

217/782-2113

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT -- RENEWAL

PERMITTEE

Alsey Refractories  
Attn: Jim Jensen  
Highway 106  
Alsey, Illinois 62610

Application No.: 72111267

I.D. No.: 171005AAA

Applicant's Designation:

Date Received: January 31, 2008

Subject: Refractory Plant

Date Issued:

Expiration Date:

Location: Highway 106, Alsey, Scott County 62610

This permit is hereby granted to the above-designated Permittee to OPERATE emission unit(s) and/or air pollution control equipment consisting of:

Mortar and Castable Manufacturing Line Comprised of:

A Pneumatic Conveyor;  
Five (5) Storage Bins, Weight Hopper, Mixer and Product Bagger, all  
Controlled by Baghouse; and  
Eight (8) Conveyors

Refractory Product Manufacturing Line Comprised of:

A Clay Grinder;  
Returns Crusher;  
Distillate Fuel Oil-Fired Rotary Dryer, Six (6) Storage Bins, Dry Pan  
Crusher and Two (2) Screens, all Controlled by Baghouse;  
Two (2) Natural Gas-Fired Brick Curing Dryers;  
Natural Gas-Fired Tunnel Kiln; and  
Twenty-Two (22) Conveyors

pursuant to the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. This federally enforceable state operating permit is issued to limit the emissions of air pollutants from the source to less than major source thresholds (i.e., 100 tons/year for Carbon Monoxide (CO), Particulate Matter less than 10 microns (PM<sub>10</sub>), 10 tons/year for any single hazardous air pollutant (HAP), and 25 tons/year for any combination of such HAPs). As a result the source is excluded from the requirement to obtain a Clean Air Act Permit Program (CAAPP) permit. The maximum emissions of this source, as limited by the conditions of this permit, are described in Attachment A.
- b. Prior to issuance, a draft of this permit has undergone a public notice and comment period.
- c. This permit supersedes all operating permits issued for this location.

- 2a. Pursuant to 35 Ill. Adm. Code 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to 35 Ill. Adm. Code 212.122.
- b. Pursuant to 35 Ill. Adm. Code 212.123(b), the emission of smoke or other particulate matter from any such emission unit may have an opacity greater than 30 percent but not greater than 60 percent for a period or periods aggregating 8 minutes in any 60 minute period provided that such opaque emissions permitted during any 60 minute period shall occur from only one such emission unit located within a 305 m (1000 ft) radius from the center point of any other such emission unit owned or operated by such person, and provided further that such opaque emissions permitted from each such emission unit shall be limited to 3 times in any 24 hour period.
- c. Pursuant to 35 Ill. Adm. Code 212.301, no person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source.
- d. Pursuant to 35 Ill. Adm. Code 212.321(a), no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in 35 Ill. Adm. Code 212.321(c).
- e. Pursuant to 35 Ill. Adm. Code 212.322(a), except as further provided in 35 Ill. Adm. Code Part 212, no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any process emission unit for which construction or modification commenced prior to April 14, 1972, which, either alone or in combination with the emission of particulate matter from all other similar process emission units at a source or premises, exceeds the allowable emission rates specified in 35 Ill. Adm. Code 212.322(c).
3. Pursuant to 35 Ill. Adm. Code 214.301, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to excess 2000 ppm.
4. This permit is issued based on the Refractory Products Manufacturing equipment not constituting a major source of Hazardous Air Pollutants (HAP) as listed in Section 112(b) of the Clean Air Act and establishes federally enforceable production and operating limitations, which restrict a potential to emit to less than 10 tons/year for any individual Hazardous Air Pollutant (HAP), and 25 tons/year of any combination of such HAPs so that the source is not being subject to the requirements of the National Emission Standards For Hazardous Air

Pollutants For Refractory Products Manufacturing, 40 CFR 63 Subpart SSSSS.

- 5a. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the baghouses such that the baghouses are kept in proper working condition and not cause a violation of the Illinois Environmental Protection Act or regulations promulgated therein.
- b. The Rotary Dryer shall only be operated with distillate fuel oil as the fuel. The use of any other fuel in the Rotary Dryer requires that the Permittee first obtain a construction permit from the Illinois EPA and then perform stack testing to verify compliance with all applicable requirements.
- c. The Brick Curing Dryers and the Tunnel Kiln shall only be operated with natural gas as the fuel. The use of any other fuel in the Brick Curing Dryers and the Tunnel Kiln requires that the Permittee first obtain a construction permit from the Illinois EPA and then perform stack testing to verify compliance with all applicable requirements.
- d. The Permittee shall not keep, store or use distillate fuel oil (Grades No. 1 and 2) at this source with a sulfur content greater than the larger of the following two values:
  - i. 0.28 weight percent, or
  - ii. The wt. percent given by the formula: Maximum wt. percent sulfur =  $(0.00015) \times (\text{Gross heating value of oil, Btu/lb})$ .
- e. The Permittee shall not keep, store or use Residual fuel oil (Grade No. 4, 5 and 6) with a sulfur content greater than that given by the formula:  
$$\text{Maximum Wt percent sulfur} = (0.00005) \times (\text{Gross heating value of oil, Btu/lb}).$$
- f. Organic liquid by-products or waste materials shall not be used in any emission unit at this source without written approval from the Illinois EPA.
- g. The Illinois EPA shall be allowed to sample all fuels stored at the above location.
- 6a. Operations of the plant and PM emission shall not exceed the following limits:
  - i. Mortar and Castable Line:
    - A. Mortar Production: 500 tons/month, 5,000 tons/year;
    - B. Pneumatic Conveyor Throughput: 300 tons/month, 2,500 tons/year;

C. Product Bagger Throughput: 300 tons/month, 3,000 tons/year; and

D. Emissions from the Mortar and Castable Line:

<u>Emission Units</u>	Emission Factor (lbs/ton)		E M I S S I O N S			
	<u>PM</u>	<u>PM<sub>10</sub></u>	PM		PM <sub>10</sub>	
			<u>(ton/mo)</u>	<u>(ton/yr)</u>	<u>(ton/mo)</u>	<u>(ton/yr)</u>
Pneumatic Conveyer (SCC 30501107)	0.72	0.46	0.1	0.9	0.07	0.6

These limits are based on the maximum production capacity and the standard emission factor for Cement Unloading to Elevated Storage Silo (Factor Information Retrieval (FIRE) version 6.25, September 2004).

ii. Refractory Line:

A. Raw Materials Throughput: 875 tons/week, 35,000 tons/year;

B. Returns Crusher Throughput: 175 tons/week, 7,000 tons/year;

C. Rotary Dryer Throughput: 7.5 tons/week, 300 tons/year; and

D. Emissions from the Refractory Line:

<u>Emission Units</u>	Emission Factor (lbs/ton)		E M I S S I O N S			
	<u>PM</u>	<u>PM<sub>10</sub></u>	PM		PM <sub>10</sub>	
			<u>(lbs/wk)</u>	<u>(ton/yr)</u>	<u>(lbs/wk)</u>	<u>(ton/yr)</u>
Clay Grinder (SCC 30500302)	0.85*	0.13*	744	14.9	114	2.3
Rotary Dryer** (SCC 30500501)	1.29	0.8	10	0.2	6	0.1
Returns Crusher (SCC 30502005)	0.039	0.015	7	0.1	3	0.05
Dry Pan Grinder/ Screens (SCC 30500302)	0.0062	0.0032	5	0.1	3	0.06
Curing Dryers (SCC 30500504)	0.20	0.10	175	3.5	88	1.8
Tunnel Kiln (SCC 30500311)	0.96	0.87	840	<u>16.8</u>	761	<u>15.2</u>
			Totals	<u>35.6</u>		<u>19.5</u>

\* emission factor is prorated 50% for moisture content above 8% and credit of 80% for capture efficiency of the building enclosure for PM and 50% for PM<sub>10</sub>.

\*\* Controlled with baghouse 99 percent efficiency for PM and 95 percent for PM<sub>10</sub>.

These limits are based on the maximum production capacity and standard emission factors (Section 11.3, AP-42, Fifth Edition, Volume I Supplement C, August 1997 and Factor Information Retrieval (FIRE) version 6.25, September 2004).

- b. Emissions and operation of the tunnel kiln shall not exceed the following limits:

Throughput		Pollutant	Emission Factor	Emissions	
(tons/wk)	(tons/yr)		(lbs/ton)	(lbs/wk)	(tons/yr)
700	35,000	CO	1.20	840	21.0
		NO <sub>x</sub>	0.35	245	6.1
		SO <sub>2</sub>	0.36	252	6.3
		VOM	0.024	28	0.4
		HF	0.56	392	9.8
		HCL	0.056	39	1.0
		Fluorides	0.59	413	11.8

These limits are based on the maximum production capacity, tunnel kiln emission factors for SO<sub>2</sub>, HCl and HF derived from the results of stack testing, and standard emission factors (Section 11.3, AP-42, Fifth Edition, Volume I Supplement C, August 1997).

- c. Emissions and operation of the brick dryers shall not exceed the following limits:

Throughput		Pollutant	Emission Factor	Emissions	
(tons/wk)	(tons/yr)		(lbs/Ton)	(lbs/wk)	(tons/yr)
700	35,000	CO	0.31	217	5.4
		NO <sub>x</sub>	0.098	69	1.7
		VOM	0.03	21	0.5

These limits are based on the maximum production capacity and standard emission factors (Table 11.3-3, AP-42, Fifth Edition, Volume I Supplement C, August 1997).

- d. Emissions and operation of the rotary dryer shall not exceed the following limits:

Material	Usage		Pollutant	Emission Factor	Emissions	
	(10 <sup>3</sup> gal/wk)	(10 <sup>3</sup> gal/yr)		(lb/1000 gal)	(lbs/wk)	(ton/yr)
No. 2	1.8	90	CO	5.00	9	0.2
Fuel			NO <sub>x</sub>	20.00	36	0.9
Oil			SO <sub>2</sub>	39.70	71	1.8
			VOM	0.34	0.61	0.02

These limits are issued based on the use of fuel oil with a sulfur content 0.28 percent or less, the maximum fuel usage, and standard emission factors (Tables 1.3-1 and 1.3-3, AP-42, Fifth Edition, Volume I, Supplement E, September 1998).

- e. This permit is issued based on negligible emissions of particulate matter PM and PM<sub>10</sub> from the storage bins, weight hopper, mixer, product bagger and conveyors. For this purpose emissions of each pollutant from each emission unit or group of emission units, shall not exceed nominal emission rates of 0.1 lbs/hour and 0.44 tons/year.
- f. Compliance with the annual limits of this permit shall be determined on a weekly basis from the sum of the data for the current week plus the preceding 51 weeks (running 52 week total).
- 7a. Pursuant to 35 Ill. Adm. Code 201.282, every emission source or air pollution control equipment shall be subject to the following testing requirements for the purpose of determining the nature and quantities of specified air contaminant emissions and for the purpose of determining ground level and ambient air concentrations of such air contaminants:
  - i. Testing by Owner or Operator. The Illinois EPA may require the owner or operator of the emission source or air pollution control equipment to conduct such tests in accordance with procedures adopted by the Illinois EPA, at such reasonable times as may be specified by the Illinois EPA and at the expense of the owner or operator of the emission source or air pollution control equipment. The Illinois EPA may adopt procedures detailing methods of testing and formats for reporting results of testing. Such procedures and revisions thereto, shall not become effective until filed with the Secretary of State, as required by the APA Act. All such tests shall be made by or under the direction of a person qualified by training and/or experience in the field of air pollution testing. The Illinois EPA shall have the right to observe all aspects of such tests.
  - ii. Testing by the Illinois EPA. The Illinois EPA shall have the right to conduct such tests at any time at its own expense. Upon request of the Illinois EPA, the owner or operator of the emission source or air pollution control equipment shall provide, without charge to the Illinois EPA, necessary holes in stacks or ducts and other safe and proper testing facilities, including scaffolding, but excluding instruments and sensing devices, as may be necessary.
- b. Testing required by Condition 8 shall be performed upon a written request from the Illinois EPA by a qualified independent testing service.
- 8. Pursuant to 35 Ill. Adm. Code 212.110(c), upon a written notification by the Illinois EPA, the owner or operator of a particulate matter emission

unit subject to 35 Ill. Adm. Code Part 212 shall conduct the applicable testing for particulate matter emissions, opacity, or visible emissions at such person's own expense, to demonstrate compliance. Such test results shall be submitted to the Illinois EPA within thirty (30) days after conducting the test unless an alternative time for submittal is agreed to by the Illinois EPA.

9. Pursuant to 40 CFR 63.10(b)(3), if an owner or operator determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants regulated by any standard established pursuant to section 112(d) or (f) of the Clean Air Act, and that stationary source is in the source category regulated by the relevant standard, but that source is not subject to the relevant standard (or other requirement established under 40 CFR Part 63) because of limitations on the source's potential to emit or an exclusion, the owner or operator must keep a record of the applicability determination on site at the source for a period of 5 years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination must be signed by the person making the determination and include an analysis (or other information) that demonstrates why the owner or operator believes the source is unaffected (e.g., because the source is an area source). The analysis (or other information) must be sufficiently detailed to allow the USEPA and/or Illinois EPA to make a finding about the source's applicability status with regard to the relevant standard or other requirement. If relevant, the analysis must be performed in accordance with requirements established in relevant subparts of 40 CFR Part 63 for this purpose for particular categories of stationary sources. If relevant, the analysis should be performed in accordance with USEPA guidance materials published to assist sources in making applicability determinations under Section 112 of the Clean Air Act, if any. The requirements to determine applicability of a standard under 40 CFR 63.1(b)(3) and to record the results of that determination under 40 CFR 63.10(b)(3) shall not by themselves create an obligation for the owner or operator to obtain a Title V permit.
10. Pursuant to 35 Ill. Adm. Code 212.110(e), the owner or operator of an emission unit subject to 35 Ill. Adm. Code Part 212 shall retain records of all tests which are performed. These records shall be retained for at least three (3) years after the date a test is performed.
- 11a. The Permittee shall maintain records of the following items so as to demonstrate compliance with the conditions of this permit:
  - i. Records addressing use of good operating practices for the baghouses:
    - A. Records for periodic inspection of the baghouses with date, individual performing the inspection, and nature of inspection; and

- B. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.
  - ii. Refractory brick production rate (tons/week and tons/year);
  - iii. Rotary dryer throughput (tons/ week and tons/year);
  - iv. Fuel oil usage for the rotary dryer (gallons/ week and gallons/year);
  - vi. Mortar and castable line throughput (tons/month and tons/year); and
  - v. Weekly and annual CO, NO<sub>x</sub>, PM, SO<sub>2</sub>, VOM, HF, and HCL emissions from the source (tons/week and tons/year) with supporting calculations.
- b. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least five years from the date of entry and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request. Any records retained in an electronic format (e.g., computer storage device) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA or USEPA request for records during the course of a source inspection.
12. Pursuant to 35 Ill. Adm. Code 212.110(d), a person planning to conduct testing for particulate matter emissions to demonstrate compliance shall give written notice to the Illinois EPA of that intent. Such notification shall be given at least thirty (30) days prior to the initiation of the test unless a shorter period is agreed to by the Illinois EPA. Such notification shall state the specific test methods from 35 Ill. Adm. Code 212.110 that will be used.
- 13a. If there is an exceedance of or a deviation from the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Illinois EPA's Compliance Section in Springfield, Illinois within 30 days after the exceedance or deviation. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedance or deviation and efforts to reduce emissions and future occurrences.
- b. Two (2) copies of required reports and notifications shall be sent to:
- Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Compliance Section (#40)  
P.O. Box 19276  
Springfield, Illinois 62794-9276

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and one (1) copy shall be sent to the Illinois EPA's regional office at the following address unless otherwise indicated:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
5415 North University  
Peoria, Illinois 61614

If you have any questions on this, please call Valeriy Brodsky at 217/782-2113.

Edwin C. Bakowski, P.E.  
Manager, Permit Section  
Division of Air Pollution Control

Date Signed: \_\_\_\_\_

ECB:VJB:

cc: Illinois EPA, FOS Region 2  
Lotus Notes

Attachment A - Emission Summary

This attachment provides a summary of the maximum emissions from refractory plant operating in compliance with the requirements of this federally enforceable permit. In preparing this summary, the Illinois EPA used the annual operating scenario which results in maximum emissions from such a plant. The resulting maximum emissions are below the levels (e.g., 100 tons for CO and PM<sub>10</sub>, 10 tons per year for any single HAP, and 25 tons per year for any combination of such HAPs) at which this source would be considered a major source for purposes of the Clean Air Act Permit Program. Actual emissions from this source will be less than predicted in this summary to the extent that less material is handled, and control measures are more effective than required in this permit.

<u>Emission Unit</u>	E M I S S I O N S (tons/yr)								
	<u>CO</u>	<u>NO<sub>x</sub></u>	<u>PM</u>	<u>PM<sub>10</sub></u>	<u>SO<sub>2</sub></u>	<u>VOM</u>	<u>Single HAP</u>		<u>Total HAP</u>
							<u>HF</u>	<u>HCl</u>	
<u>Mortar Line</u>									
Pneumatic									
Conveyor			0.9	0.6					
Weight Hopper			0.44	0.44					
Mixer			0.44	0.44					
Bagger			0.44	0.44					
Conveyors			0.44	0.44					
<u>Refractories Line</u>									
Clay Grinder			14.9	2.3					
Returns Crusher			0.1	0.05					
Rotary Dryer	0.2	0.9	0.2	0.1	1.8	0.02			
Storage Bins			0.44	0.44					
Dry Grinder/ Screens			0.1	0.06					
Brick Dryers	5.4	1.7	3.5	1.8		0.5			0.5
Tunnel Kiln	21.0	6.1	16.8	15.2	6.3	0.4	9.8	1.0	10.8
Conveyors			0.44	0.44					
Totals	<u>26.6</u>	<u>8.7</u>	<u>39.1</u>	<u>22.8</u>	<u>8.1</u>	<u>0.92</u>	<u>9.8</u>	<u>1.0</u>	<u>11.3</u>