

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: **042015-006**

Project Number: 2013-04-088
Installation Number: 203-0005

Parent Company: Hardwoods of Missouri

Parent Company Address: P.O. Box 117, Birch Tree, MO 65438

Installation Name: Hardwoods of Missouri

Installation Address: 502 E Old Highway 60, Birch Tree, MO 65438

Location Information: Shannon County, S22, T27N, R5W

Application for Authority to Construct was made for:
The installation of a new Spears Dry Kiln. 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.

APR 28 2015

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 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 start up 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.

Page No.	3
Permit No.	
Project No.	2013-04-088

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."

Hardwoods of Missouri
Shannon County, S22, T27N, R5W

1. Control Device Requirement-Baghouse
 - A. Hardwoods of Missouri shall control emissions from the equipment listed below using baghouses as specified in the permit application.
 - 1) Sawing Activity (EP-13) – All saws at the facility
 - 2) Wood Crusher (EP-15)
 - B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The 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 Department of Natural Resources' employees may easily observe them.
 - C. 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).
 - D. Hardwoods of Missouri 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.
 - E. Hardwoods of Missouri shall maintain a copy of the baghouse manufacturer's performance warranty on site.
 - F. Hardwoods of Missouri 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.

Page No.	4
Permit No.	
Project No.	2013-04-088

SPECIAL CONDITIONS:

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

2. Record Keeping and Reporting Requirements
 - A. Hardwoods of Missouri 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. These records shall include MSDS for all materials used
 - B. Hardwoods of Missouri shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 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 (6) REVIEW

Project Number: 2013-04-088
Installation ID Number: 203-0005
Permit Number:

Hardwoods of Missouri
502 E Old Highway 60
Birch Tree, MO 65438

Complete Application: April 23, 2013

Parent Company:
Hardwoods of Missouri
P.O. Box 117
Birch Tree, MO 65438

Shannon County, S22, T27N, R5W

REVIEW SUMMARY

- Hardwoods of Missouri has applied for authority to install a new Spears Dry Kiln.
- HAP emissions are not expected from the proposed equipment. HAPs are expected from the combustion of sawdust in their wood fired boiler however in amounts less than their respective SMALs.
- 40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS) Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* applies to Hardwoods of Missouri's wood fired boiler.
- 40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories Subpart JJJJJJ, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources* applies to Hardwoods of Missouri's wood fired boiler.
- Baghouse is being used to control the particulate matter emissions from the sawing activity (EP-13) and wood crusher (EP-15).
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants except for PM are below de minimis levels. PM emissions are above de minimis levels, but below major source levels.
- This installation is located in Shannon County, an attainment area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.

- Ambient air quality modeling was not performed since potential emissions of all pollutants besides PM are below de minimis levels. PM potential emissions are above the de minimis levels however remain below major source levels. There are no modeling requirements for PM.
- An emission testing is not required for the equipment.
- An application to amend to your Basic Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Hardwoods of Missouri is an existing flooring manufacturing facility located in Birch Tree, Missouri in Shannon County. Hardwoods of Missouri were formerly known as Missouri Hardwood Flooring Company until it changed ownership in November 2009. The installation had previously operated three flooring mills at this site, but they have since reduced to operating only one mill.

The following permits have been issued to Hardwoods of Missouri from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
0184-012	Installation of one (1) hardwood-fired boiler.
0387-009	Replacement of two (2) existing boiler w/ 1-300hp wood-fired boiler.
0192-006	Addition of a new processing line including two (2) planning operations, three (3) sawing operations and the replacement of a sawdust storage building with a storage silo.
0497-022	Extension of existing Peerless Bin Model 62 Mono with Peerless Bin Model 30 Mono.
0797-020	Addition of Cut-up saw and Williams Hog.
112000-009	Addition of a wood crusher
112011-003	Dip Tank

PROJECT DESCRIPTION

Hardwoods of Missouri is installing a new kiln in order to increase the capacity of wood the facility can dry. The new kiln heat source will be the existing wood fired boiler (EP-05). The addition of the kiln will increase the overall production of the facility by an estimated 10 percent. The MHDR of the facility was calculated in the previous construction permit 112011-003 to be 3750 board feet (BF) per hour. With the addition of the new the new MHDR was calculated to be 4125 BF per hour. Because the addition of the kiln increases the MHDR of the entire facility the PTE of the entire facility was calculated with the exception of the wood fired boiler. After reviewing previous construction permits received it was noticed that the method of calculating the current

existing PTE of facility overestimated the installation PTE. The old calculation method applied the log sawing emission factor (SCC 30700802) to each saw at the facility. Since Hardwoods of Missouri last construction permit where the sawing PTE was calculated it has been determined that the log sawing emission factor is for all the log sawing activity at the sawmill. Using this approach facility wide particulate matter is lower than what was originally calculated. The potential emissions of the ash handling (EP-16 and EP-17) from the wood fired boiler and the potential emissions from drying the wood in the kiln (EP-18) were not included in previous construction permits. These emission units have been added as a part of this project and the potential emissions were calculated and added to the installation conditioned potential emissions.

EMISSIONS/CONTROLS EVALUATION

The emission factors used to determine the potential emission from all the Sawing Activity (EP-13), the Wood Crusher (EP-15) and all the Sawdust Handling (EP-07/08) were obtained from the EPA Web Based Factor Information Retrieval (WebFIRE) Data System. The SCC codes for these processes are 30700802 (sawing activity), 30700801, and 30700803 respectively.

All saws at the Hardwoods of Missouri are controlled by a baghouse. A 50% capture efficiency was given to the baghouse and with a PM, PM₁₀, and PM_{2.5} control efficiency of 99%. The combined capture and control calculates out to be 49.5%.

The emission factors used to determine the potential emission from haul roads and vehicular activity were obtained from AP-42, Section 13.2.2, *Unpaved Roads* (November 2006).

The emission factors used to determine the potential emissions of the wood fired boiler were obtained from EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.6 *Combustion of Wood Residue in Boilers*, September 2003, National Council for Air and Stream Improvement (NCASI) Technical bulletin No. 858, Table 20A, and EPA's National Center for Environmental Assessment (NCEA) document "The Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States: The Year 2000 Update," Table 4-14. The emission factor for ash handling (EP-16 and EP-17) was obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 11.12 *Concrete Batching*, June 2006 (SCC 3-05-011-17). The emission factor for sawdust handling was obtained from the U.S. Environmental Protection Agency Factor Information Retrieval (FIRE) Data System for sawdust chip pile handling (SCC 30700803). The emission factors for the hardwood drying kilns were obtained from North Carolina Division of Air Quality industry guidance spreadsheet for estimating emissions from lumber kilns. The pollutants included in the North Carolina Division of Air Quality industry guidance are products of wood drying and include particulate matter, VOC, acetaldehyde, acrolein, formaldehyde, methanol, phenol, and propionaldehyde. The emission factors found in the spreadsheet are intended for estimating emissions from steam heated softwood drying kilns. However, due to a lack of emission factors for steam heated hardwood drying kilns, these emission factors were used to estimate the emissions associated with the six hardwood drying kilns (EP-18) associated with this project. The MHDR for

the boiler was calculated based on an hourly burning capacity equal to 1.45 tons of wood, as provided by the applicant, with a 40% moisture content and 5,200 Btu per pound of wood burned based on EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, *Appendix A*, September 1985.

The following table provides an emissions summary for this project. Existing potential emissions were recalculated for this project implementing the most current calculation method. Existing actual emissions were taken from the installation's 2013 EIQ. HOM emission factors need to be adjusted in their next EIQ submittal to reflect the new emission factors and units. Potential emissions of the application represent the potential of the new kiln and equipment affected by the increase in production, assuming continuous operation (8760 hours per year).

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	*Existing Potential Emissions	Existing Actual Emissions (2013 EIQ)	**Potential Controlled Emissions of the Application	New Installation Conditioned Potential
PM	25.0	57.53	N/D	41.24	61.28
PM ₁₀	15.0	32.81	1.83	14.84	34.22
PM _{2.5}	10.0	18.07	0.22	6.63	18.73
SO _x	40.0	1.65	0.32	N/A	1.65
NO _x	40.0	32.41	6.36	N/A	32.41
VOC	40.0	39.68	0.22	N/A	39.68
CO	100.0	13.61	7.78	1.23	13.61
GHG (CO ₂ e)	100,000	13,193	N/D	N/A	13,193
GHG (mass)	250.0	12,899	N/D	N/A	12,899
Total HAPs	10.0/25.0	11.58	0.79	0.87	11.58

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

*Existing Potential Emission were recalculated during this project review implementing the most current calculation method for sawmill facilities.

**Potential Controlled Emissions of the Application include emission from the new kiln and all affected emission units and process affected by the expected 10 percent increase in throughput at the facility.

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 all criteria pollutants are below de minimis levels with the exception of PM. The PM potential emissions are above the de minimis levels however remain below major source levels. There are no modeling requirements for PM.

APPLICABLE REQUIREMENTS

Hardwoods of Missouri 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
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070
 - *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, 40 CFR Part 60, Subpart Dc, applies to your wood fired boiler.
- *MACT Regulations*, 10 CSR 10-6.075
 - *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 CFR Part 63, Subpart JJJJJ, applies to your wood fired boiler.
- *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-6.405 does not apply to the wood fired boiler as it is subject to NSPS Subpart Dc.

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.

Gerad Fox
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated April 12, 2013, received April 23, 2014, designating Hardwoods of Missouri as the owner and operator of the installation.

Other reference documents used in this permit:

- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- U.S. Environmental Protection Agency Factor Information Retrieval (FIRE) Data System.
- North Carolina Division of Air Quality industry guidance spreadsheet for estimating emissions from lumber kilns.

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	
CFR	Code of Federal Regulations	National Emissions Standards for Hazardous Air Pollutants
CO	carbon monoxide	NO_x	nitrogen oxides
CO₂	carbon dioxide	NSPS	New Source Performance Standards
CO_{2e}	carbon dioxide equivalent	NSR	New Source Review
COMS	Continuous Opacity Monitoring System	PM	particulate matter
CSR	Code of State Regulations	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
dscf	dry standard cubic feet	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
EQ	Emission Inventory Questionnaire	ppm	parts per million
EP	Emission Point	PSD	Prevention of Significant Deterioration
EPA	Environmental Protection Agency	PTE	potential to emit
EU	Emission Unit	RACT	Reasonable Available Control Technology
fps	feet per second	RAL	Risk Assessment Level
ft	feet	SCC	Source Classification Code
GACT	Generally Available Control Technology	scfm	standard cubic feet per minute
GHG	Greenhouse Gas	SIC	Standard Industrial Classification
gpm	gallons per minute	SIP	State Implementation Plan
gr	grains	SMAL	Screening Model Action Levels
GWP	Global Warming Potential	SO_x	sulfur oxides
HAP	Hazardous Air Pollutant	SO₂	sulfur dioxide
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Jeff Davis
Owner
Hardwoods of Missouri
P.O. Box 117
Birch Tree, MO 65438

RE: New Source Review Permit - Project Number: 2013-04-088

Dear Mr. Davis:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. 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 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:shl

Enclosures

c: Southeast Regional Office
PAMS File: 2013-04-088

Permit Number: