



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: **112012-005** Project Number: 2012-05-057
Installation Number: 001-0041

Parent Company: Hartzell Hardwoods

Parent Company Address: 1025 S. Roosevelt Ave., Piqua, OH 45356

Installation Name: Hartzell Hardwoods – Kirksville Facility

Installation Address: 3310 North Industrial Road, Kirksville, MO 63501

Location Information: Adair County, S28/33, T63N, R15W

Application for Authority to Construct was made for:

The installation of a new 19.5 MMBtu/hr wood-fired boiler and a new paint booth. The boiler will be used to heat two (2) existing and eight (8) new drying kilns and one (1) existing and two (2) new steam boxes. 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.

NOV 15 2012

Wendy Tot for Kyra L. Moore

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.

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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."

Hartzell Hardwoods
Adair County, S28/33, T63N, R15W

1. Control Device Requirement – Cyclone/Electrostatic Precipitator (ESP)
 - A. Hartzell Hardwoods shall control emissions from the new 19.5 MMBtu/hr boiler (EP-01) using a cyclone followed by an ESP as specified in the permit application.
 - B. The cyclone/ESP system shall be operated and maintained in accordance with the manufacturer's specifications.
 - C. Hartzell Hardwoods shall monitor and record the operating parameters specified by the manufacturer to ensure proper operation of the cyclone/ESP system at least once every 24 hours. The operating parameters shall be maintained within the design conditions specified by the manufacturer's performance warranty. If the facility does not operate the boiler on that day, a "no operation" status should be noted on the log.
 - D. Hartzell Hardwoods shall maintain an operating and maintenance log for the cyclone/ESP system 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.
2. Control Device Requirement – Booth and Paint Arrestor Filters
 - A. Hartzell Hardwoods shall control emissions from the paint spray gun (EP-02) using a paint booth with paint arrestor filters as specified in the permit application.
 - B. The filters shall be operated and maintained in accordance with the manufacturer's specifications. The filters shall be equipped with a gauge or meter, which indicates the pressure drop across the control device.

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SPECIAL CONDITIONS:

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

These gauges or meters shall be located such that the Department of Natural Resources' employees may easily observe them.

- C. Replacement filters shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance and abrasion resistance).
 - D. Hartzell Hardwoods shall monitor and record the operating pressure drop across the filter 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. Hartzell Hardwoods shall maintain an operating and maintenance log for the filters 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.
3. Control Device Requirement – Cyclones
- A. Hartzell Hardwoods shall control emissions from the wood planer (EP-03) and the rip saw (EP-04) using a cyclone as specified in the permit application.
 - B. The cyclone shall be operated and maintained in accordance with the manufacturer's specifications.
 - C. Hartzell Hardwoods shall maintain an operating and maintenance log for the cyclone 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.
4. Capture Device – Hoods
- A. Hartzell Hardwoods shall use hoods to capture emissions from the wood planer (EP-03) and the rip saw (EP-04). A hood is a shaped inlet to a pollution control system that does not totally surround emissions from an emission unit.

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SPECIAL CONDITIONS:

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

- B. The maximum distance between the hood inlet and the emissions source shall not exceed 1.5 times the diameter of the exhaust duct.
5. Record Keeping and Reporting Requirements
- A. Hartzell Hardwoods 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. Hartzell Hardwoods 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: 2012-05-057
Installation ID Number: 001-0041
Permit Number:

Hartzell Hardwoods
3310 North Industrial Road
Kirksville, MO 63501

Complete: May 14, 2012

Parent Company:
Hartzell Hardwoods
3310 North Industrial Road
Kirksville, MO 63501

Adair County, S28/33, T63N, R15W

REVIEW SUMMARY

- Hartzell Hardwoods has applied for authority to install a new 19.5 MMBtu/hr wood-fired boiler and a new paint booth. The boiler will be used to heat two (2) existing and eight (8) new drying kilns and one (1) existing and two (2) new steam boxes.
- HAP emissions are expected from the proposed equipment, but only in amounts less than their respective SMAL. HAPs of concern from this process are dioxins, furans, polychlorinated biphenyls (PCB), and methanol.
- 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Unit*, of the NSPS applies to the new boiler.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment. 40 CFR Part 63, Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters*, does not apply to the new boiler because this installation is not a major source of HAP.
- A cyclone and an electrostatic precipitator (ESP) are being used to control particulate emissions from the boiler (EP-01). A booth and paint arrestor filters are being used to control particulate emissions from the paint spray gun (EP-02). A cyclone is being used to control particulate emissions from the wood planer (EP-03) and the rip saw (EP-04).
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below *de minimis* levels.

- This installation is located in Adair 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 because potential emissions of the application for criteria pollutants are below their respective *de minimis* level and for HAPs are below the SMAL.
- Emissions testing is not required for the equipment.
- A Basic Operating Permit application is required for this installation within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION

Hartzell Hardwoods, Inc. owns and operates a lumber yard that trims, grades and dries the wood before shipping. The facility currently operates a wood planer, a rip saw and a 3.9 MMBtu/hr wood-fired boiler that supplies steam to two drying kilns and a steam box. Particulate emissions from the planer and rip saw are controlled by a cyclone which collects the sawdust and drops the dust into a silo. The silo then feed the sawdust to the boiler using an auger conveyor. Besides the sawdust, the boiler also uses green and kiln dried wood chips purchased from outside suppliers and other wood wastes generated by the facility.

The facility is a minor source for construction permits and a basic installation for operating permits. No construction or operating permits have been issued to this facility by the Air Pollution Control Program.

PROJECT DESCRIPTION

The facility supplies steam to the kiln and steam boxes using a boiler. The facility proposes to replace its existing wood-fired 3.9 MMBtu/hr boiler with a wood-fired 19.5 MMBtu/hr boiler. The boiler will be used to heat two (2) existing and eight (8) new drying kilns and one (1) existing and two (2) new steam boxes. Each kiln has a capacity of 50,000 board feet. Each steam box has a capacity of 25,000 board feet. A cyclone followed by an ESP will be used to control the particulate emissions from the boiler. The existing boiler will be kept onsite as a backup. With the addition of the new boiler, the capacity of the lumber yard will increase from approximately 150,000 board feet to a maximum of 750,000 board feet per month (9 million board feet per year and 1027.4 board feet per hour). The weight of the wood is approximately 5 pounds per board foot entering the kiln and 3.2 pounds per board exiting. The maximum input capacity of the plant is then 1,875 tons of wood per month (22,500 tpy or 2.57 tph).

A new paint booth with one airless spray gun will also be added. The MHDR is 2.55 gallons per hour (gph), which includes 2.5 gph of Gempaint water-based paint and 0.05 gph of enamel spray paint. The MHDR takes into account material transport and setup time. Paint arrestor filters will be used to control emissions from the paint gun. The paint booth has a roof and three sides.

EMISSIONS/CONTROLS EVALUATION

Particulate, NO_x, SO_x, CO, VOC, nitrous oxide (N₂O), methane (CH₄) and CO₂ emissions from the new boiler were calculated using emission factors from EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.6, *Wood Residue Combustion in Boilers*, 9/03. The individual HAP emissions, excluding the dioxins and furans, were either calculated using emission factors from AP-42, Section 1.6, or from the document, *Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Sources at Kraft, Sulfite and Non-Chemical Pulp Mills – An Update*, Table A-19a, Technical Bulletin No. 858, National Council for Air and Stream Improvement, 2/03. The dioxin and furan emissions were calculated using the EPA document, *The Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States: The Year 2000 Update*, Table 4-14. Particulate emissions from the boiler are controlled using a cyclone followed by an ESP. The use of these control devices are already accounted for in the particulate emission factors, so no control device efficiency were assigned to them.

Particulate emissions from the paint booth were calculated using mass balances assuming a transfer efficiency of 75%, which was taken from Table 5-7 of the Air Pollution Training Institute (APTI) course 482 student manual, *Sources and Control of Volatile Organic Air Pollutants*, third edition. The percentage solid was obtained from the MSDS for the paints. The facility uses one type of water-based paint during the summer and one during the winter. The higher percent solid of the two were used for the calculations. The PM_{2.5}, PM₁₀ and PM were differentiated using the particle size distribution from a table developed by the California Emission Inventory Development and Reporting System (CEIDARS). A capture efficiency of 70% was given for the paint arrestor filters. This is the highest capture efficiency given by the Air Pollution Control Program without requiring additional design and record keeping requirements. A filter efficiency of 55%, 75% and 95% were given for PM_{2.5}, PM₁₀ and PM, respectively. These numbers were derived from data in the *Environmental Technology Verification Report, Paint Overspray Arrestor, Columbus Industries SL-46B* prepared by the Research Triangle Institute, 3/2000.

Because the addition of the boiler debottlenecks the sawing and sawdust handling equipment, the emissions increase from the equipment is counted as part of this project. Normally, the increase is calculated using the potential emissions after the modification minus the baseline actual emissions (BAE), which are the annual average emissions during a consecutive 24-month period within the last ten (10) years. However, using just the potential emissions of the equipment after the modification still resulted in all of the particulate emissions being below their respective *de minimis* levels. Therefore, subtracting the BAE was not necessary and only the potential emissions of the equipment were used.

Emissions from the sawing and sawdust handling equipment were calculated using emission factors (SCC 3-07-008-02 and 3-07-008-03) in WebFIRE, the internet application of the Factor Information Retrieval System (FIRE). The amount of sawdust handled per year was assumed to be 8% of the total wood processed, which was obtained from EPA document *Assessment of Fugitive Particulate Emission Factors for Industrial Processes*, EPA-450/3-78-107, 9/78. Emissions from raw material and product hauling were calculated using the equation in AP-42, Chapter 13.2.2, *Unpaved Roads*, (11/2006). No control measures are used on the haul roads.

The following table provides an emissions summary for this project. Existing potential emissions were calculated during this project and includes the 3.9 MMBtu/hr existing boiler. The existing boiler is only used as an emergency boiler and will not be hooked up to any control devices. Therefore, the uncontrolled emission factors were used. Existing actual emissions were not available because the facility was not required to obtain a permit for its existing equipment and therefore, did not need to file EIQs. Potential emissions of the application represent the potential of the new 19.5 MMBtu/hr boiler, the paint booth and all debottlenecked equipment, assuming continuous operations (8760 hours per year). Although the controlled potential emissions all pollutants for the project are below their respective *de minimis* level, a construction permit is required because the Air Pollution Control Program uses uncontrolled potential emissions for permit applicability. A Basic Operating permit is required because the installation-wide PM_{2.5} and PM₁₀ emissions are now greater than their respective *de minimis* levels and the boiler is also subject to NSPS Subpart Dc.

Table 1: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> /SMAL Levels	Existing Potential Emissions	Existing Actual Emissions (EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	9.86	N/D	11.55	N/A
PM ₁₀	15.0	8.83	N/D	8.31	N/A
PM _{2.5}	10.0	7.64	N/D	7.23	N/A
SO _x	40.0	0.43	N/D	2.14	N/A
NO _x	40.0	3.76	N/D	18.79	N/A
VOC	40.0	0.29	N/D	10.97	N/A
CO	100.0	10.25	N/D	51.25	N/A
CH ₄	N/A	0.36	N/D	1.79	N/A
CO ₂	N/A	3,331.00	N/D	16,654.95	N/A
N ₂ O	N/A	0.222	N/D	1.11	N/A
GHG-Mass	¹ 250/100,000	3,331.58	N/D	16,657.85	N/A
CO ₂ e		3,407.4	N/D	17,036.82	N/A
Dioxins/Furans	² 6 x 10 ⁻⁷	7.61 x 10 ⁻⁸	N/D	3.80 x 10 ⁻⁷	N/A
PCBs	² 0.009	2.07 x 10 ⁻⁷	N/D	1.03 x 10 ⁻⁶	N/A
Methanol	² 10.0	1.47 x 10 ⁻²	N/D	6.60	N/A
Individual HAP	10.0	N/A	N/D	N/A	N/A
Total HAPs	25.0	0.334	N/D	8.73	N/A

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

Note 1: GHG-Mass and CO₂e emissions do not have *de minimis* or SMAL values. PSD review is triggered if the GHG-Mass emissions are greater than 250.0 tpy **and** if the CO₂e emissions are greater than 100,000 tpy for the project.

Note 2: SMAL values.

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 all pollutants are below *de minimis* levels.

APPLICABLE REQUIREMENTS

Hartzell Hardwoods 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

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *New Source Performance Regulations*, 10 CSR 10-6.070 –*NSPS for Small Industrial-Commercial-Institutional Steam Generating Units*, 40 CFR Part 60, Subpart Dc
- *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-6.405

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.

Chia-Wei Young
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated May 10, 2012, received May 14, 2012, designating Hartzell Hardwoods as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- *Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Sources at Kraft, Sulfite and Non-chemical Pulp Mills – An Update*, National Council for Air and Stream Improvement (2/2003).
- U.S. EPA document, *The Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States: The Year 2000 Update*.
- Research Triangle Institute Report, *Environmental Technology Verification Report, Paint Overspray Arrestor, Columbus Industries SL-46B*.

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 Sheets
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	tpy	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. Joe Hartzell
Environmental Coordinator
Hartzell Hardwoods
PO Box 919
Kirksville, MO 63501

RE: New Source Review Permit - Project Number: 2012-05-057

Dear Mr. Hartzell:

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 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 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 Chia-Wei Young, 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:cyl

Enclosures

c: Northeast Regional Office
PAMS File: 2012-05-057

Permit Number: