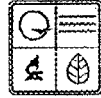


STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT BOOK

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: 05 2015 - 011

Project Number: 2014-07-007
Installation Number: 095-0295

Parent Company: Sika

Parent Company Address: 14201 Botts Road, Grandview, MO 64030

Installation Name: Sika

Installation Address: 14201 Botts Road, Grandview, MO 64030

Location Information: Jackson County, S26, T47N, R33W

Application for Authority to Construct was made for:

Installation of a reactor to produce reactive isocyanite pre-polymer and a mixer to produce a structural adhesive. This review was conducted in accordance with Section (5) of 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.

MAY 20 2015

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "Kyle L. Moore".
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. The 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' Kansas City Regional Office 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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Permit No.	
Project No.	2014-07-007

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(12)(A)10. "Conditions required by permitting authority."

Sika

Jackson County, S26, T47N, R33W

1. Control Device Requirement - Baghouse
 - A. Sika shall control emissions from Mixing and Mud Cutting using a baghouse.
 - B. The baghouse 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. The gauge or meter shall be located such that Department of Natural Resources' employees may easily observe them.
 - C. Replacement filters for the baghouse 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. Sika shall monitor and record the operating pressure drop across the baghouse 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. Sika shall maintain a copy of the baghouse manufacturer's specifications on site.
 - F. Sika shall maintain an operating and maintenance log for the baghouse 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.

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Permit No.	
Project No.	2014-07-007

SPECIAL CONDITIONS:

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

2. **Operational Requirement - Solvent/Ink Cloths**
Sika shall keep all solvents and cleaning solutions in sealed containers whenever the materials are not in use. Sika shall provide and maintain suitable, easily read, permanent markings on all solvents and cleaning solution containers used with this equipment.
3. **Record Keeping and Reporting Requirements**
 - A. Sika shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - B. Sika shall retain SDS for all VOC and HAP materials used at the installation.

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

Project Number: 2014-07-007
Installation ID Number: 095-0295
Permit Number:

Sika
14201 Botts Road
Grandview, MO 64030

Complete Date
of Application: March 10, 2015

Parent Company:
Sika
14201 Botts Road
Grandview, MO 64030

Jackson County, S26, T47N, R33W

REVIEW SUMMARY

- Sika has applied for authority to install a reactor to produce iso-cyanite pre-polymer and a mixer which combines the iso-cyanite pre-polymer and other materials to produce a structural adhesive.
- HAP emissions are expected from the proposed equipment. Xylene will be used as a cleaning solvent. Naphthalene will be emitted from the use of SOLVESSO 150 ND which is used to clean the mixer.
- No NSPS apply to the equipment permitted by this project or to the existing equipment at the installation.
- No MACT apply to the equipment permitted by this project or to the existing equipment at the installation.
- No air pollution control equipment is being used in association with the new equipment. A federally enforceable baghouse requirement for the existing Mixing and Mud Cutting operations is included in this permit to comply with 10 CSR 10-6.400 and to reduce installation potential emissions below the de minimis levels so that an operating permit is not required.
- 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 insignificance level.
- This installation is located in Jackson County, a nonattainment area for the 2010 sulfur dioxide 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 of VOC was not performed since potential emissions of the application are below de minimis levels. Ambient air quality modeling of individual HAPs was not performed as potential emissions of the application are below each individual HAP's respective SMAL.
- Emissions testing is not required for the equipment.
- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Sika opened a factory in Grandview, MO in 1999. Sika has received two previous no construction permit required determinations from the Air Pollution Control Program, Projects 1999-06-063 and 2002-09-159. The existing installation produces acoustical, noise reducing, products for the automotive parts industry and sealants used in the construction of metal buildings. The existing installation consists of:

- ♦ a calcium carbonate silo
- ♦ a barite silo
- ♦ mixing and mud cutting
- ♦ a twin screw extruder
- ♦ eight single screw extruders
- ♦ a thermal plastic extruder
- ♦ 16 two-shot injection molding machines
- ♦ three vertical injection molding machines
- ♦ seven horizontal molding machines
- ♦ 11 0.4 MMBtu/hr natural gas air make-up units
- ♦ a 0.8 MMBtu/hr natural gas air make-up unit
- ♦ a 1.2 MMBtu/hr natural gas air make-up unit
- ♦ a 1.5 MMBtu/hr natural gas air make-up unit

Project 2002-09-159 determined the potential emissions from the calcium carbonate and barite silos to be 0.37 tons per year of PM/PM₁₀/PM_{2.5}, based on an MHDR of 60.9 tons per hour, a PM/PM₁₀/PM_{2.5} emission factor of 0.1377 pounds per ton, and an inherent control device efficiency of 99 percent for the operation of a baghouse.

Project 2002-09-159 determined the potential emissions from mixing and mud cutting to be 4.79 tons per year of PM/PM₁₀/PM_{2.5}, based on an MHDR of 60.9 tons per hour, a PM/PM₁₀/PM_{2.5} emission factor of 1.7954 pounds per ton, and a baghouse control efficiency of 99 percent. In 2002 it was MDNR policy to include control devices in potential to emit calculations even if a federally enforceable control device requirement did not exist. MDNR now requires that a control device only be included in potential to emit calculations if it is inherent or is required by a federally enforceable requirement. In order to ensure that the baghouse can be included in potential to emit calculations, a

federally enforceable control device requirement, Special Condition 1, has been added to this permit.

The MHDR of the extruders and injection molding machines is unknown. Sika was able to provide us with their 2014 material usage (2,769,065 pounds of the polymer Ethylene Vinyl Acetate (EVA) and 4,952,019 pounds of nylon) and their 2014 hours of operation (24 hours per day, seven days per week). It is unclear if the extruders and injection molding machines were operated at full capacity during the 2014 calendar year; therefore, the MHDR was conservatively determined to be 1.5 times greater than the actual 2014 material usage.

Potential emissions from EVA were determined to be 0.27 tons per year of VOC and 0.01 tons per year HAP (Vinyl Acetate), based on an MHDR of 474.15 pounds per hour and emission factors obtained from the *Journal of the Air & Waste Management Association* 47:1111-1118 article "Development of Emission Factors for Ethylene-Vinyl Acetate and Ethylene-Methyl Acrylate Copolymer Processing" (1997).

Potential emission from nylon were determined to be 14.60 tons per year of VOC, based on an MHDR of 847.95 pounds per hour and a VOC emission factor of 3.93 pounds per 1,000 pounds obtained from EPA document AP-42, *Compilation of Air Pollution Emission Factors*, Fifth Edition, Section 6.9 "Synthetic Fibers" (1993) Table 2.

Potential emissions from the combustion of natural gas in the make-up air units are provided in Table 1 and are based on an aggregated natural gas MHDR of 7.9 MMBtu/hr and emission factors obtained from EPA document AP-42, *Compilation of Air Pollution Emission Factors*, Fifth Edition, Section 1.4 "Natural Gas Combustion" (1998).

PROJECT DESCRIPTION

Sika is requesting to install a reactor, a mixer, and two 1,500 gallon holding tanks for the production of a reactive isocyanate pre-polymer and a structural adhesive. The reactive iso-cyanite pre-polymer produced in the reactor is combined in the mixer with other materials to produce the final product – structural adhesive. One of the holding tanks will contain xylene which will be used to periodically remove reactive isocyanate pre-polymer buildup from the reactor. The second holding tank will store spent xylene. Solvesso 150 ND will be used to clean the mixer.

The materials associated within this project are indicated in Table 1.

Table 1: Project Materials

Reactor Raw Materials			
Material Name	Manufacturer	Does the material contain VOC?	Does the material contain HAP?
POLY BD R45V	SARTOMER	No	No
PolyTHF 2000 S	BASF	Yes, 1 wt%	No
Ionol CP	Degussa	No	No
Cardolite NC – 700	Cardolite	No	No
Coscat 83	C.H. Erbsloh	No	No
Vestanat IPDI	Evonik	Yes, 100 wt%	No
Cleaning Solvents			
Material Name	Manufacturer	Does the material contain VOC?	Does the material contain HAP?
SOLVESSO 150 ND	Valspar	Yes, 100 wt%	Yes, 10 wt% naphthalene
Xylene	-	Yes, 100 wt%	Yes, 100 wt% xylene

EMISSIONS/CONTROLS EVALUATION

Potential emissions from PolyTHF 2000 S and SOLVESSO 150 ND were calculated using a mass balance and conservatively assuming 100 percent of the VOC and HAP is emitted. Emissions are based on annual usage rates of 1,400,000 pounds of PolyTHF 2000 S and 4,000 pounds of SOLVESSO 150 ND.

Vestanat IPDI contains 100 percent isophorone diisocyanate (IPDI). The American Chemistry Council has demonstrated that diisocyanates have a high product retention factor. The American Chemistry Council does not have product retention factors for this specific diisocyanate, but does have a product retention factors for methylene diphenyl diisocyanate (MDI). As IPDI has a lower vapor pressure and a lower molecular weight than MDI, potential emissions were conservatively estimated using the American Chemistry Council's MDI Emissions Estimator (<http://polyurethane.americanchemistry.com/Health-Safety-and-Product-Stewardship/Emissions>). Emissions are based on an annual usage rate of 522,368 pounds of Vestanat IPDI.

Sika anticipates using 2,000 pounds of xylene to clean the reactor each year. Potential emissions from reactor cleaning were calculated using a mass balance and conservatively assuming 100 percent of the xylene is emitted. As 100 percent of the xylene used is assumed to be emitted, calculation of the breathing and working losses from the two holding tanks was deemed unnecessary.

The potential emissions of the project are provided in Table 2. Existing actual emissions for the installation are unavailable.

Table 2: Emissions Summary (tons per year)

Pollutant	De Minimis Level	Existing Installation Potential to Emit	Potential Emissions of the Application	New Installation Potential to Emit
NO _x	40.0	3.39	N/A	3.39
CO	100.0	2.85	N/A	2.85
PM ₁₀ /PM _{2.5}	15.0/10.0	5.41 ¹	N/A	5.41
PM	25.0	5.22 ¹	N/A	5.22
VOC	40.0	15.05	10.00	25.05
SO _x	40.0	0.02	N/A	0.02
HAP	25.0	0.08	1.20	1.28
Xylene	10.0	-	1.00	1.00
Naphthalene	10.0	-	0.20	0.20
Hexane	10.0	0.06	-	0.06
Vinyl Acetate	10.0	0.01	-	0.01

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

As the new potential to emit of the installation is below the de minimis levels, the installation does not meet the definition of a basic state installation at 10 CSR 10-6.020(2)(B)8; therefore, **no operating permit is required.**

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 insignificance level.

APPLICABLE REQUIREMENTS

Sika 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.

GENERAL REQUIREMENTS

- *10 CSR 10-6.045 Open Burning Requirements*
- *10 CSR 10-6.165 Restriction of Emission of Odors*
- *10 CSR 10-6.170 Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*
- *10 CSR 10-6.220 Restriction of Emission of Visible Air Contaminants*

¹ This value includes the control efficiency for the baghouse required by Special Condition 1.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Alana Hess
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 30, 2014, received July 2, 2014, designating Sika as the owner and operator of the installation.

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	National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SDS	Safety Data Sheet
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. Cedric Gray
VP Operations
Sika
14201 Botts Road
Grandview, MO 64030

RE: New Source Review Permit - Project Number: 2014-07-007

Dear Mr. Gray:

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 and your new source review permit application 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 were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission 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 administrative hearing commission, whose contact information is: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact Alana Hess, 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:ahl

Enclosures

c: Kansas City Regional Office
PAMS File: 2014-07-007
Permit Number: