construction permits have been issued to Holcim from the Air Pollution Control Program.

Table 1: Previously Issued Construction Permits

Permit Number	Description
0478-001	Installation of a silo dust collector
0586-010	Installation of a waste fuel storage tank
0687-008	Modification of fuel firing system for cement kiln
0693-014	Installation of equipment to burn chipped and whole tire derived fuel
0699-009	Temporary permit to burn tire derived fuel in existing equipment
0699-018	Installation of a stacker belt and storage pile for gypsum
0699-010	Temporary permit for the evaluation of oxygen enrichment in the existing kiln
0699-010A	Extension of temporary permit 0699-010
012000-007	Temporary permit for the evaluation of steel furnace slag as raw material feed in the existing kiln
032000-018	Temporary permit for the evaluation of oil filter fluff as supplemental fuel in the existing kiln
012001-011	Utilization of shredded wood and oil filter fluff in existing shredded tire fuel system
112001-011	Utilization of shredded rubber and plastics as supplemental fuel in the existing kiln
012002-002	Temporary permit for the evaluation of soybeans as supplemental fuel in the existing kiln
112001-011A	Correction to Permit No. 112001-011
032004-001	Temporary permit for use of soil containing petroleum-related constituents as supplemental fuel in the existing kiln
022005-013	Construction of a new grizzly feeder, primary and secondary crushers and associated conveying equipment.
022006-001	Installation of a new silo, weigh feeder and belt conveyor to allow granulated blast furnace slag processing at a rate of 35 tons per hour.
022006-001A	Correction to Permit Number 022006-001 regarding NSPS requirement.
022005-013A	Amendment to Permit Number 022005-013 to revise the additive throughput.

PROJECT DESCRIPTION

Holcim is planning to reconstruct the Clinker Cooler system by replacing the existing reciprocating grate cooler with an η-cooler by Claudius Peters. The reconstructed clinker cooler will have largely the same footprint as the existing clinker cooler and will utilize some of the existing components, including the existing baghouse and stack.

The η-cooler features an effective walking floor design that improves the clinker cooler operation in terms of energy efficiency, waste vent air reduction, and clinker dust generation. The existing cooler, installed in 1967, is considerably over-sized for the kiln it serves. The kiln has a theoretical capacity of 4,000 metric tons per day of clinker. The installation of the new clinker cooler would not change the design capacity of the kiln. The design features of the existing and the new clinker cooler are as follows:

Table 2: Design Specifications

	Existing Clinker Cooler	New Clinker Cooler
Total Grade Area	136 m ²	110 m ²
Installed Air	2.6 Nm ³ /kg of clinker produced	2.0 Nm ³ /kg of clinker produced
Grate Loading	40 metric tons per m ² of grate area	40 metric tons per m ² of grate area
Production Capacity	5,400 metric tons pd (Grate area x Grate Loading)	4,400 metric tons pd (Grate area x Grate Loading)
Waste Vent Area	1.20 Nm ³ /kg of clinker produced	0.186 Nm ³ /kg of clinker produced
Clinker Crushing	Single axis inline hammer mill crusher	Four roll inline crusher

SIGNIFICANT EMISSIONS INCREASE DETERMINATION

The only criteria air pollutant emitted from the clinker cooler (EP21) is PM₁₀. Potential emissions of PM₁₀ from the project are above the de minimis level, which is also the major source threshold for major sources. Since this project is a replacement of an existing unit with an equivalent unit, the emissions increase of PM₁₀ is determined by calculating the difference between the projected actual emissions and the baseline actual emissions. The baseline actual emissions can be determined by using any consecutive 24-month period in the past 10 years. Holcim has requested to use May 1998 to April 2000. Holcim proposed to use an emission factor of 0.112 pounds per ton of clinker for their baseline emissions. This emission factor is based on a stack test performed on May 14, 2001. However, this stack test has not been approved by the Air Pollution Control Program. The New Source Review Unit has chosen to use the emission factor of 0.055 pound per ton of clinker, which is based on the stack test performed on August 1, 2002 and approved by the Air Pollution Control Program. The projected actual emissions are the projected maximum annual emissions for the 5 year-period after the change.

Table 3: PM₁₀ Actual-to-Potential Evaluation

Baseline Actual Production	1,215,709 tons of clinker
Emission Factor for baseline emissions*	0.055 lb/ton clinker
Baseline Actual Emissions	33.43 tons
Projected Actual Production**	1,200,650 tons of clinker
Emission Factor for projected actual emissions*	0.055 lb/ton clinker
Projected actual emissions	33.02
Projected Actual – Baseline Actual Emissions	(0.41)

*Emission factors for baseline emissions and projected actual emission are evaluated from stack test performed on August 1, 2002 using EPA's Method 5 test and assuming all PM as PM₁₀. As outlined in Special Condition 1, Holcim is required to perform a Method 5 test on the new Clinker Cooler to determine the emission factor of PM₁₀ (assuming all PM as PM₁₀).

**The production rate during the baseline was 1,215,709 metric tons, which is greater than the projected production of 1,200,650 metric tons. Therefore, no demand growth exclusion applies.

This project is not considered to be a major modification, according to the actual-to-projected actual-test per 40 CFR 52.21.

EMISSIONS EVALUATION

PM₁₀ is the emission of concern from this project. The emission factors used in this analysis were developed based on the emission testing performed on August 1, 2002 and approved by the Air Pollution Control Program. However, Holcim will determine the emission factor for the new equipment through stack testing as outlined in Special Condition 1. Existing actual emissions are taken from Holcim's 2005 Emissions Inventory Questionnaire submittal. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). The following table provides an emissions summary for this project.

Table 4: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions (2005 EIQ)	Potential Emissions of the Application	Project Increase: Proposed – Baseline Actual
PM ₁₀	15.0	Major	229.16	44.08	(0.41)
SOx	40.0	Major	13,408.5	N/A	N/A
NOx	40.0	Major	8,108.17	N/A	N/A
VOC	40.0	Major	1,645.57	N/A	N/A
CO	100.0	Major	2,434.2	N/A	N/A
HAPs	10.0/25.0	Major	408.76	N/A	N/A

N/A = Not Applicable; N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀ from the project are above the de minimis level. However, emissions of PM₁₀ are below de minimis levels based on the actual-to-projected actual test per 40 CFR 52.21.

APPLICABLE REQUIREMENTS

Holcim (US), Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *Control of NO_x Emissions From Portland Cement Kilns*, 10 CSR 10-6.380
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Portland Cement Plants*, 40 CFR Part 60, Subpart F
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry*, 40 CFR Part 63, Subpart LLL

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Fuad Wadud
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated February 8, 2007, received February 9, 2007, designating Holcim (US) Inc. as the owner and operator of the installation.
- Stack Test reports submitted in the application.
- Northeast Regional Office Site Survey, dated March 5, 2007.

Mr. Alan Greer
Plant Manager
Holcim (US) Inc.
14378 Highway 79
Clarksville, MO 63336

RE: New Source Review Permit - Project Number: 2007-02-020

Dear Mr. Greer:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Fuad Wadud at (573) 751-4817, or you may write to me at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH: fwl

Enclosures

c: Northeast Regional Office
PAMS File: 2007-02-020
Permit Number: