



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: **082013-008** Project Number: 2013-05-027

Installation Number: 071-0068

Parent Company: Meramec Group, Inc.

Parent Company Address: 338 Ramsey Street, Sullivan, MO 63080

Installation Name: Meramec Industries, Inc.

Installation Address: 338 Ramsey Street, Sullivan, MO 63080

Location Information: Franklin County, S17, T40N, R2W

Application for Authority to Construct was made for:
Table 18 consisting of flexible urethane foam molding and surface coating . 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.

AUG 19 2013

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."

Meramec Industries, Inc.
Franklin County, S17, T40N, R2W

1. Capture Device Requirement – Table 18 Surface Coating (EU-31e)
 - A. Meramec Industries, Inc. shall capture emissions from the spray applied surface coating operation with a booth and exhaust fan(s).
 - B. Negative pressure shall be demonstrated and recorded at all booth openings at least once every 24 hours using visual indication such as streamers, powder puff, smoke, or other method preapproved by the Air Pollution Control Program. 24- hour periods when spray applied surface coating is non-operational shall be recorded.
 - C. Meramec Industries, Inc. shall operate the surface coating booth's exhaust fan(s) at all times surface coating is spray applied.
 - D. No more than one spray gun shall operate at one time.
 - E. Meramec Industries, Inc. shall maintain an operating and maintenance log for the filter 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 – Table 18 Surface Coating (EU-31e)
 - A. Meramec Industries, Inc. shall control emissions from the spray applied surface coating operation using an exhaust filter.
 - B. The filter shall be operated and maintained in accordance with the manufacturer's specifications.
 - C. The filter shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be

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SPECIAL CONDITIONS:

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

located such that the Department of Natural Resources' employees may easily observe them. The pressure drop shall be measured and recorded at least once every 24 hours. 24-hour periods when spray applied surface coating is non-operational shall be recorded. The pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

- D. Meramec Industries, Inc. shall maintain a copy of the filter manufacturer's performance warranty on site.
- E. Meramec Industries, Inc. shall maintain an operating and maintenance log for the filter 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. Operational Requirement – Raw Materials
Meramec Industries, Inc. shall keep all raw materials (mold release, resin, isocyanate, blowing agents, surface coating) in sealed containers whenever the materials are not in use. Meramec Industries, Inc. shall provide and maintain suitable, easily read, permanent markings on all raw materials used with this equipment.
- 4. Use of Alternative Material in Table 18 Surface Coating (EU-31e)
 - A. Before using an alternative surface coating at Table 18 that differs from a material listed in the Application for Authority to Construct, Meramec Industries, Inc. shall calculate the potential emissions of all HAPs and VOC from using the alternative material.
 - B. Meramec Industries, Inc. shall seek approval from the Air Pollution Control Program New Source Review Unit before use of the alternative material if the potential individual HAP emissions for the alternative material are greater than the SMAL for any HAP listed in Appendix B, or if the potential VOC emissions for the alternative material are greater than 12.05 tons per year.
 - C. Attachment A or equivalent forms, such as electronic forms, preapproved by the Air Pollution Control Program shall be used to show compliance with Special Conditions 4.A and 4.B.

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SPECIAL CONDITIONS:

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

5. Record Keeping and Reporting Requirements
 - A. Meramec Industries, 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. These records shall include MSDS for all materials used.
 - B. Meramec Industries, Inc. 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 shows an exceedance of a limitation imposed by this permit.

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

Project Number: 2013-05-027
Installation ID Number: 071-0068
Permit Number:

Meramec Industries, Inc.
338 Ramsey Street
Sullivan, MO 63080

Complete: May 13, 2013

Parent Company:
Meramec Group, Inc.
338 Ramsey Street
Sullivan, MO 63080

Franklin County, S17, T40N, R2W

REVIEW SUMMARY

- Meramec Industries, Inc. has applied for authority to install Table 18 consisting of flexible urethane foam molding and surface coating .
- MDI (CAS 101-68-8) HAP emissions are expected from the foam molding. All surface coatings evaluated for this project are HAP free.
- None of the NSPS under 40 CFR 60 apply to the proposed emission units. 40 CFR 60 Subpart FFF, *Standards of Performance for Flexible Vinyl and Urethane Coating and Printing*, does not apply as the foam is not rotogravure printed.
- 40 CFR 60 Subpart RRR, *Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes*, does not apply. Butane diol (CAS 110-63-4) and ethylene glycol (CAS 107-21-1) are listed in §60.707, but are not a product, co-product, by-product, or intermediate.
- None of the NESHAPs under 40 CFR 61 apply to the proposed emission units.
- 40 CFR 63 Subpart OOOOOO, *National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production and Fabrication Area Sources*, applies to the proposed emission units and other processes at the installation. According to the MSDS submitted with the project, the proposed emission units do not use a material containing methylene chloride. The MACT requires a methylene chloride compliance certification to be on file. The MACT does not require a startup, shutdown, malfunction plan; and does not require performance tests or continuous monitoring. Please refer to the MACT for complete requirements.

- 40 CFR 63 Subpart III, *National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production*, 40 CFR 63 Subpart PPPP, *National Emission Standards for Hazardous Air Pollutants for Surface Coating of Plastic Parts and Products*, and 40 CFR 63 Subpart MMMMM, *National Emission Standard for Hazardous Air Pollutants: Flexible Polyurethane Foam Fabrication Operations*, do not apply because the installation is not a major HAP source.
- 40 CFR 63 Subpart VVVVVV, *National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources*, and 40 CFR 63 Subpart BBBB BBB, *National Emission Standards for Hazardous Air Pollutants for Area Sources: Chemical Preparations Industry*, do not apply to the installation. According to the resin and isocyanate MSDS the installation is the manufacturer of these materials. The installation purchases raw materials and combines them according to different recipes to generate resin blends. It does not manufacture via a chemical reaction or process involving precursor reactants, any of the raw materials used in the blends. Also, the resin and isocyanate do not contain a MACT 6V Table 1 HAP or MACT 6B Target HAP.
- 40 CFR 63 Subpart HHHHHH, *National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*, does not apply to the proposed surface coating because the coatings do not contain target HAPs.
- A partially enclosed booth and exhaust filter are being used to control the PM, PM₁₀, and PM_{2.5} emissions from the spray applied surface coating.
- 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 respective de minimis levels. Potential emissions of VOC exceed the insignificant emission exemption level in 10 CSR 10-6.061(3)(A)3.A., thus requiring a permit.
- This installation is located in Franklin County, a nonattainment area for the 8-hour ozone standard and the PM_{2.5} standard and an attainment area for all other 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 for this review. Potential emissions of the project are below respective de minimis levels.
- Emissions testing are not required for the emission units.

- Submittal of an application to amend the Part 70 Operating Permit is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Meramec Industries, Inc. manufactures molded polyurethane shoe soles and industrial plastic parts. Meramec Industries, Inc. and adjacent facility Moldtech Inc. are one installation for permitting applicability under Meramec Group, Inc. The installation is located in Sullivan, Franklin County, which is part of the St. Louis metropolitan area. Isocyanate prepolymer and polyurethane polyols are mixed and poured into molds that are pre-sprayed with a mold release compound and occasionally pre-sprayed with lacquer surface coating. After removal from the molds, the products are either directly shipped or spray coated with lacquer and then shipped. The installation is a major source of VOC for construction and operating permit applicability. Table 1 lists the New Source Review (construction) permits that have been issued to Meramec Industries, Inc. from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
0195-025	Installation of a shoe sole production line
0499-008	Installation of polyurethane shoe sole mold Line 12
052002-018	Installation of two paint lines and equipment for a molding process line
072002-010	Modification to existing molding lines to include the usage of n-pentane as a blowing agent; this permit was a combination of projects 2002-02-019, 2002-02-020.
042005-002	Modification to an existing painting operation
072002-010A	MHDR correction for sandblaster and abrasive cleaner
062005-003	Installation of a new automated finishing operation
062005-003A	Amended recordkeeping requirements
032006-009	New molding operation
032006-009A	Amended MACT PPPP applicability
092010-010	New molding operation Table 24

PROJECT DESCRIPTION

Meramec Industries, Inc. proposes to install a flexible polyurethane foam manufacturing station, Table 18 (EP-31). Table 18 will manufacture one-piece floor mats. It will consist of spray applying mold release compound, then water-based paint. Isocyanate prepolymer and polyurethane polyols will be mixed with n-pentane and n-butane blowing agents and injected into the mold. The part will cure before being removed, trimmed, and packaged. The molds will be cleaned with media blasting. Only one mat will be made at a time. Only one paint spray gun will be used at a time. The largest mold produces a 5x4 feet by 0.75 inches thick mat. Up to 12 mats can be made in one hour. Paint overspray emissions will be controlled with a partially enclosed-curtain booth and fiberglass arrestor pad. Process description and MHDR are summarized in Table 2. MHDRs were provided by the installation based upon a similar process, Table 24, from permit 092010-010.

The installation has requested confidentiality of mold release and paint product names. This is the public permit. A confidential permit is available under project 2013-07-074.

Table 2: EP-31 Process Summary

Emission Unit	Description	Material	MHDR (lb/hr)
EU-31a	Mold release		1.693
EU-31b	Foam part A	Meramec Group PP-303 Polyurethane Resin	128.706
EU-31c	Foam part B	Meramec Group MG23 MDI Isocyanate	51.294
EU-31d	Blowing agent	Ashland n-Pentane 20592	4.140
		Aeropres n-Butane 17 (A-17)	
EU-31e	Paint		1.587

EMISSIONS/CONTROLS EVALUATION

Potential emissions from the mold release were calculated using mass balance, conservatively assuming all blowing agent would be released. Either blowing agent can be used as their VOC potential emissions are equal, and the most conservative GHG (CO₂e) PTE is reported for pentane. Potential GHG emissions from the foam production were calculated using mass balance and GWP obtained from the Intergovernmental Panel on Climate Change (IPCC) document, *IPCC 4th Assessment Report: Climate Change 2007*, Table 2.15 and the EPA document, *Transitioning to Low-GWP Alternatives in Building/Construction Foams*, February 2011. These documents were used because 40 CFR 98 does not provide a pentane or butane 100 year GWP. A 100 year GWP of 4.0 was used for the butane blowing agent, while 25.0 was used for the pentane blowing agent. The most conservative GHG (CO₂e) resulted from assuming pentane is the only blowing agent. The foam part B contains MDI. MDI reacts with water to produce CO₂. However, the foam part A MSDS does not indicate water as an ingredient, and similar product MSDS from other suppliers indicate less than 0.1% water mass. Therefore, it was assumed no GHG will be produced from the polyurethane reaction itself, only from the usage of blowing agents.

Potential emissions from the foam mixture were calculated using a document obtained from the Alliance For The Polyurethanes Industry, *MDI/Polymeric MDI Emissions Reporting Guidelines For the Polyurethane Industry*, pages 5-40 and 5-41, 2004. The isocyanate contains MDI. The resin contains VOC and ethylene glycol. MDI was the only pollutant whose emissions were calculated. Ethylene glycol emissions were considered negligible citing industry documents and 40 CFR 63 MACT III silence.

Potential emissions from the surface coating were calculated using mass balance. The HVLP gun was assigned 65% transfer efficiency, cited from the EPA document, *Sources and Control of Volatile Organic Air Pollutants*, Section 5.1.3.1, *Spray Coating*, November 2002. All solids were conservatively considered PM_{2.5}. The table is equipped with curtains that raise and lower to form a booth as needed. The booth was assigned 95% capture efficiency as negative pressure will be demonstrated, but the

booth does not meet the definition of permanent total enclosure according to EPA Method 204. The Airguard fiberglass paint arrestor media AG/FG exhaust filter was assigned 90% PM_{2.5} control efficiency. The manufacturer specifications indicate 94% paint removal efficiency, but do not show particle size distribution. The coatings do not contain HAPs. Only one coating can be applied at one time. The potential emissions are the highest per pollutant regardless of the coating type, which represents the most conservative method. The highest VOC PTE is from the black paint at 1.85 tpy. The highest PM_{2.5} PTE is from the tan paint at 0.13 tons per year.

This permit allows surface coatings not evaluated under this project to be used without requiring a new construction permit when the individual HAP potential emissions don't exceed the respective SMAL, and the coating VOC potential emissions don't exceed 12.05 tpy. 12.05 tpy is the hourly insignificant emission exemption level in 10 CSR 10-6.061(3)(A)3. converted to tpy assuming 8,760 hours for PTE purposes. Project surface coating VOC potential emissions are 1.85 tpy. Any change in mold release, resin, isocyanate, or blowing agents is subject to construction permitting applicability.

The floor mat surface coating is subject to 10 CSR 10-5.330, *Control of Emissions From Industrial Surface Coating Operations*. The VOC emission limit is 2.3 lbs of VOC per gallon for "plastic and rubber parts and products coatings, plastic and rubber, all other, general, one component coating" per section (3)(J). Single use of black coating exceeds the limit, however compliance is demonstrated using the daily volume weighted average. Table 3 provides the coating VOC content.

Table 3: Coating VOC Content (lb/gal)

Coating	VOC Content (lb/gal)
	2.17
	2.34
	1.58
	2.10
	2.22

Molds will be cleaned with existing permitted media blasting. The media blasting was permitted at a MHDR that was not limited by the mold throughput, therefore this project does not debottleneck the media blasting and there is no potential emissions increase from media blasting.

Working and breathing losses from the raw materials were not calculated and were considered negligible.

Table 4 provides an emissions summary for this project. Existing PM₁₀, VOC, and HAP potential emissions were cited from permit 092010-010, with HAP reductions from delisted methyl ethyl ketone. PM and PM_{2.5} were assumed equal to PM₁₀ emissions. Existing natural gas combustion emissions were recalculated using emission factors for SCC 1-02-006-03 at 8.04 MMBtu/hr input cited from permit OP2012-038. The existing natural gas combustion emissions were summed with the PM, PM₁₀, PM_{2.5}, VOC, and HAP potential emissions from permit 092010-010. Consistent with the GHG emission calculations for this project, GHG emissions exist for other molding operations at the installation, but were not included in the existing potential emissions. n-Pentane and n-

Butane are the only blowing agents in use, and their GHG (CO₂e) are low, consistent with the GHG (CO₂e) potential emissions for this project. Installation-wide GHG (CO₂e) are well below the NSR major source level. Existing actual emissions were cited from the installation's 2012 EIQ. Potential emissions of the project represent the potential of the new molding and painting, assuming continuous operation (8,760 hours per year).

Table 4: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2012 EIQ)	Potential Emissions of the Project	New Installation Potential Emissions
PM	25.0	15.24	N/D	0.13	15.35
PM ₁₀	15.0	15.43	0.84	0.13	15.56
PM _{2.5}	10.0	15.43	0.81	0.13	15.56
SO _x	40.0	0.02	1.6E-03	N/A	0.02
NO _x	40.0	3.47	0.27	N/A	3.47
VOC	40.0	314.70	38.15	27.40	342.10
CO	100.0	2.91	0.06	N/A	2.91
GHG (CO ₂ e)	75,000 / 100,000	4,183.73	N/D	453.33	² 4,637.06
GHG (mass)	0.0 / 100.0 / 250.0	4,158.58	N/D	18.13	² 4,176.71
HAPs	10.0/25.0	7.66	N/D	2.05E-07	7.66
MDI	¹ 0.1	N/D	N/D	2.05E-07	² 2.05E-07

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

¹ SMAL

² Do not include PTE from existing molding operations.

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 respective de minimis levels. Potential emissions of VOC exceed the insignificant emission exemption level in 10 CSR 10-6.061(3)(A)3.A., thus requiring a permit.

APPLICABLE REQUIREMENTS

Meramec Industries, 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

SPECIFIC REQUIREMENTS

- *Control of Emissions From Industrial Surface Coating Operations*, 10 CSR 10-5.330
- *MACT Regulations*, 10 CSR 10-6.075
 - *National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production and Fabrication Area Sources*, 40 CFR Part 63, Subpart OOOOOO

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.

David Little
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 May 8, 2013, received May 13, 2013, designating Meramec Group, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Attachment A: Table 18 Alternative Coating Compliance Worksheet

Meramec Industries, Inc.
 Franklin County, S17, T40N, R2W
 Project Number: 2013-05-027
 Installation ID Number: 071-0068
 Permit Number: _____

Coating Name: _____ Date: _____ Copy this sheet as needed.

A	B	C	D	E	F	G	H	I
Individual HAP Name and CAS No.	HAP is also PM (yes / no)	Individual HAP Content (max weight %)	Maximum Application Rate (lbs coating per hour)	Overall PM Control Efficiency (%)	Individual HAP PTE (tons per year)	Individual HAP SMAL (tons per year)	Coating VOC (weight %)	Coating VOC PTE (tons per year)
<i>Benzene 71-43-2</i>	<i>no</i>	<i>2.0%</i>	<i>1.587</i>	<i>N/A</i>	<i>0.14</i>	<i>2.0</i>	<i>36.61%</i>	<i>2.54</i>
<i>Cobalt 2-Ethylhexanoate 136-52-7</i>	<i>yes</i>	<i>0.5%</i>		<i>94.925%</i>	<i>0.0018</i>	<i>0.1</i>		

- A. Record the all individual HAPs from this single coating MSDS.
- B. Compare the HAP to Appendix B for verification as particulate matter.
- C. Record the maximum weight percent of each HAP from the MSDS.
- D. The maximum application rate is 1.587 lbs of coating per hour. If the maximum application rate is exceeded, seek approval from the Air Pollution Control Program New Source Review Unit before using this coating.
- E. The overall PM control efficiency includes the HVLP transfer efficiency (65%), booth capture efficiency (95%), and exhaust filter control efficiency (90%): $65\% + (1 - 65\%) \times 95\% \times 90\% = 94.925\%$
- F. Calculate the particulate matter HAP potential to emit: $F = C \times D \times (1 - E) \times 8,760 / 2,000$. Otherwise calculate the volatile HAP potential to emit: $F = C \times D \times 8,760 / 2,000$.
- G. Record the individual HAP SMAL from the most recent Appendix B, also available at <http://www.dnr.mo.gov/env/apcp/permits/constpmtguide.htm> as *Table of Hazardous Air Pollutants, Screening Model Action Levels and Risk Assessment Levels*. If the individual HAP potential to emit is greater than the SMAL seek approval from the Air Pollution Control Program New Source Review Unit before using this coating.
- H. Record or calculate the coating's VOC weight % from the MSDS. Verify VOC status according to 10 CSR 10-6.020 *Definitions and Common Reference Tables (2)(V)13*.
- I. Calculate the VOC potential to emit: $I = D \times H \times 8,760 / 2,000$. If the VOC potential to emit is greater than 12.05 tons per year seek approval from the Air Pollution Control Program New Source Review Unit before using this coating.

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		

Appendix B: Table of Hazardous Air Pollutants and Screening Model Action Levels (May 3, 2012 Revision 10)

Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	
ACETALDEHYDE	75-07-0	9		Y	N	CARBARYL	63-25-2	10	V	Y	Y	DICHLOROPROPANE, [1,2-]	78-87-5	1			Y	N
ACETAMIDE	60-35-5	1		Y	N	CARBON DISULFIDE	75-15-0	1		Y	N	DICHLOROPROPENE, [1,3-]	542-75-6	1			Y	N
ACETONITRILE	75-05-8	4		Y	N	CARBON TETRACHLORIDE	56-23-5	1		Y	N	DICHLORVOS	62-73-7	0.2			Y	N
ACETOPHENONE	98-86-2	1	Y	Y	N	CARBONYL SULFIDE	463-58-1	5	Y	N		111-42-2	5			Y	N	
ACETYLAMINOFLUORINE, [2-]	53-96-3	0.005	V	Y	Y	CATECHOL	120-80-9	5		Y	N	DIETHYL SULFATE	64-67-5	1			Y	N
ACROLEIN	107-02-8	0.04		Y	N	CHLORAMBEN	133-90-4	1		Y	Y	DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	5	P		Y	N
ACRYLAMIDE	79-06-1	0.02		Y	N	CHLORDANE	57-74-9	0.01		Y	Y	DIMETHOXYBENZIDINE, [3,3-]	119-90-4	0.1	V		Y	Y
ACRYLIC ACID	79-10-7	0.6		Y	N	CHLORINE	7782-50-5	0.1		N	N	DIMETHYL BENZIDINE, [3,3-]	119-93-7	0.008	V		Y	Y
ACRYLONITRILE	107-13-1	0.3		Y	N	CHLOROACETIC ACID	79-11-8	0.1		Y	N	DIMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02			Y	N
ALLYL CHLORIDE	107-05-1	1		Y	N	CHLOROACETOPHENONE, [2-]	532-27-4	0.06	Y	N		68-12-2	1			Y	N	
AMINOBIIPHENYL, [4-]	92-67-1	1	V	Y	N	CHLOROBENZENE	108-90-7	10		Y	N	DIMETHYL HYDRAZINE, [1,1-]	57-14-7	0.008			Y	N
ANILINE	62-53-3	1		Y	N	CHLOROBENZILATE	510-15-6	0.4	V	Y	Y	DIMETHYL PHTHALATE	131-11-3	10			Y	N
ANISIDINE, [ORTHO-]	90-04-0	1		Y	N	CHLOROFORM	67-66-3	0.9		Y	N	DIMETHYL SULFATE	77-78-1	0.1			Y	N
ANTHRACENE	120-12-7	0.01	V	Y	N	CHLOROMETHYL METHYL ETHER	107-30-2	0.1		Y	N	DIMETHYLAMINOAZOBENZENE, [4-]	60-11-7	1			Y	N
ANTIMONY COMPOUNDS		5	H	N	Y	CHLOROPRENE	126-99-8	1		Y	N	DIMETHYLANILINE, [N-N]	121-69-7	1			Y	N
ANTIMONY PENTAFLUORIDE	7783-70-2	0.1	H	N	Y	CHROMIUM (VI) COMPOUNDS		0.002	L	N	Y	DINITRO-O-CRESOL, [4,6-] (Note 6)	534-52-1	0.1	E	Y	Y	
ANTIMONY POTASSIUM TARTRATE	28300-74-5	1	H	N	Y	CHROMIUM COMPOUNDS		5	L	N	Y	DINITROPHENOL, [2,4-]	51-28-5	1			Y	N
ANTIMONY TRIOXIDE	1309-64-4	1	H	N	Y	CHRYSENE	218-01-9	0.01	V	Y	N	DINITROTOLUENE, [2,4-]	121-14-2	0.02			Y	N
ANTIMONY TRISULFIDE	1345-04-6	0.1	H	N	Y	COBALT COMPOUNDS		0.1	M	N	Y	DIOXANE, [1,4-]	123-91-1	6			Y	N
ARSENIC COMPOUNDS		0.005	I	N	Y	COKE OVEN EMISSIONS	8007-45-2	0.03	N	Y	N	DIPHENYLHYDRAZINE, [1,2-]	122-66-7	0.09	V		Y	Y
ASBESTOS	1332-21-4	0	A	N	Y	CRESOL, [META-]	108-39-4	1	B	Y	N	DIPHENYLMETHANE DIISOCYANATE, [4,4-]	101-68-8	0.1	V		Y	N
BENZ(A)ANTHRACENE	56-55-3	0.01	V	Y	N	CRESOL, [ORTHO-]	95-48-7	1	B	Y	N	EPICHLOROHYDRIN	106-89-8	2			Y	N
BENZENE	71-43-2	2		Y	N	CRESOL, [PARA-]	106-44-5	1	B	Y	N	ETHOXYETHANOL, [2-]	110-80-5	10	P		Y	N
BENZIDINE	92-87-5	0.0003	V	Y	N	CRESOLS (MIXED ISOMERS)	1319-77-3	1	B	Y	N	ETHOXYETHYL ACETATE, [2-]	111-15-9	5	P		Y	N
BENZO(A)PYRENE	50-32-8	0.01	V	Y	N	CUMENE	98-82-8	10		Y	N	ETHYL ACRYLATE	140-88-5	1			Y	N
BENZO(B)FLUORANTHENE	205-99-2	0.01	V	Y	N	CYANIDE COMPOUNDS		0.1	O	Y	N	ETHYL BENZENE	100-41-4	10			Y	N
BENZO(K)FLUORANTHENE	207-08-9	0.01	V	Y	N	DDE	72-55-9	0.01	V	Y	Y	ETHYL CHLORIDE	75-00-3	10	Y		Y	N
BENZOTRICHLORIDE	98-07-7	0.006		Y	N	DI(2-ETHYLHEXYL) PHTHALATE, (DEHP)	117-81-7	5		Y	N	ETHYLENE GLYCOL	107-21-1	10			Y	N
BENZYL CHLORIDE	100-44-7	0.1		Y	N	DIAMINOTOLUENE, [2,4-]	95-80-7	0.02		Y	N	ETHYLENE GLYCOL MONOBUTYL ETHER (Delisted)	111-76-2					
BERYLLIUM COMPOUNDS		0.008	J	N	Y	DIAZOMETHANE	334-88-3	1		Y	N	ETHYLENE GLYCOL MONOHEXYL ETHER	112-25-4	5	P		Y	N
BERYLLIUM SALTS		2E-05	J	N	Y	DIBENZ(A,H)ANTHRACENE	53-70-3	0.01	V	Y	N	ETHYLENE IMINE [AZIRIDINE]	151-56-4	0.003			Y	N
BIPHENYL, [1,1-]	92-52-4	10	V	Y	N	DIOXINS/FURANS		6E-07	D,V	Y	N	ETHYLENE OXIDE	75-21-8	0.1			Y	N
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		Y	N	DIBENZOFURAN	132-64-9	5	V	Y	N	ETHYLENE THIOUREA	96-45-7	0.6			Y	Y
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0003		Y	N	DIBROMO-3-CHLOROPROPANE, [1,2-]	96-12-8	0.01		Y	N	FORMALDEHYDE	50-00-0	2			Y	N
BROMOFORM	75-25-2	10		Y	N	DIBROMOETHANE, [1,2-]	106-93-4	0.1	Y	N		GLYCOL ETHER (ETHYLENE GLYCOL ETHERS)		5	P		Y	N
BROMOMETHANE	74-83-9	10		Y	N	DIBUTYL PHTHALATE	84-74-2	10		Y	Y	GLYCOL ETHER (DIETHYLENE GLYCOL ETHERS)		5	P		Y	N
BUTADIENE, [1,3-]	106-99-0	0.07		Y	N	DICHLOROBENZENE, [1,4-]	106-46-7	3		Y	N	HEPTACHLOR	76-44-8	0.02			Y	N
BUTOXYETHANOL ACETATE, [2-]	112-07-2	5	P	Y	N	DICHLOROBENZIDENE, [3,3-]	91-94-1	0.2	V	Y	Y	HEXACHLOROBENZENE	118-74-1	0.01			Y	N
BUTYLENE OXIDE, [1,2-]	106-88-7	1		Y	N	DICHLOROETHANE, [1,1-]	75-34-3	1		Y	N	HEXACHLOROBUTADIENE	87-68-3	0.9			Y	N
CADMIUM COMPOUNDS		0.01	K	N	Y	DICHLOROETHANE, [1,2-]	107-06-2	0.8		Y	N	HEXACHLOROCYCLOHEXANE, [ALPHA-]	319-84-6	0.01	F		Y	N
CALCIUM CYANAMIDE	156-62-7	10		Y	Y	DICHLOROETHYLENE, [1,1-]	75-35-4	0.4	Y	N		HEXACHLOROCYCLOHEXANE, [BETA-]	319-85-7	0.01	F		Y	N
CAPROLACTAM (Delisted)	105-60-2					DICHLOROMETHANE	75-09-2	10		N	N	HEXACHLOROCYCLOHEXANE, [DELTA-]	319-86-8	0.01	F		Y	N
CAPTAN	133-06-2	10		Y	Y	DICHLOROPHENOXY ACETIC ACID, [2,4-]	94-75-7	10	C	Y	Y	HEXACHLOROCYCLOHEXANE, [TECHNICAL]	608-73-1	0.01	F		Y	N

Appendix B: Table of Hazardous Air Pollutants and Screening Model Action Levels (May 3, 2012 Revision 10)

Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM	Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.1		Y	N	NITROSODIMETHYLAMINE, [N-]	62-75-9	0.001		Y	N	TRIMETHYLPENTANE, [2,2,4-]	540-84-1	5		Y	N
HEXACHLOROETHANE	67-72-1	5		Y	N	NITROSOMORPHOLINE, [N-]	59-89-2	1		Y	N	URETHANE [ETHYL CARBAMATE]	51-79-6	0.8		Y	N
HEXAMETHYLENE -1,6-DISOCYANATE	822-06-0	0.02		Y	N	NITROSO-N-METHYLUREA, [N-]	684-93-5	0.0002		Y	N	VINYL ACETATE	108-05-4	1		Y	N
HEXAMETHYLPHOSPHORAMIDE	680-31-9	0.01		Y	N	OCTACHLORONAPHTHALENE	2234-13-1	0.01	V	Y	N	VINYL BROMIDE	593-60-2	0.6		Y	N
HEXANE, [N-]	110-54-3	10		Y	N	PARATHION	56-38-2	0.1		Y	Y	VINYL CHLORIDE	75-01-4	0.2		Y	N
HYDRAZINE	302-01-2	0.004		N	N	PCB [POLYCHLORINATED BIPHENYLS]	1336-36-3	0.009	X	Y	Y	XYLENE, [META-]	108-38-3	10	G	Y	N
HYDROGEN CHLORIDE	7647-01-0	10		N	N	PENTACHLORONITROBENZENE	82-68-8	0.3		Y	N	XYLENE, [ORTHO-]	95-47-6	10	G	Y	N
HYDROGEN FLUORIDE	7664-39-3	0.1		N	N	PENTACHLOROPHENOL	87-86-5	0.7		Y	N	XYLENE, [PARA-]	106-42-3	10	G	Y	N
HYDROQUINONE	123-31-9	1		Y	N	PHENOL	108-95-2	0.1		Y	N	XYLENES (MIXED ISOMERS)	1330-20-7	10	G	Y	N
INDENO(1,2,3CD)PYRENE	193-39-5	0.01	V	Y	N	PHENYLENEDIAMINE, [PARA-]	106-50-3	10		Y	N						
ISOPHORONE	78-59-1	10		Y	N	PHOSGENE	75-44-5	0.1		Y	N						
LEAD COMPOUNDS		0.01	Q	N	Y	PHOSPHINE	7803-51-2	5		N	N						
LINDANE [GAMMA-HEXACHLOROCYCLOHEXANE]	58-89-9	0.01	F	Y	N	PHOSPHOROUS (YELLOW OR WHITE)	7723-14-0	0.1		N	N	Legend					
MALEIC ANHYDRIDE	108-31-6	1		Y	N	PHTHALIC ANHYDRIDE	85-44-9	5		Y	N	Group ID	Aggregate Group Name				
MANGANESE COMPOUNDS		0.8	R	N	Y	POLYCYCLIC ORGANIC MATTER		0.01	V	Y	N	A	Asbestos				
MERCURY COMPOUNDS		0.01	S	N	N	PROPANE SULTONE, [1,3-]	1120-71-4	0.03		Y	Y	B	Cresols/Cresylic Acid (isomers and mixtures)				
METHANOL	67-56-1	10		Y	N	PROPIOLACTONE, [BETA-]	57-57-8	0.1		Y	N	C	2,4 - D, Salts and Esters				
METHOXYCHLOR	72-43-5	10	V	Y	Y	PROPIONALDEHYDE	123-38-6	5		Y	N	D	Dibenzofurans, Dibenzodioxins				
METHOXYETHANOL, [2-]	109-86-4	10	P	Y	N	PROPOXUR [BAYGON]	114-26-1	10		Y	Y	E	4, 6 Dinitro-o-cresol, and Salts				
METHYL CHLORIDE	74-87-3	10		Y	N	PROPYLENE OXIDE	75-56-9	5		Y	N	F	Lindane (all isomers)				
METHYL ETHYL KETONE (Delisted)	78-93-3					PROPYLENEMINE, [1,2-]	75-55-8	0.003		Y	N	G	Xylenes (all isomers and mixtures)				
METHYL HYDRAZINE	60-34-4	0.06		Y	N	QUINOLINE	91-22-5	0.006		Y	N	H	Antimony Compounds				
METHYL IODIDE	74-88-4	1		Y	N	QUINONE	106-51-4	5		Y	N	I	Arsenic Compounds				
METHYL ISOBUTYL KETONE	108-10-1	10		Y	N	RADIOISOTOPES		Note 1	Y	N	Y	J	Beryllium Compounds				
METHYL ISOCYANATE	624-83-9	0.1		Y	N	SELENIUM COMPOUNDS		0.1	W	N	Y	K	Cadmium Compounds				
METHYL METHACRYLATE	80-62-6	10		Y	N	STYRENE	100-42-5	1		Y	N	L	Chromium Compounds				
METHYL TERT-BUTYL ETHER	1634-04-4	10		Y	N	STYRENE OXIDE	96-09-3	1		Y	N	M	Cobalt Compounds				
METHYLCYCLOPENTADIENYL MANGANESE	12108-13-3	0.1	R	N	Y	TETRACHLORODIBENZO-P-DIOXIN[2,3,7,8]	1746-01-6	6E-07	D,V	Y	Y	N	Coke Oven Emissions				
METHYLENE BIS(2-CHLOROANILINE), [4,4-]	101-14-4	0.2	V	Y	Y	TETRACHLOROETHANE, [1,1,2,2-]	79-34-5	0.3		Y	N	O	Cyanide Compounds				
METHYLENEDIANILINE, [4,4-]	101-77-9	1	V	Y	N	TETRACHLOROETHYLENE	127-18-4	10		N	N	P	Glycol Ethers				
METHYLNAPHTHALENE, [2-]	91-57-6	0.01	V	Y	N	TITANIUM TETRACHLORIDE	7550-45-0	0.1		N	N	Q	Lead Compounds (except elemental Lead)				
MINERAL FIBERS		0	T	N	Y	TOLUENE	108-88-3	10		Y	N	R	Manganese Compounds				
NAPHTHALENE	91-20-3	10	V	Y	N	TOLUENE DIISOCYANATE, [2,4-]	584-84-9	0.1		Y	N	S	Mercury Compounds				
NAPHTHYLAMINE, [ALPHA-]	134-32-7	0.01	V	Y	N	TOLUIDINE, [ORTHO-]	95-53-4	4		Y	N	T	Fine Mineral Fibers				
NAPHTHYLAMINE, [BETA-]	91-59-8	0.01	V	Y	N	TOXAPHENE	8001-35-2	0.01		Y	N	U	Nickel Compounds				
NICKEL CARBONYL	13463-39-3	0.1	U	N	Y	TRICHLOROETHANE, [1,2,4-]	120-82-1	10		Y	N	V	Polycyclic Organic Matter				
NICKEL COMPOUNDS		1	U	N	Y	TRICHLOROETHANE, [1,1,1-]	71-55-6	10		N	N	W	Selenium Compounds				
NICKEL REFINERY DUST		0.08	U	N	Y	TRICHLOROETHANE, [1,1,2-]	79-00-5	1		Y	N	X	Polychlorinated Biphenyls (Aroclors)				
NICKEL SUBSULFIDE	12035-72-2	0.04	U	N	Y	TRICHLOROETHYLENE	79-01-6	10		Y	N	Y	Radionuclides				
NITROBENZENE	98-95-3	1		Y	N	TRICHLOROPHENOL, [2,4,5-]	95-95-4	1		Y	N						
NITROBIPHENYL, [4-]	92-93-3	1	V	Y	N	TRICHLOROPHENOL, [2,4,6-]	88-06-2	6		Y	N						
NITROPHENOL, [4-]	100-02-7	5		Y	N	TRITHYLAMINE	121-44-8	10		Y	N						
NITROPROPANE, [2-]	79-46-9	1		Y	N	TRIFLURALIN	1582-09-8	9		Y	Y						
Notes																	
												Note 1	The SMAL for radionuclides is defined as the effective dose equivalent to 0.3 millirems per year for 7 years exposure associated with a cancer risk of 1 in 1 million				

Mr. John Offord
Chemist
Meramec Industries, Inc.
338 Ramsey Street
Sullivan, MO 63080

RE: New Source Review Permit - Project Number: 2013-05-027

Dear Mr. Offord:

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 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 David Little, 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:dll

Enclosures

c: St. Louis Regional Office
PAMS File: 2013-05-027

Permit Number: