

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:

112013-009

Project Number: 2013-08-021
Installation Number: 163-0062

Parent Company: Calumet Lubricants Co., Limited Partnership

Parent Company Address: 2780 Waterfront Parkway E Dr, Ste 200, Indianapolis, IN 46214

Installation Name: Calumet Missouri, LLC

Installation Address: 11089 Highway D, Louisiana, MO 63353

Location Information: Pike County, S29, T54N, R1W

Application for Authority to Construct was made for:
Synlube production increase. 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.

NOV 25 2013

EFFECTIVE DATE

Handwritten signature of Kyra L. Moore in black ink.

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

Page No.	3
Permit No.	
Project No.	2013-08-021

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."

Calumet Missouri, LLC
Pike County, S29, T54N, R1W

1. Operational Requirement
 - A. Calumet Missouri, LLC shall exclusively combust natural gas in EP143 Boiler (B-8210).
 - B. Calumet Missouri, LLC shall control emissions from EP143 Boiler (B-8210) using low NOx burners as specified in the permit application.
 - C. The low NOx burners shall be operated and maintained in accordance with the manufacturer's specifications.
 - D. The manufacturer's specifications shall be retained onsite.
2. Control Device Requirement - Baghouse
 - A. Calumet Missouri, LLC shall control emissions from EP145 Synlube PE Charge 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 it.
 - 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. Calumet Missouri, LLC 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.

Page No.	4
Permit No.	
Project No.	2013-08-021

SPECIAL CONDITIONS:

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

- E. Calumet Missouri, LLC shall maintain a copy of the baghouse manufacturer's performance warranty on site.
- F. Calumet Missouri, LLC 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.
- 3. **Operational Requirement – Solvent Cloths**
Calumet Missouri, LLC shall keep all solvents and cleaning solutions in sealed containers whenever the materials are not in use. Calumet Missouri, LLC shall provide and maintain suitable, easily read, permanent markings on all solvent and cleaning solution containers used with this equipment.
- 4. **Record Keeping and Reporting Requirements**
Calumet Missouri, LLC 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.

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

Project Number: 2013-08-021
Installation ID Number: 163-0062
Permit Number:

Calumet Missouri, LLC
11089 Highway D
Louisiana, MO 63353

Complete: September 4, 2013

Parent Company:
Calumet Lubricants Co., Limited Partnership
2780 Waterfront Parkway E Drive, Suite 200
Indianapolis, IN 46214

Pike County, S29, T54N, R1W

REVIEW SUMMARY

- Calumet Missouri, LLC has applied for authority to increase Synlube production.
- HAP emissions are expected from the combustion of natural gas in the proposed boiler. The primary HAP of concern is Hexane (110-54-3).
- 40 CFR Part 60, Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* applies to EP143 Boiler (B-8210).
- 40 CFR Part 60, Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984* is not applicable to the installation. The Intermediate Tanks (EP125 - EP127) and Product Tanks (EP128 - EP133) all exceed 75 m³ (and are less than 151 m³); however, all of these tanks contain fatty acid esters with a maximum true vapor pressure of 0.1934 psia (less than 15.0 kPa) and are exempt per §60.110b(b). The Fresh Acid Tanks (EP134 - EP137) and TMP Tank (EP138) all exceed 151 m³; however, all of these, the acid and TMP, have a maximum true vapor pressure of 0.0019 psia (less than 3.5 kPa) and are exempt per §60.110b(b). The Spent Acid Tanks (EP139 - EP142) are less than the 75 m³ threshold of §60.110b(a).
- 40 CFR Part 63, Subpart JJJJJJ – *National Emission Standards for HAP for Industrial, Commercial, and Institutional Boilers Area Sources* is not applicable to the installation. EP143 Boiler (B-8210) meets the definition of *gas-fired boiler* at §63.11237 and is exempt per §63.11195(e).

- 40 CFR Part 63, Subpart VVVVVV – *National Emission Standards for HAP for Chemical Manufacturing Area Sources* is not applicable to the installation. The installation does manufacture chemicals (synlube); however, none of the synthetic lubricants manufactured and none of the raw materials contain HAP.
- The installation is using a baghouse to control particulate emissions from EP145 Synlube PE Charge.
- 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 Pike County, an attainment area for all criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation is classified as item number 20 “Chemical process plants”. The installation's major source level is 100 tons per year and fugitive emissions are 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 is not required for the equipment.
- The installation is required to submit an amendment to their Basic Operating Permit, Project 2012-04-036, within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Calumet Missouri, LLC (163-0062) purchased the Synlube production portion of Ashland, Inc. (163-0002) in 2010. No permits have previously been issued to Calumet Missouri, LLC directly; however, their purchase of the Ashland, Inc. Synlube production process transferred the following permits issued to Ashland, Inc. by the Air Pollution Control Program to Calumet Missouri, LLC:

Table 1: Permit History

Permit Number	Description
042007-015	Synlube production expansion
032011-010	100 MMBtu/hr natural-gas fired boiler

Table 2 contains a list of equipment existing at the installation prior to this project.

Table 2: Calumet Missouri, LLC Existing Equipment List

Emission Unit	Description	MHDR
EP62.1	Existing Synlube Line	22,000,000 lb/yr
EP63	Existing Synlube PE Charge	22,000,000 lb/yr
EP64	Natural Gas Fired Dowtherm Boiler	4 MMBtu/hr
EP65	Dowtherm A Fugitive Emissions	25.5 gal/hr
EP83A	550 gallon Gasoline Storage Tank	7,000 gal/yr
EP83B	550 gallon Diesel Storage Tank	7,000 gal/yr
EP98	Cooling Towers	200,000 gal/hr
EP101	Used Synlube Oil Storage Tanks - 359 gallons and 185 gallons	20,000 gal/yr
EP102	Parts Washer	20 gal/yr
EP103	Maintenance Welding	0.0004 lb/hr
EP112	New Synlube Line	30,000,000 lb/yr
EP113	Natural Gas Fired Dowtherm Boiler	5 MMBtu/hr
EP114	5,450 gallon Premix Acid Tank #1 (T-7704)	2,244,000 gal/yr
EP115	5,450 gallon Premix Acid Tank #2 (T-7706)	2,244,000 gal/yr
EP116	20,300 gallon Fatty Acid Storage Tank #1 (T-7700)	150,000 gal/yr
EP117	20,300 gallon Fatty Acid Storage Tank #2 (T-7702)	150,000 gal/yr
EP118	42,000 gallon Synlube Product Tank (T-7640)	792,000 gal/yr
EP119	20,000 gallon Synlube Intermediate Tank (T-7770)	3,941,000 gal/yr
EP120	Cooling Tower	78,000 gal/hr
EP121	New Synlube PE Charge	30,000,000 lb/yr
EP122	Backup Natural Gas Fired Boiler	100 MMBtu/hr
EP147A	Existing 0.3 mile Paved Haul Road	5.94 tph

PROJECT DESCRIPTION

Calumet Missouri, LLC has proposed to increase their Synlube production by installing two additional 6,500 gallon kettles and additional raw material, intermediate, and product storage tanks. The installation makes more than one synthetic lubricant (synlube). RL7H was determined to be the worst-case synlube for VOC emissions. None of the synlube products or raw materials contain HAP. Each kettle can produce a maximum of 615 batches per year due to batch length. Each batch produces 22,750 lbs of product; therefore, the installation of two new 6,500 gallon kettles increases Synlube production by 44,268,000 lbs per year. The increased Synlube production brings the installation-wide Synlube production to 96,268,000 lbs per year.

If installation-wide Synlube production exceeds 96,268,000 lbs or the installation begins producing a new synthetic lubricant with VOC and/or HAP emissions exceeding that of RL7H, a new permit will be required.

Table 3 contains an emission unit list for this project with MHDRs.

Table 3: Calumet Missouri, LLC Project Equipment List

Emission Unit	Description	MHDR
EP123	Synlube Line #1	44,268,000 lb/yr
EP124	Synlube Line #2	
EP125	20,000 gallon Intermediate Tank #1 (T-8100)	7,995,000 gal/yr
EP126	20,000 gallon Intermediate Tank #2 (T-8101)	
EP127	20,000 gallon Intermediate Tank #3 (T-8102)	
EP128	30,000 gallon Product Tank #1 (T-8150)	7,995,000 gal/yr
EP129	30,000 gallon Product Tank #2 (T-8151)	
EP130	30,000 gallon Product Tank #3 (T-8160)	
EP131	30,000 gallon Product Tank #4 (T-8161)	
EP132	30,000 gallon Product Tank #5 (T-8170)	
EP133	30,000 gallon Product Tank #6 (T-8171)	
EP134	Fresh Acid Tank #1 (T-8130)	3,492,000 gal/yr
EP135	Fresh Acid Tank #2 (T-8131)	
EP136	Fresh Acid Tank #3 (T-8132)	
EP137	Fresh Acid Tank #4 (T-8133)	
EP138	TMP Tank (T-8134)	873,000 gal/yr
EP139	Spent Acid Tank #1 (T-8110)	3,492,000 gal/yr
EP140	Spent Acid Tank #2 (T-8111)	
EP141	Spent Acid Tank #3 (T-8112)	
EP142	Spent Acid Tank #4 (T-8113)	
EP143	Natural Gas Fired Boiler (B-8210)	10 MMBtu/hr
EP144	Railcar/Tank Truck Loading/Unloading	15,990,000 gal/yr
EP145	Synlube PE Charge	13,723,080 lb/yr
EP146	Cooling Tower	1,850 gpm
EP147B	Increased Usage of EP147A	5.05 tph
EP147C	New 0.1 mile Unpaved Haul Road	5.05 tph

EMISSIONS/CONTROLS EVALUATION

VOC emissions from the kettle were calculated using an emission factor from Project 2006-12-052 as the installation has not changed the types of synthetic lubricant being produced since their last production increase. Note: none of the raw materials, intermediates, or products contain HAP.

VOC emissions from EP125 – EP142 tanks were calculated using equations from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 7.1.3.1 “Total Losses From Fixed Roof Tanks” (November 2006). Emissions are based upon the chemical contents and properties listed in Table 4 and ambient temperatures obtained from Tanks 4.0.9d for Springfield, IL.

Table 4: Tank Information

Tank	Content	Molecular Weight (lb/lb-mole)	Maximum True Vapor Pressure (psia)	Average Liquid Surface Temperature (°F)
EP125 – EP133	Fatty Acid Esters	158.24	0.1934	140
EP134 – EP137	Fatty Acid, C8-C10	158.24	0.0019	77
EP138	TMP	158.24	0.0019	185
EP139 – EP142	Fatty Acid, C8-C10	158.24	0.0019	95

Emissions from EP143 Boiler (B-8210) were calculated using emission factors obtained from AP-42, Section 1.4 "Natural Gas Combustion" (July 1998) and 40 CFR Part 98. The boiler is required to use low NO_x burners by Special Condition 1.

VOC emissions from EP144 Railcar/Tank Truck Loading/Unloading were calculated using Equation 1 from AP-42, Section 5.2 "Transportation and Marketing of Petroleum Liquids" (July 2008). A saturation factor of 0.6 was employed for tank trucks and rail tank cars using submerged loading: dedicated normal service.

No emission factors were available for the pneumatic transfer of pentaerythritol (PE); therefore, potential emissions from EP145 Synlube PE Charge were conservatively estimated using emission factors from AP-42, Section 11.17 "Lime Manufacturing" (February 1998) for lime transfer. A particulate control efficiency of 99 percent was given for the use of a baghouse required by Special Condition 2.

Particulate emissions from EP146 Cooling Tower were calculated based upon a maximum drift loss of 0.02 percent obtained from AP-42 Section 13.4 "Wet Cooling Towers" (January 1995) and a maximum total dissolved solids (TDS) content of 10,000 ppm obtained from the manufacturer's specifications.

The installation operates an existing 0.3 mile long paved EP147A Haul Road which was previously unaccounted for. To get to the new synlube line, a truck must first traverse the existing paved EP147B Haul Road and then travel an additional 0.1 miles on the new unpaved EP147C Haul Road. Emissions from the paved haul roads were calculated using equations from AP-42 Section 13.2.1 "Paved Roads" (January 2011). Emissions from the unpaved haul road were calculated using equations from AP-42 Section 13.2.2 "Unpaved Roads" (November 2006). EP147C Unpaved Haul Road was given 50 percent particulate control for undocumented watering.

The following table provides an emissions summary for this project. Existing potential emissions were taken from Project 2012-04-036. Existing actual emissions were taken from the installation's 2012 EIQ. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8,760 hours per year).

Table 5: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions (2012 EIQ)	Potential Emissions of the Application	New Installation Potential
PM	25.0	18.70	N/A	9.29	27.99
PM ₁₀	15.0	18.70	2.41	2.37	21.07
PM _{2.5}	10.0	18.70	2.41	0.42	19.12
SO _x	40.0	0.27	0.01	0.03	0.30
NO _x	40.0	24.72	1.80	2.15	26.87
VOC	40.0	55.01	32.97	34.30	89.31
CO	100.0	38.29	1.51	3.61	41.90
GHG (CO ₂ e)	100,000	54,821.82	N/A	5,164.91	59,986.73
HAPs	10.0/25.0	1.00	0.04	0.08	1.08

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

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

Calumet Missouri, LLC 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

- 10 CSR 10-6.065 *Operating Permits*
 - The installation is required to amend their Basic Operating Permit, 2012-04-036, within 30 days of equipment startup to include the new equipment.
- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
 - The installation is required to submit a full EIQ for the first full calendar year of operation of the new equipment.
- 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*

SPECIFIC REQUIREMENTS

- 10 CSR 10-6.070 *New Source Performance Regulations*
 - 40 CFR Part 60, Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*

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 L. Rugen, EIT
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 August 6, 2013, received August 12, 2013, designating Calumet Lubricants Co., Limited Partnership as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

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	SIC	Standard Industrial Classification
GHG	Greenhouse Gas	SIP	State Implementation Plan
gpm	gallons per minute	SMAL	Screening Model Action Levels
gr	grains	SO_x	sulfur oxides
GWP	Global Warming Potential	SO₂	sulfur dioxide
HAP	Hazardous Air Pollutant	tph	tons per hour
hr	hour	tpy	tons per year
hp	horsepower	VMT	vehicle miles traveled
lb	pound	VOC	Volatile Organic Compound
lbs/hr	pounds per hour		
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. David Volpe
Plant Manager
Calumet Missouri, LLC
11089 Highway D
Louisiana, MO 63353

RE: New Source Review Permit - Project Number: 2013-08-021

Dear Mr. Volpe:

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 Alana Rugen, 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:arl

Enclosures

c: Northeast Regional Office
PAMS File: 2013-08-021

Permit Number: