

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: **06 2 0 1 2 - 0 0 5** Project Number: 2012-01-017
Installation Number: 091-0072

Parent Company: Timberland Forest Products, Inc.

Parent Company Address: 3772 US Highway 160, West Plains, MO 65775

Installation Name: Timberland Forest Products, Inc.

Installation Address: 3772 US Highway 160, West Plains, MO 65775

Location Information: Howell County, S22, T23N, R9W

Application for Authority to Construct was made for:

The installation of one charcoal kiln system (EP-18), which consists of six new steel charcoal kilns that are controlled by one thermal oxidizer afterburner. This charcoal kiln system is expected to produce up to 150.0 tons of charcoal in a 168-hour batch. 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.

JUN 15 2012

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 startup of these air contaminant sources. The information must be made available within 30 days of actual startup. 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 startup of these air contaminant sources.

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 sources(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."

Timberland Forest Products, Inc.
Howell County, S22, T23N, R9W

1. Operating Requirements
 - A. No more than three kilns in the charcoal kiln system, referred to as EP-18, shall operate in the burn phase at one time. EP-18 consists of Kilns # 7-12 and one thermal oxidizer afterburner (Control Device 10). Kilns # 7-12 must exhaust into this thermal oxidizer afterburner at all times.

2. Annual Emission Limit
 - A. Timberland Forest Products, Inc. shall emit less than 40.0 tons of nitrogen oxides (NO_x) in any consecutive 12-month period from EP-18.

 - B. Timberland Forest Products, Inc. shall demonstrate compliance with Special Condition 2.A using Attachment A or another equivalent form that has been approved by the Air Pollution Control Program, including an electronic form.

 - C. Timberland Forest Products, Inc. shall not emit more than the following from EP-18, per 10 CSR 10-6.330:

Pollutant	Emission Limitation
Visible emissions	Ten percent (10%) opacity
Particulate Matter (PM)	1.5 pounds per hour
Volatile Organic Compounds (VOC)	0.24 pounds per hour, or an emission rate equivalent to 99% control efficiency, whichever is lower
Carbon Monoxide (CO)	1.75 pounds per hour

3. Haul Road Watering
 - A. Timberland Forest Products, Inc. shall water haul roads whenever conditions exist which would cause visible fugitive emissions to enter the ambient air beyond the property boundary.

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SPECIAL CONDITIONS:

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

- B. Watering may be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.
4. Performance Testing
- A. Timberland Forest Products, Inc. shall conduct performance tests sufficient to demonstrate compliance with the emission rates of PM, VOCs and CO set forth in 10 CSR 10-6.330. Testing on the charcoal kiln system shall also be done to quantify the emission rate of NO_x for the use in the record keeping required by Special Condition 2 in this permit. This testing shall be limited to conducting tests on one charcoal kiln system that consist of three kilns operating in the burn phase at one time which all emissions are exhausted to one thermal oxidizer afterburner. Tests shall be done in accordance with the test methods and procedures outlined in Special Condition 4.A. through 4.E and in 10 CSR 10-6.330 (3)(F). VOC emissions shall be calculated as pounds of VOC per hour, not reported on a carbon or propane basis.
 - B. Timberland Forest Products, Inc. shall receive approval from the Air Pollution Control Program prior to any changes in the process or throughput processed at this installation that would result in a permit modification other than that which is tested at the time of performance test.
 - C. These tests shall be performed within 60 days after achieving the maximum production rate of the installation, but not later than 180 days after initial start-up for commercial operation and shall be conducted in accordance with the stack test procedures outlined in Special Condition 4.A
 - D. A completed Performance Test Plan Form (enclosed) must be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Performance Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.
 - E. Two copies of a written report of the performance test results shall be submitted to the Director within 30 days of completion of any required testing. The report must include legible copies of the raw data sheets,

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SPECIAL CONDITIONS:

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

analytical instrument laboratory data, and complete sample calculations from the required United States Environmental Protection Agency Method for at least one sample run.

- F. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.
5. Record Keeping and Reporting Requirements
- A. Timberland Forest Products, Inc. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - B. Timberland Forest Products, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

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

Project Number: 2012-01-017
Installation ID Number: 091-0072
Permit Number:

Timberland Forest Products, Inc.
3772 US Highway 160
West Plains, MO 65775

Complete: January 9, 2012

Parent Company:
Timberland Forest Products, Inc.
3772 US Highway 160
West Plains, MO 65775

Howell County, S22, T23N, R9W

REVIEW SUMMARY

- Timberland Forest Products, Inc. has applied for authority to install one charcoal kiln system (EP-18), which consists of six new steel charcoal kilns that are controlled by one thermal oxidizer afterburner.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. However, most of the HAPs are expected to be controlled by the thermal oxidizer.
- None of the New Source Performance Standards apply to the installation.
- None of the National Emission Standards for Hazardous Air Pollutants and none of the currently promulgated Maximum Achievable Control Technology regulations apply to the proposed equipment.
- One thermal oxidizer is being used to control the HAP, volatile organic compounds (VOC), particulate matter (PM), and particulate matter less than 10 microns in diameter (PM₁₀), particulate matter less than 2.5 microns in diameter (PM_{2.5}), and carbon monoxide (CO) emissions from the six new charcoal kilns.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of nitrogen oxides (NO_x) are conditioned below the de minimis level.
- This installation is located in Howell County, an attainment area for all criteria air pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2, *Charcoal Production Facilities*.

- Ambient air quality modeling was not performed since potential emissions of the application are below or conditioned below de minimis levels.
- Emissions testing are required for the thermal oxidizer afterburner (EP-18).
- A modification to your Basic Operating Permit is required for this installation within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Timberland Forest Products, Inc. (herein referred to as Timberland), located in West Plains, Missouri, produces pallets and rough lumber for market and pallet manufacturing. In addition, Timberland owns and operates six charcoal kilns (Kilns # 1-6). These six charcoal kilns operate as one charcoal kiln system known as (EP-06A). The emissions from these kilns are controlled by one thermal oxidizer (EP-06B).

Charcoal is formed through the pyrolysis of carbon containing materials. The most commonly used materials are woods, such as beech, birch, hard maple, hickory, and oak. Other materials can be used, including nutshells, fruit pits, coal, vegetable wastes, and paper mill residues. During the manufacturing process, the material is heated, driving off water and highly volatile organic compounds. The temperature of the material rises to approximately 275°C (527°F), and the VOC distillate yield increases. At this point, external application of heat is no longer required because the carbonization reactions become exothermic. At 350°C (662°F), exothermic pyrolysis ends, and heat is again applied to remove the less volatile tarry materials from the product charcoal.

The following New Source Review permits have been issued to Timberland Forest Products, Inc. from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
032002-008	Installation of six new charcoal kilns controlled by one thermal oxidizer afterburner
072005-043	Installation of nine new charcoal kilns controlled by three thermal oxidizer afterburners

During the review of this project, Timberland informed the Air Pollution Control Program that the emission sources associated with Permit 072005-043 were not installed. Per the standard conditions of Permit 072005-043, Timberland no longer has the authority the nine charcoal kilns and the three thermal oxidizer afterburners since the installation failed to begin construction within two years from the effective date of the permit.

PROJECT DESCRIPTION

Timberland has applied for authority to install six steel charcoal kilns (Kilns # 7-12) and one thermal oxidizer afterburner to increase charcoal production at this installation. These six charcoal kilns and thermal oxidizer afterburner will operate as one charcoal kiln system and will be known as EP- 18. The thermal oxidizer afterburner, which acts as a control device for the charcoal kiln system, is known as CD-10. Permit 072005-043 referenced Kilns # 7-15 and EP-10. However, since these emission sources were not constructed the kiln numbering is resuming at Kiln # 7 and CD-10 of this permit is not related to EP-10 referenced in Permit 072005-043.

Based upon the information Timberland provided to the Air Pollution Control Program, this kiln system is expected to produce up to 150.0 tons of charcoal in a 168-hour batch. The batch time includes the burn and cooling phase and does not include loading and unloading times. Each kiln is expected to produce 25 tons per batch. Since Timberland can only operate 3 kilns at a time, the maximum hourly design rate (MHDR) for this charcoal kiln system of 0.89 tons of charcoal per hour is conservative. The expected MHDR of the system is approximately 0.77 tons of charcoal per hour.

The thermal oxidizer afterburner has a MHDR of 3.0 million British thermal units per hour and uses approximately 32.8 gallons of propane per hour. The high temperatures achieved in the thermal oxidizer are expected to reduce the VOC, HAP, PM, PM₁₀, PM_{2.5} and CO emissions.

The proposed kilns will be of steel construction, each with inside dimensions of 23 feet wide by 43 feet long. The walls of each kiln are 10 feet high, with an arch roof peaking at 15 feet.

EMISSIONS/CONTROLS EVALUATION

Emissions for the project were calculated using emission factors found in the United States Environmental Protection Agency document AP-42 *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Fifth Edition (AP-42).

Because the emission sources associated with Permit 072005-043 were not installed, the existing potential emissions were obtained from Permit Number 032002-008, which was issued by the Air Pollution Control Program. Existing actual emissions were obtained from the 2011 Emissions Inventory Questionnaire (EIQ). Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year).

Potential emissions for the application were calculated using a maximum hourly design rate of 0.893 tons per hour for 8,760 hours annually. There are no available emission factors to calculate potential SO_x emissions from the charcoal production process. Potential emissions of SO_x are expected to be greater than zero, but less than de minimis level. The potential SO_x emission from the use of propane to ignite the thermal oxidizer is expected to be 0.01 tons per year. The conditioned potential

emissions of the application for PM, VOC and CO are based on the maximum allowable hourly emission rates listed in 10 CSR 10-6.330, *Restriction of Emissions from Batch-Type Charcoal Kilns*, and govern the emissions emanating from the stacks of the thermal oxidizers. Timberland has taken a voluntary 40.0 ton per year NO_x limit to avoid modeling requirements. To quantify the NO_x emission rate for EP-18, Timberland must conduct performance tests on this charcoal kiln system in order to develop an emission factor to be used for record keeping purposes. The following table provides an emissions summary for this project.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2011 EIQ)	Potential Emissions of the Application	Conditioned Potential Emissions of the Application
PM	25.0	N/D	N/D	13.64	6.57
PM _{2.5}	10.0	N/D	N/D	2.11	N/A
PM ₁₀	15.0	6.57	9.32	12.42	N/A
SO _x	40.0	N/D	N/D	< 40.0 >	N/A
NO _x	40.0	< 40.0	13.48	95.74	<40.0
VOC	40.0	1.05	0.15	10.63	1.05
CO	100.0	7.67	2.86	12.42	23.0
HAPs	10.0/25.0	N/D	N/D	0.02	N/A

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

PM, NO_x, VOC and CO emissions from the charcoal production were calculated using equations from AP-42, Section 10.7, "Charcoal," September 1995. A control efficiency of 99 percent for the thermal oxidizer was used to calculate potential emissions for PM, PM₁₀, PM_{2.5}, VOC, and CO emissions. PM_{2.5} emissions from the charcoal production were calculated using the emission factor of condensable PM from a stack test for the existing similar charcoal kiln system at this site. This stack test was conducted on August 26, 2003 by AirSource Technologies, Inc. The tested emission rate of condensable PM was 0.312 pounds per hour. This test was approved by the Air Pollution Control Program on November 10, 2003 and was a requirement of Permit 032002-008. Potential PM₁₀ emissions from the charcoal production were assumed to be equal to the potential PM emissions.

The emissions from the propane burning were calculated using equations from AP-42, Section 1.5, "Liquefied Petroleum Gas Combustion," October 1996.

Emissions from haul roads and vehicular activity areas were calculated using the predictive equation from AP-42, Section 13.2.2, "Unpaved Roads," November 2006. Emissions from load-in and load-out of storage piles were calculated using the predictive equation from AP-42, Section 13.2.4, "Aggregate Handling and Storage Piles," November 2006, using a moisture content of 0.7 percent by weight. Emissions from wind erosion of storage piles were calculated using an equation found in the Air Pollution Control Program's Emissions Inventory Questionnaire Form 2.8 "Storage Pile Worksheet."

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 NO_x are conditioned below de minimis levels.

APPLICABLE REQUIREMENTS

Timberland Forest Products, 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
- *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

SPECIFIC REQUIREMENTS

- *Restriction of Emissions from Batch-Type Charcoal Kilns*, 10 CSR 10-6.330

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.

Daronn Williams
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated January 3, 2012, received January 9, 2012, designating Timberland Forest Products, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Mr. Pete Gencarelli
CEO
Timberland Forest Products, Inc.
3772 US Highway 160
West Plains, MO 65775

RE: New Source Review Permit - Project Number: 2012-01-017

Dear Mr. Gencarelli:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions 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 Daronn Williams, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:dwl

Enclosures

c: Southeast Regional Office
PAMS File: 2012-01-017

Permit Number: