



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.

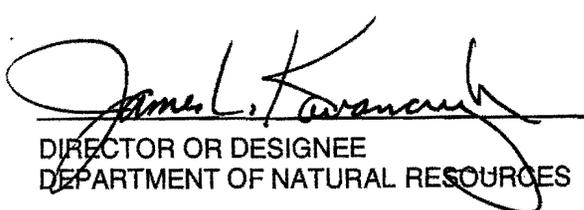
Permit Number: **062010-008** Project Number: 2009-07-023
Parent Company: Mid America Brick & Structural Clay Products, L.L.C.
Parent Company Address: 600 Green Boulevard, Mexico, MO 65265
Installation Name: Mid America Brick & Structural Clay Products, L.L.C.
Installation Address: 600 Green Boulevard, Mexico, MO 65265
Location Information: Audrain County, S25, T51N, 9E

Application for Authority to Construct was made for:
The installation of a brick manufacturing facility located at the site formerly owned by A.P. Green. Some of the previously operated equipment that has been shut down for more than five years will be utilized. This review was conducted in accordance with Section (6), 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.

JUN 15 2010

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 Departments' 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 within 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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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."

Mid America Brick & Structural Clay Products, L.L.C.
Audrain County, S25, T51N, 9E

1. Annual Emission Limitation
 - A. Mid America Brick & Structural Clay Products, L.L.C. (Mid America Brick) shall emit less than 15.0 tons of particulate matter less than ten (10) microns in diameter (PM₁₀) in any consecutive 12 month period from the entire installation. The entire installation is summarized in Attachment A: Emission Unit Summary.
 - B. Mid America Brick shall maintain an accurate record of PM₁₀ emitted into the atmosphere from the entire installation. Attachment B or an equivalent form shall be used to demonstrate compliance with Special Condition 1.A.
 - C. Mid America Brick shall use the emission factors developed from stack testing as indicated in Special Condition 2.B. to determine the emissions from the dryers (EU20 - EU27) and the tunnel kilns (EU28 and EU29). Prior to the stack testing, Mid America Brick shall use the emission factors provided in the application and listed in Table 1 and Table 2 below.
 - D. Mid America Brick shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten (10) days after the end of the month during which the records from Special Condition 1.B. indicate that the source exceeds the limitation of Special Condition 1.A.
2. Stack Testing Requirements
 - A. Mid America Brick shall verify the emission factors listed in Table 1 and Table 2 for the total PM₁₀ (condensable and filterable), Sulfur Oxides (SO_x), and hydrogen fluoride (HF) (CAS# 7664-39-3) emissions from the dryers (EU20 - EU27) and the tunnel kilns (EU28 and EU29).

SPECIAL CONDITIONS:

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

Table 1: Emission Factors for the Dryers (EU20 - EU27)

Pollutant	MHDR (tons brick/hr) ^[1]	Emission Factor (lb pollutant/ton brick)	Potential Emissions (lb/hr) ^[2]
PM ₁₀	1.625	0.187	0.30
SO _x	1.625	0.001	N/D
HF	1.625	0.001	N/D

¹MHDR = Maximum Hourly Design Rate for each dryer

²N/D = Not determined; Emissions of SO_x and HF are not expected from the dryers (EU20 - EU27) and were not included in the potential emissions of the application. However, testing is required for verification purposes.

Table 2: Emission Factors for the Kilns (EU28 and EU29)

Pollutant	MHDR (tons brick/hr) ^[1]	Emission Factor (lb pollutant/ton brick)	Potential Emissions (lb/hr)
PM ₁₀	6.5	0.105	0.68
SO _x	6.5	0.643	4.18
HF	6.5	0.370	2.41

¹MHDR = Maximum Hourly Design Rate for each kiln

- B. Mid America Brick shall conduct performance testing on the dryer (EU27) and the tunnel kilns (EU28 and EU29) sufficient to quantify the emission factors for total PM₁₀ (filterable and condensable), SO_x, and hydrogen fluoride (CAS# 7664-39-3). As EU27 is the only dryer for which emissions are vented to a stack, the stack test results for EU27 shall apply to all of the dryers (EU20 - EU27). The emission factors shall be based on the tons of brick processed through the emission unit tested. This testing may be limited to conducting tests on a representative piece(s) of each type of equipment upon written request from Mid America Brick and approval by the Director. These tests shall be done in accordance with the procedures outlined below.
- C. 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.
- D. The stack testing shall be performed within sixty (60) days after achieving the maximum production rate of the tunnel kilns (EU28 and EU29) but not

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SPECIAL CONDITIONS:

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

later than 365 days after initial start of operation. As both kilns are not expected to be started at the same time. Stack testing on each kiln shall be performed within 365 days after the initial start of operation for the individual kiln. However, testing for both kilns may be represented by the testing of one kiln upon written request from Mid America Brick and approval by the Director.

- E. Two 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 Environmental Protection Agency (EPA) Method for at least one sample run for each air pollutant tested.
 - F. No later than 30 days after the performance test results are submitted, Mid America Brick shall provide the director with a report that establishes the potential emissions of total PM₁₀ (filterable and condensable), SO_x, and HF for the emission units tested according to Special Condition 2.B. The emission rates shall be reported in pounds per hour and tons per year so that the Air Pollution Control Program may verify the potential emissions of this project. If the potential emissions are greater than what was indicated in this permit, then Mid America Brick shall submit an application for an amendment to this permit to correct the potential emissions calculations.
 - G. The above time frames associated with this performance testing condition may be extended upon written request of Mid America Brick and approval by the Director.
3. Sulfur Content Testing Requirement
- A. Mid America Brick shall verify that the sulfur content (based upon the average test results for four samples collected within a one-month time period) of the clay raw material is less than or equal to 0.116 dry wt%.
 - B. Mid America Brick shall determine the sulfur content of the clay raw material by collecting and testing samples from the clay storage pile (EU03). Test results for four samples collected within a one-month time period shall be averaged to determine the sulfur content. A written analytical report of the testing shall include the test method, the raw data, the sulfur content (dry wt%) of each sample, the average sulfur content (dry wt%) of the four samples, the test date, and the original signature of the individual performing the test. Within 30 days of completion of the required testing, the report shall be filed on-site.

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SPECIAL CONDITIONS:

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

- C. Mid America Brick shall determine the sulfur content of the clay storage pile (EU03) monthly. However, after 6 months of testing, Mid America Brick may submit a sulfur variability analysis and propose a quarterly sampling plan to the Director of the Air Pollution Control Program. The sulfur variability analysis must include copies of the test reports required for Special Condition 3.B. Upon approval by the Director, a quarterly sampling plan may be implemented.
 - D. If the sulfur content (the average test results for the four samples collected within a one-month time period) is greater than 0.116 dry wt%, then Mid America Brick shall have 60 days to apply for an amendment to this permit with an evaluation of what effects the higher sulfur content would have had on the permit review for this project.
4. Performance Testing for New Source Performance Standards (NSPS)
- A. Within 30 days of the initial start of operation, Mid America Brick shall submit a determination to the Enforcement section of the Air Pollution Control Program on the applicability of 40 CFR 60, Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants*, for each piece of equipment listed in Attachment A. Mid America Brick shall indicate whether or not each piece of equipment is subject to Subpart OOO and the applicable requirements.
 - B. Mid America Brick shall submit the enclosed testing plan to the Enforcement section of the Air Pollution Control Program for all equipment with applicable testing requirements as determined in Special Condition 4.A. Mid America Brick shall contact the Enforcement section to obtain all requirements for testing, and the plan must be submitted to the Enforcement section at least 30 days prior to the proposed test date.
 - C. Testing must be performed no later than 60 days after achieving the maximum production rate of the process, and in any case no later than 180 days after initial startup. The performance test results shall be submitted to the Enforcement section no later than 30 days after completion of any required testing.
5. Control Device Requirements – Baghouses
- A. Mid America Brick shall control emissions from the Secondary Crusher (EU09), Pug Mill (EU16), Extruder (EU17), Dry Sand Mixer (EU19), and the Jaw Crusher (EU30) by using baghouses as specified in the permit application. The baghouses shall be operated and maintained in

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SPECIAL CONDITIONS:

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

accordance with the manufacturer's specifications. Each baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the Department of Natural Resources employees may easily observe them. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

- B. Mid America Brick shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
- C. Mid America Brick shall maintain an operating and maintenance log for the baghouses which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
- 6. Haul Road Watering Requirements
Mid America Brick shall water the unpaved haul roads whenever conditions exist which would cause visible fugitive emissions to enter the ambient air beyond the property boundary.
- 7. Requirements for Future Alterations
Mid America Brick shall notify the Air Pollution Control Program before initial startup of any modifications to the facility design that could impact the release parameters or emission rates as specified in the Memorandum from the Modeling Unit entitled "Ambient Air Quality Impact Analysis for Mid America Brick and Structural Clay Products, LLC" (November 18, 2009). In the event that the Program determines that the changes are significant, Mid America Brick shall submit an updated Ambient Air Quality Impact Analysis (AAQIA) to the Program that continues to demonstrate compliance with the Risk Assessment Levels for Hazardous Air Pollutants.
- 8. Record Keeping Requirement
Mid America Brick shall maintain all records required by this permit for not less than five (5) years and shall make them available to any Missouri Department of Natural Resources' personnel upon request.

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SPECIAL CONDITIONS:

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

9. Requirements for the Part 70 Operating Permit Application
Mid America Brick shall provide justification in the Part 70 Operating Permit Application that the tunnel kilns (EU28 and EU29) are not considered reconstructed as a result of the modernization activities associated with this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2009-07-023
Installation ID Number: 007-0001
Permit Number:

Mid America Brick & Structural Clay Products, L.L.C. Complete: July 9, 2009
600 Green Boulevard
Mexico, MO 65265

Parent Company:
Mid America Brick & Structural Clay Products, L.L.C.
600 Green Boulevard
Mexico, MO 65265

Audrain County, S25, T51N, 9E

REVIEW SUMMARY

- Mid America Brick & Structural Clay Products, L.L.C. (Mid America Brick) has applied for the authority to construct a brick manufacturing facility at the site formerly owned by A.P. Green. Some of the previously operated equipment that has been shut down for more than five years will be utilized.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAPs of concern from this process are Hydrogen Fluoride (CAS# 7664-39-3), Hydrogen Chloride (CAS# 7647-01-0), and Manganese Compounds.
- 40 CFR 60, Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants*, of the New Source Performance Standards (NSPS) applies to the proposed equipment. However, some of the equipment may be considered existing for NSPS applicability purposes, therefore a special condition of this permit is for the facility to determine the applicable requirements for each affected unit.
- 40 CFR 60, Subpart UUU, *Standards of Performance for Calciners and Dryers in Mineral Industries*, does not apply to the dryers because tunnel dryers (EU20-EU27) are not subject to the provisions of the subpart.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) regulations apply to the proposed equipment.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart JJJJJ, *National Emission Standards for Hazardous Air Pollutants for Brick and Structural Clay Products Manufacturing*, applies to Mid America Brick; however, there are no affected sources located at the facility. According to 40 CFR 63.8385, the standard applies to Mid America Brick because it is a Brick and Structural Clay Products manufacturing facility and it is a major source of HAP emissions. However, the tunnel kilns (EU28 and EU29), being neither new nor reconstructed, are

considered existing for MACT applicability purposes, and the maximum design capacity of each kiln is less than 10 tons per hour. Therefore, the tunnel kilns (EU28 and EU29) are considered existing small tunnel kilns according to 40 CFR 63.8390 (b), which are not covered by Subpart JJJJJ. Although Mid America Brick has indicated that the modernization of the tunnel kilns will not satisfy the definition of reconstruction, as defined in 40 CFR 63.2 *Definitions*, a special condition of this permit is to include the justification in the Part 70 Operating Permit application.

- Baghouses are being used to control the Particulate Matter less than 10 microns in diameter (PM₁₀) emissions from the following equipment in this permit: Secondary Crusher (EU09), Pug Mill (EU16), Extruder (EU17), Dry Sand Mixer (EU19), and the Jaw Crusher (EU30)
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of the individual HAP, Hydrogen Fluoride (CAS# 7664-39-3), and total combined HAPs are above major source levels. Potential emissions of criteria pollutants are limited to below de minimis levels.
- This installation is located in Audrain County, an attainment area for all criteria air pollutants.
- This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2].
- Ambient air quality modeling was performed to determine the ambient impact of the HAP, Hydrogen Fluoride (CAS# 7664-39-3).
- Emissions testing is required for the source.
- A Part 70 Operating Permit application is required for this installation within 1 year of equipment startup because the installation is a major source of HAP emissions.
- Approval of this permit is recommended with special conditions.

INSTALLATION/PROJECT DESCRIPTION

Mid America Brick proposes to construct a 13 ton per hour brick manufacturing facility at the site formerly known as A.P. Green in Mexico, Missouri. A.P. Green shut down all operations at the Mexico facility in April of 2002, and the brick manufacturing equipment has remained idle since that time. Mid America Brick has purchased some of the Mexico, Missouri property formerly owned by A.P. Green and plans to modernize some of the existing brick manufacturing equipment and install some new equipment. As the existing equipment was shut down without the intent to re-start, all previously issued construction permits from the Air Pollution Control Program are now considered invalid. Therefore, the potential emissions of all existing emission units are considered new for

this application.

Brick is manufactured by forming processed clay into brick molds and then hardening the clay into finished brick in high temperature kilns. The clay raw materials are obtained from surface mining operations. Mid America Brick expects to receive approximately half of its clay from existing mines, and the other half is expected to come from a clay mine located on adjacent property (EU01). The adjacent mine (EU01) will be constructed solely for the purposes of supplying the Mid America Brick plant (007-0001), will be located less than 3700 feet away, and will be controlled by the same parent company. Therefore, the mine (EU01) will be considered a support facility for the brick plant (007-0001), and the two sites will be considered the same source for construction permitting purposes.

Mined, wet clay from existing mines will be trucked to the facility over a 0.4 mile paved haul road (EU02). The adjacent clay mine (EU01) will have an additional 0.3 mile section of unpaved haul road (EU02). The wet clay will be stored in a 0.69 acre storage pile (EU03). The freshly mined clay is expected to be very wet, and the clay will be allowed to dry prior to processing. Although the dry clay will have a lower moisture content than the freshly mined clay, the moisture content of the dry clay is still considered high with an expected moisture content exceeding six percent (6%).

Dry clay is processed through a series of crushing, screening and conveying operations, referred to as the crushing and screening operations (EU04-EU13). These operations generally operate simultaneously and will be bottlenecked by the screening operation (EU11). The maximum design rate of the screens (EU11) is expected to be 30 tons clay per hour per screen. As the screening operation (EU11) will contain two screens, the maximum design rate for the crushing and screening operations (EU04-EU13) will be no more than 60 tons clay per hour.

Screened clay is then processed through a series of mixing, extruding, cutting, and coloring operations, referred to as the forming operations (EU14 - EU19). These operations are bottlenecked by the brick stacking activity which has a maximum design rate of 30,000 bricks per hour (52.5 tons clay per hour). After the bricks are colored, they will be stacked onto kiln cars and transferred to holding rooms, referred to as settling chambers, where the clay bricks will homogenize prior to curing. No emissions are expected from the settling chambers.

From the settling chambers, the kiln cars will be transferred to one of eight 120 foot continuous drying chambers (EU20 – EU27) which will be heated by excess waste heat from the tunnel kilns (EU28 and EU29). Upon exiting the drying chambers (EU20 – EU27), the kiln cars will be immediately transferred to one of two 425 foot kilns (EU28 and EU29), known as tunnel kilns, where the brittle clay bricks will be transformed into hard finished bricks. In the tunnel kilns, bricks will be heated to approximately 2000°F by numerous natural gas-fired burners rated at 0.231 million Btu per hour. Each tunnel kiln will have 34 burners for a total capacity of 7.85 million Btu per hour per kiln. Emissions from the entrance portion (hot side) of each tunnel kiln will be vented to individual stacks (EP08 and EP09) which are 90 feet tall and 2.5 feet in diameter. Emissions from the exit portion (cold side) of the tunnel kilns will be vented directly to the drying chambers (EU20 – EU27). Emissions from seven drying chambers will be

vented to the room and the emissions from the eighth drying chamber (EU27) will be vented to a stack (EP07). There will be no control devices to control emissions from the drying chambers or from the tunnel kilns. As the dryers (EU20-EU27) will be heated by drawing hot air from the cold side of the tunnel kilns, a special condition of this permit is to verify that the dryer emissions do not include emissions from the tunnel kilns which shall be determined by stack testing. The maximum design rate for the drying and firing processes will be limited by the capacity of the tunnel kilns. The maximum design rate for this type of brick, known as face brick, is six and a half (6.5) tons fired brick per hour per kiln, or eight (8) tons clay per hour per kiln. As only two of the existing tunnel kilns will be modernized with new burners, ducts, wiring, and controls, the maximum design rate for the source will be thirteen (13) tons brick per hour, or sixteen (16) tons clay per hour.

After the tunnel kilns, bricks are sorted and packaged for shipment. Finished bricks that are cracked or broken are recycled back into the process. Rework bricks are loaded into a jaw crusher (EU30) and transferred back to the primary crusher by a belt conveyor (EU31). Emissions from the jaw crusher will be vented to a baghouse (CD06) and stack (EP06). No other emissions are expected from the packaging operations. The maximum design rate for the rework crusher and conveyor was determined by the applicant to be 1.5 tons bricks per hour. This is based on a conservative estimate of the yield from the tunnel kilns.

The facility will also have several other small sources of potential emissions; including a 500 gallon diesel fuel storage tank (EU32), a small 0.025 gallon per hour parts washer (EU33), and a small research kiln (EU34) with a maximum design rate of 0.21 pounds brick per hour. Attachment A contains a summary of the emission units considered for this project.

EMISSIONS/CONTROLS EVALUATION

The emission factors for the emission units which generate only PM₁₀ (EU01-EU19, EU30, and EU31) were obtained from the following sections of the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 13.2.2 *Unpaved Roads* (November 2006); Section 11.19.2 *Crushed Stone Processing and Pulverized Mineral Processing* (August 2004); Section 11.19.1 *Sand & Gravel Processing* (November 1995); Section 6.4 *Paint & Varnish* (May 1983); Section 11.3 *Brick And Structural Clay Product Manufacturing* (August 1997).

The emission factors for Nitrogen Oxides (NO_x), Volatile Organic Compounds (VOCs), Carbon Monoxide (CO), Fluorides (excluding HF), and HAPs used in the analysis of the dryers (EU20 - EU27) and the tunnel kilns (EU28 and EU29) were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 11.3 *Brick And Structural Clay Product Manufacturing* (August 1997). The emission factors for PM₁₀ and SO_x for the tunnel kilns (EU28 and EU29) were provided by the applicant and testing will be required to verify these emission factors. As the emission factor for SO_x was determined by a

mass balance approach based on the sulfur content of the clay raw material, a special condition of this permit is to verify the sulfur content of the clay raw materials through testing. This allows the facility some flexibility to change raw material suppliers without additional permit review or SO_x emissions tracking.

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 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels ^[1]	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application	New Installation Conditioned Potential
PM ₁₀	15.0	N/A	N/A	20.07	<15.0
SO _x	40.0	N/A	N/A	36.61	N/A
NO _x	40.0	N/A	N/A	19.93	N/A
VOC	40.0	N/A	N/A	6.76	N/A
CO	100.0	N/A	N/A	68.33	N/A
Fluorides (excluding HF)	3.0	N/A	N/A	12.53	N/A
Manganese Compounds	0.8	N/A	N/A	0.74	N/A
Hydrogen Fluoride	1.0	N/A	N/A	21.07	N/A
Hydrogen Chloride	10.0	N/A	N/A	9.68	N/A
HAPs (Combined)	25.0	N/A	N/A	32.02	N/A

N/A = Not Applicable

¹For individual HAPs, the value represents the Screening Model Action Level

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of Hydrogen Fluoride (CAS# 7664-39-3) and total combined HAPs are above major source levels. The source is regulated by the MACT standard, 40 CFR Part 63, Subpart JJJJJ, *National Emission Standards for Hazardous Air Pollutants for Brick and Structural Clay Products Manufacturing* which is a standard issued pursuant to Section 112(d) of the Clean Air Act.

APPLICABLE REQUIREMENTS

Mid America Brick & Structural Clay Products, L.L.C. 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 June 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*
- *New Source Performance Regulations, 10 CSR 10-6.070 – New Source Performance Standards (NSPS) for Nonmetallic Mineral Processing Plants, 40 CFR 60, Subpart OOO*
- *Restriction of Emission of Sulfur Compounds, 10 CSR 10-6.260*

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed to determine the ambient impact of hydrogen fluoride (CAS# 7664-39-3). The results show compliance with the 1-hour, 24-hour and the annual Risk Assessment Levels (RAL) for hydrogen fluoride. For further details on the modeling analysis, please refer to the memo titled "Ambient Air Quality Impact Analysis for Mid America Brick and Structural Clay Products, LLC" (November 18, 2009).

Table 4: Compliance with the Risk Assessment Levels (RALs)

Pollutant	Modeled Impact ($\mu\text{g}/\text{m}^3$)	RAL ($\mu\text{g}/\text{m}^3$)^[1]	Time Period
Hydrogen Fluoride	12.41	820	1-hour
Hydrogen Fluoride	4.34	16	24-hour
Hydrogen Fluoride	0.249	14	Annual

¹The Risk Assessment Level (RAL) is a health based level developed by the Air Pollution Control Program

and the Department of Health and Senior Services. Units are in micrograms per cubic meter.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Kathi Jantz
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated July 8, 2009, received July 14, 2009, designating Mid America Brick & Structural Clay Products, L.L.C. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Northeast Regional Office Site Survey, dated July 16, 2009.

Attachment A – Emission Unit Summary

Mid America Brick & Structural Clay Products, L.L.C.
 Audrain County, S25, T51N, 9E
 Project Number: 2009-07-023
 Installation ID Number: 007-0001
 Permit Number:

Emission Unit ID	Description	MHDR	Control Device	Emission Point
EU01	Clay Mining	25.6 tons clay/hr	Moisture Content	Fugitive
EU02	Haul Roads	0.4 miles (Paved) 0.3 miles (Unpaved)	Paving/Undocumented Watering	Fugitive
EU03	Clay Storage Pile	0.69 acres	Paving/Moisture Content	Fugitive
EU04	Clay Transfer (Loader)	60 tons clay/hr	Moisture Content	Fugitive
EU05	Feed Hopper	60 tons clay/hr	Moisture Content	Fugitive
EU06	Enclosed Belt Conveyor #1	60 tons clay/hr	Moisture Content	Fugitive
EU07	Primary Crusher	60 tons clay/hr	Moisture Content	Fugitive
EU08	Enclosed Belt Conveyor #2	60 tons clay/hr	Moisture Content	Fugitive
EU09	Secondary Crusher	60 tons clay/hr	CD1 (Bag House) CD2 (Bag House) CD3 (Bag House) Moisture Content	EP01 EP02 EP03
EU10	Enclosed Bucket Elevator	60 tons clay/hr	Moisture Content	Fugitive
EU11	Screen	60 tons clay/hr	Moisture Content	Fugitive
EU12	Hammermill (Screen overs)	60 tons clay/hr	Moisture Content	Fugitive
EU13	Surge bin (Screen throughs)	60 tons clay/hr	Moisture Content	Fugitive
EU14	Enclosed Belt Conveyor #3	52.5 tons clay/hr	Moisture Content	Fugitive
EU15	Feed Bin	52.5 tons clay/hr	Moisture Content	Fugitive
EU16 & EU17	Pug Mill (Blade Mixer) & Extruder	52.5 tons clay/hr	CD4 (Baghouse)	EP04
EU18	Slurry Mixing (addition of Dry Metallic Additives)	1.8 pounds additives per hour	N/A	Fugitive
EU19	Dry Sand Mixer	5 tons sand/hr	CD5 (Baghouse)	EP05
EU20-26	7 Dryers	1.625 tons brick/hr per dryer	N/A	Fugitive
EU27	1 Dryer	1.625 tons brick/hr	N/A	EP07
EU28	Tunnel Kiln	6.5 tons brick/hr 7.85 MMBtu/hr	N/A	EP08
EU29	Tunnel Kiln	6.5 tons brick/hr 7.85 MMBtu/hr	N/A	EP09
EU30	Jaw Crusher (Rework Bricks)	1.5 tons brick/hr	CD6 (Bag House)	EP06
EU31	Rework Conveyor #4	1.5 tons brick/hr	N/A	Fugitive
EU32	#2 Diesel Storage Tank	500 gallons	N/A	Fugitive
EU33	Parts Washer	0.025 gal/hr	N/A	Fugitive
EU34	Research Kiln	0.21 bricks/hr	N/A	Fugitive

