

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: 102012-008

Project Number: 2012-07-081
Installation Number: 221-0008

Parent Company: Red Wing Shoe Company, Inc.

Parent Company Address: 314 Main Street, Red Wing, MN 55066

Installation Name: Red Wing Shoe Company, Inc.

Installation Address: One Red Wing Drive, Potosi, MO 63664

Location Information: Washington County, S13, T37N, R2E

Application for Authority to Construct was made for:
Installation of a Gusbi machine (EP-06). 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.

OCT 18 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 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.

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

Project Number: 2012-07-081
Installation ID Number: 221-0008
Permit Number:

Red Wing Shoe Company, Inc.
One Red Wing Drive
Potosi, MO 63664

Complete: July 23th, 2012

Parent Company:
Red Wing Shoe Company, Inc.
314 Main Street
Red Wing, MN 55066

Washington County, S13, T37N, R2E

REVIEW SUMMARY

- Red Wing Shoe Company, Inc. has applied for authority to install a Gusbi machine that has 40 mold stations and will form the sole and boot upper of the shoe.
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process are diphenylmethane diisocyanate [4,4-] (CAS 101-68-8).
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- No air pollution control equipment is being used in association with the new equipment.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of VOC are below de minimis levels, but above the insignificant emission exemption level.
- This installation is located in Washington 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 the application are below de minimis levels.

- Emissions testing are not required for the equipment.
- A modification to your Intermediate Operating Permit is required for this installation within 90 days of equipment startup or a Part 70 Operating Permit is required within a year or equipment start up.
- Approval of this permit is recommended without special conditions.

INSTALLATION DESCRIPTION

Red Wing Shoe Company in Potosi, Missouri manufactures footwear, herein referred to as Red Wing. Red Wing was a major source of VOCs, but has taken an installation wide limit of 95 tons per year for VOC, 9.5 tons per year for individual HAPs, and less than 24 tons per year combined HAPs in their Intermediate Operating Permit OP2009-035. The following New Source Review permits have been issued to Red Wing Shoe Company, Inc. from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
OP1999-159	Part 70 operating permit
012001-009	Construction permit for previously installed equipment
OP1999-159A	Part 70 operating permit amendment
032003-035	Construction permit for urethane machines
OP2004-008	Intermediate operating permit
OP2009-035	Intermediate operating permit renewal
032010-004	Construction permit for a welt operation
OP2009-035A	Intermediate operating permit amendment

PROJECT DESCRIPTION

The Gusbi machine (EP-06) consists of 40 mold stations into which a two-part urethane material is poured at an application rate of 0.66 gallons per hour and a maximum throughput of 17.84 tons per year. The mold forms the sole and also holds the boot upper. As the urethane resin reacts with the activator the resin expands, hardens, and binds to the boot upper. The boot moves toward the take apart station as the carousel rotates. The urethane cures during this time. When the boot has rotated to the take apart station the mold is then opened, the boot removed, and the molds rotate to the mold release spray station to begin another cycle.

Before the urethane compounds are poured into the mold, it is sprayed with a mold releasing agent. Red Wing uses chemical 559 as their mold releasing agent.

Red Wing had installed a Gusbi machine in 1998 and then removed it in 2005. Red Wing is now removing a urethane machine (U5) and installing this Gusbi machine therefore, according to the applicant, no debottlenecking is taking place.

EMISSIONS/CONTROLS EVALUATION

The project maximum throughputs are listed in Table 2. The emission factors used in the VOCs emission analysis for the mold releasing agent, chemical 559 were developed from the MSDS submitted with the permit application. Multiplying the density and the application rate of chemical 559 the maximum throughput was obtained. Using the percent VOC listed on the MSDS sheet the potential VOC emissions from chemical 559 were obtained.

In order to estimate the emission of MDI and VOCs from one part of the urethane material, Isocyanate RU-5745-T, the Air Pollution Control Program reviewed the article *“Developing a National Emissions Inventory for 4,4-Methylene Diphenyl Diisocyanate”* by William Robert, Dennis Miller, Jeffrey Holmstead & Scott Schang, Anne Pope, and Stephanie Finn (EPA web site <http://www.epa.gov/ttnchie1/conference/ei10/toxics/schang.pdf>). The Society of the Plastics Industry’s Polyurethane Division developed a detailed method (often referred to as the “Notebook Method”) to estimate MDI emissions. In 1999 the American Chemistry Council (ACC) established an MDI Emissions Project. The scope of the project was to quantify the amount of applications. The emissions of VOCs and MDI from Isocyanate RU-5745-T were done by a ratio of a similar process emissions and pounds of chemical used to the pounds of chemical used by Red Wing annually. (The similar process emissions were verified by testing by the MDI Emissions Project.)

The second chemical in the urethane material is Polyol RU-5791-R. Polyol RU-5791-R does not list any VOC or HAPs.

Table 2: Chemical Usage

Chemical Name	Maximum Annual Throughput (pounds)
559	35672.5
Isocyanate RU-5745-T	0.1 million
Polyol RU-5791-R	N/D

The following table provides an emissions summary for this project. Existing potential emissions were taken from the unconditioned potential emissions of the application in permit number 032010-004 and adding them to the installation wide limit of 95 tons per year. Existing actual emissions were taken from the installation’s 2011 EI. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). The new installation potential emissions represent the potential emissions of the installation at the completion of this project.

Table 3: 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	New Installation Potential Emissions
PM	25.0	N/A	N/A	N/A	N/A
PM ₁₀	15.0	N/A	N/A	N/A	N/A
PM _{2.5}	10.0	N/A	N/A	N/A	N/A
SO _x	40.0	N/A	N/A	N/A	N/A
NO _x	40.0	N/A	N/A	N/A	N/A
VOC	40.0	113.21	23.02	16.05	129.26
CO	100.0	N/A	N/A	N/A	N/A
HAPs	10.0/25.0	N/D	N/A	2.38E-06	N/A
MDI ¹	0.1 ²	3.50E-05	N/A	2.38E-06	3.74E-05

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

¹Diphenylmethane diisocyanate (4,4-)

²Screening Model Action Level

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 VOC are below de minimis levels, but above the insignificant emission exemption level.

APPLICABLE REQUIREMENTS

Red Wing Shoe Company, 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
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

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 without special conditions.

Janelle Lewis
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated July 23rd, 2012, received July 23rd, 2012, designating Red Wing Shoe Company, Inc. as the owner and operator of the installation.
- *Developing a National Emissions Inventory for 4,4-Methylene Diphenyl Diisocyanate*, William Robert, Dennis Miller, Jeffrey Holmstead & Scott Schang, Anne Pope, and Stephanie Finn.
- <http://www.epa.gov/ttnchie1/conference/ei10/toxics/>

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. John Smith
Director of Enterprise Risk Management
Red Wing Shoe Company, Inc.
314 Main Street
Red Wing, MN 55066

RE: New Source Review Permit - Project Number: 2012-07-081

Dear Mr. Smith:

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 Janelle Lewis, 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:jl

Enclosures

c: Southeast Regional Office
PAMS File: 2012-07-081

Permit Number: