



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: **08 2007 - 019** Project Number: 2007-02-082

Parent Company: Holcim (US) Inc.

Parent Company Address: 201 Jones Road, Waltham, MA 02451

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:
Installation of a mid kiln firing system to the existing cement kiln. 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.

AUG 27 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.

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Project No.	2007-02-082

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

A. Holcim (US) Inc. shall conduct performance testing on the Kiln Main Stack after the modification to quantify the emission rates of the following criteria pollutants.

- 1) Particulate Matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers (PM₁₀) by applying the Environmental Protection Agency's (EPA) Method 5 Filterable PM test and
- 2) Volatile Organic Compounds (VOC) using EPA reference Method 25A.

These tests shall be done in accordance with the procedures outlined below. In lieu of the performance testing for Sulfur oxides (SO_x), Nitrogen oxides (NO_x), and Carbon monoxide (CO), Holcim shall monitor the emissions using Continuous Emissions Monitoring Systems (CEMS).

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 of the mid kiln firing system, 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

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SPECIAL CONDITIONS:

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

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 kiln 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 (APCP) 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.

- 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 for at least one (1) sample run for each 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 establishes the emission rate of each air pollutant 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 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 testing and CEMS show that the emission rates for PM₁₀, SO_x, NO_x, VOC, or CO are greater than the sum of the baseline actual emissions plus emissions from demand growth and plus PSD Significance level emissions as represented in the construction permit application, then Holcim (US) Inc. shall evaluate what effects these higher emission rates would have had on the permit applicability of this project. Holcim (US) Inc. shall submit the results of any such evaluation within 30 days of submitting the Performance Test Results report required in Special Conditions 1.E. of this permit.
 - 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

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SPECIAL CONDITIONS:

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

supporting the findings of the actual-to-projected-actual applicability tests used in Holcim's analysis. Holcim (US) Inc. shall maintain records of the baseline, projection, and annual emissions information for 5 years after the modification in this project.

3. Haul Road Requirements – Paving or Documented Watering/Surfactant Spraying
 - A. The installation shall control dust from the haul road #6 by using paved haul road. The installation shall periodically water and/or wash the paved portions of the above affected areas to prevent visible fugitive emissions from entering the ambient air beyond the property boundary.
 - B. In lieu of paving, Holcim (US) Inc. shall control dust from the unpaved haul road #6 (EP95) using water or surfactant spray consistently and correctly at all times to prevent visible fugitive emissions from entering the ambient air beyond the property boundary. The following conditions apply to haul road watering:
 - i) The water application rate shall be 4.6 gallons per 1000 square feet at least once every twelve (12) hours or surfactant spray will be applied per the manufacturer's specification.
 - ii) A quarter inch or more rainfall during the preceding 24 hours shall substitute for one (1) daily water application
 - iii) Water/surfactant application shall not be required when the ground is frozen or when there will be no traffic on the roads.
 - C. Holcim (US) Inc. shall keep the following records on file and available for inspection:
 - i) A daily log initialed by the responsible facility operator of roads watered and quantity of water/chemical application used, or notation that there was a quarter inch or greater rainfall within the past 24 hours or that the facility was not in operation.
 - ii) Water tank size, total area of roads to be watered, and the resultant number of fills necessary to accomplish the required application rate.
 - iii) Records of watering equipment breakdowns and repairs.

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

Project Number: 2007-02-082
Installation ID Number: 163-0001
Permit Number:

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

Complete: February 28, 2007
Revision: July 9, 2007

Parent Company:
Holcim (US) Inc.
201 Jones Road
Waltham, MA 02451

Pike County, S13, T53N, R1E

REVIEW SUMMARY

- Holcim (US) Inc. has applied for authority to install a mid kiln firing system to the existing cement kiln.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart EEE, *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors*, applies to the proposed equipment.
- Subpart F, *Standards of Performance for Portland Cement Plants*, of the New Source Performance Standards (NSPS) does not apply to the equipment since the MACT standard, 40 CFR Part 63, Subpart EEE, applies to this equipment and is more stringent.
- An existing high efficiency electrostatic precipitator is being used to control the particulate matter emissions from the Kiln Main Stack (EP14).
- 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, SO_x, NO_x, VOC, and CO from the project are above the de minimis level. However, emissions of these pollutants are at de minimis levels based on the actual-to-projected actual test per 40 CFR 52.21. Potential emissions of HAPs from the Kiln are above major levels. However, the MACT standard, 40 CFR Part 63, Subpart EEE, applies to this equipment.
- 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, SO_x, NO_x, VOC, and CO since the actual-to-projected actual emissions of the application are at de minimis levels.
- Emissions testing is required for the equipment/source as outlined in Special Condition 1.
- 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.
052007-006	Reconstruction of the Clinker Cooler system by replacing the existing reciprocating grate cooler with an η (eta)-cooler.

PROJECT DESCRIPTION

Holcim is proposing to install a mid kiln firing system that will enable the utilization of various fuels near the mid point of the long wet kiln via a feed tube equipped with an interlock. Holcim intends to feed at the mid kiln location tire derived fuel (TDF) and other non-hazardous waste fuels including but not limited to oil filter fluff, plastics, spent activated carbon and carbon black, asphalt shingles, diaper manufacturing waste, and other combustible solids. In addition, Holcim may also feed traditional solid fossil fuels, which are currently fed through the burner pipe at the hot end of the kiln. The introduction of a portion of the required kiln energy input at the mid kiln location improves clinker process energy efficiency, allows for greater operational flexibility with respect to fuel types. The mid kiln firing system is currently listed as a NO_x control technology in 10 CSR 10-6.380 *Control of NO_x Emissions From Portland Cement Kilns*.

SIGNIFICANT EMISSIONS INCREASE DETERMINATION

Potential emissions of PM₁₀, SO_x, NO_x, VOC, and CO from the project are above de minimis levels, which are also the significance levels for a major source. Since this project is a modification of existing emissions units, the emissions increase of PM₁₀, SO_x, NO_x, VOC, and CO are 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. The projected actual emissions are the projected maximum annual emissions for the 5 year-period after the change excluding any emissions increase due to product demand growth. Table 2 provides the summary of the evaluation performed for this project. Please refer to attached calculations for details.

Table 2: Baseline Actual-to-Projected Actual Evaluation

Pollutant(s)	Baseline Date	Baseline Production (metric tons/year)	Baseline Emissions (tons/year)	Projected Production (metric tons/year)	Projected Actual Emissions (tons/year)	Demand Growth Production (metric tons/year)	Demand Growth Emissions (tons/year)	Emission Increase (tons/year)
PM ₁₀	6/2002-5/2004	1,176,492	150.55	1,200,650	144.078	24,158	3.14	(6.77)
SO _x	8/2002-7/2004	1,171,611	11,173.1	1,200,650	9,905.4	29,039	275.87	(1,543.61)
NO _x	5/1998-4/2000	1,215,704	6382.47	1,200,650	6,303.41	0	0	(79.06)
VOC	5/1998-4/2000	1,215,708	1,884.35	1,200,650	1861	0	0	(23.34)
CO	1/2003-12/2004	1,126,631	2,828.71	1,200,650	2,461.33	74,019	185.05	(552.42)

Since the emission increases are below the significance levels, this project is not considered to be a major modification, according to the actual-to-projected actual-test per 40 CFR 52.21.

EMISSIONS/CONTROLS EVALUATION

Holcim has utilized the Relative Accuracy Test Audit (RATA) certified continuous emissions monitoring systems (CEMS) to monitor the emission rates of SO_x, NO_x, and CO from January 2004 to the present. The emission factors for SO_x, NO_x, and CO used in this analysis are developed based on the CEMS data.

PM₁₀ emission factors for the kiln system are based on approved compliance testing performed during December 1997, June 2001, and February 2004 using EPA Reference Method 5 Filterable PM method. VOC emission factor is also derived from the compliance testing performed on December 1997 using EPA Reference Method 25A method. However, Holcim will determine the emission factors of PM₁₀ and VOC from the Main Kiln through stack testing as outlined in Special Condition 1.

Existing actual emissions and the emission factor used to calculate the potential emissions of HAPs are obtained from Holcim's 2006 Emissions Inventory Questionnaire submittal. Potential emissions of the application represent the potential of the modified equipment, assuming continuous operation (8760 hours per year). The following table provides an emissions summary for this project.

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2006 EIQ)	Potential Emissions of the Application	Project Increase: Projected Actual – Baseline Actual
PM ₁₀	15.0	Major	239.34	196.26	(9.61)
SO _x	40.0	Major	6992.45	13,297.68	(1,543.61)
NO _x	40.0	Major	4481.36	8,462.16	(79.06)
VOC	40.0	Major	1293.43	2,498.35	(23.34)
CO	100.0	Major	1760.52	3,304.27	(552.42)
HAPs**	10.0/25.0	Major	321.05	564.14	N/A

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

** The MACT standard, 40 CFR Part 63, Subpart EEE, applies to this installation.

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, SO_x, NO_x, VOC, and CO from the project are above the de minimis level. However, emissions of these pollutants are at de minimis levels based on the actual-to-projected actual test per 40 CFR 52.21. Potential emissions of HAPs from the Kiln are above major levels. However, the MACT standard, 40 CFR Part 63, Subpart EEE, applies to this equipment.

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*
- *Restriction of Emission of Sulfur Compounds, 10 CSR 10-6.260*
- *Maximum Achievable Control Technology (MACT) Regulations, 10 CSR 10-6.075, National Emission Standards for Hazardous Air Pollutants From Hazardous Waste Combustors, 40 CFR Part 63, Subpart EEE*

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 27, 2007, received February 28, 2007, designating Holcim (US) Inc. as the owner and operator of the installation.
- CEMS data provided with the application.
- Northeast Regional Office Site Survey, dated March 15, 2007.

Mr. Alan Greer
Plant Manager
Holcim (US) Inc.
P.O. Box 67
Clarksville, MO 63336

RE: New Source Review Permit - Project Number: 2007-02-082

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 the department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or telephone (573) 751-4817. 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 2007-02-082
Permit Number: