



SAFETY DATA SHEET

SDS ID NO.: 0111MAR019

Revision date 12/28/2021

1. IDENTIFICATION

Product Name Marathon Petroleum Molten Sulfur

Synonym Molten Sulfur; Elemental Sulfur; Sulphur
Product code 0111MAR019
Chemical family Non-metallic element

Recommended use Feedstock.
Restrictions on use All others.

Manufacturer, Importer, or Responsible Party Name and Address
MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS Information 1-419-421-3070 (M-F; 8-5 EST)

24 Hour Emergency Telephone CHEMTREC: 1-800-424-9300 (CCN# 13740)

2. HAZARD IDENTIFICATION

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Classification

Skin corrosion/irritation	Category 2
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Hazards Not Otherwise Classified (HNOC)

May release hydrogen sulfide gas
Hot liquid may cause thermal burns

Label Elements

Warning

May release highly toxic hydrogen sulfide gas that quickly fatigues the sense of smell
Contact with product at elevated temperatures can result in thermal burns
Causes skin irritation
Harmful to aquatic life



Appearance Yellow Liquid

Physical State Liquid

Odor Rotten egg like

Precautionary Statements - Prevention

Wear protective gloves/protective clothing/eye protection/face protection
 Wash hands and any possibly exposed skin thoroughly after handling
 Avoid release to the environment

Precautionary Statements - Response

For HOT material in eyes: Rinse with cool water for several minutes. Remove contacts if present and easy to do. Continue rinsing. Get immediate medical attention.
 IF ON SKIN: Gently wash with plenty of soap and water
 If skin irritation occurs: Get medical attention
 Take off contaminated clothing and wash before reuse
 For HOT material on skin: Take off immediately all contaminated clothing. Rinse skin with cool water/shower. Get immediate medical attention.

Precautionary Statements - Storage

Not applicable

Precautionary Statements - Disposal

Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Molten Sulfur is extracted from various petroleum refining processes. It contains small but significant amounts of hydrogen sulfide. The Molten Sulfur is handled and shipped as a hot liquid material.

Composition Information

Name	CAS Number	% Concentration
Sulfur, Elemental	7704-34-9	100
Hydrogen sulfide	7783-06-4	0.01-0.06

All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

First aid measures**General advice**

In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation

Remove to fresh air. If not breathing, utilize bag valve mask or other form of barrier device to institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. If symptoms occur get medical attention.

Skin contact

Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. Get medical attention if irritation persists. Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties.

For contact with hot material, immerse or flush skin with large amounts of the coldest water possible. Cover with clean cotton sheeting or gauze. Remove clothing if not sticking to skin. DO NOT try to remove solidified material from the skin as the damaged flesh can be easily torn. DO NOT try to dissolve with solvents or thinners. GET IMMEDIATE MEDICAL ATTENTION.

Eye contact

Flush immediately with large amounts of water for at least 15 minutes. Gently remove contacts while flushing. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.

For contact with hot material, flush eyes immediately with large amounts water for at least 15 minutes. Get immediate medical attention.

Ingestion

Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

Most important signs and symptoms, both short-term and delayed with overexposure**Adverse effects**

Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. Contact with hot product may cause burns. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since loss of smell rapidly occurs. Effects of overexposure include irritation of the nose and throat, nausea, vomiting, diarrhea, abdominal pain and signs of nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination and fatigue), irregular heartbeats, pulmonary edema, weakness and convulsions.

Indication of any immediate medical attention and special treatment needed**Notes to physician**

INHALATION: Inhalation exposure can produce toxic effects. Treat intoxications as hydrogen sulfide exposures. At high concentrations hydrogen sulfide may produce pulmonary edema, respiratory depression, and/or respiratory paralysis. The first priority in treatment should be the establishment of adequate ventilation and the administration of 100% oxygen. Monitor for respiratory distress. If cough or difficulty inbreathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis.

SKIN & EYE CONTACT: In case of exposure to hot material, treat for thermal burns.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

For small fires, Class B fire extinguishing media such as CO₂ or dry chemical can be used. For large fires use water spray or fog. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

This product is not a combustible material per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

Hazardous combustion products

Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data**Sensitivity to mechanical impact:**

No.

Sensitivity to static discharge:

No.

Special protective equipment and precautions for firefighters

Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water spray and foam must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep run-off water out of sewers and water sources.

Additional firefighting tactics

Not applicable

NFPA

Health 2

Flammability 1

Instability 0

Special Hazard -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Hot material causes thermal burns. Runoff may be acidic.
Protective equipment	Use personal protection measures as recommended in Section 8.
Emergency procedures	Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.
Environmental precautions	Contain any runoff from precipitation.
Methods and materials for containment	Contain liquid with sand or soil.
Methods and materials for cleaning up	Contain molten material by diking or impounding. After cooling, shovel or sweep up cold product and collect into suitable containers for disposal. Recover and return free product to proper containers.

7. HANDLING AND STORAGE

Safe handling precautions	<p>Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mists. Use only with adequate ventilation. Use personal protection measures as recommended in Section 8. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.</p> <p>Harmful concentrations of hydrogen sulfide (H₂S) gas can accumulate in excavations and low-lying areas as well as the vapor space of storage and bulk transport compartments. Stay upwind and vent open hatches before unloading. Sulfur containing products may cause polysulfide deposits (iron sulfide) to form inside iron storage tanks. These pyrophoric deposits, upon exposure to air, can ignite spontaneously.</p>
Storage conditions	Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area.
Incompatible materials	Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Name	ACGIH TLV	OSHA PELS	NIOSH IDLH
Hydrogen sulfide 7783-06-4	1 ppm TWA 5 ppm STEL	Ceiling: 20 ppm Peak: 50 ppm	100 ppm

Notes: No further information available.

Engineering measures Ensure adequate ventilation, especially in confined areas. Local or general exhaust required in an enclosed area or when there is inadequate ventilation.

Personal protective equipment

Eye protection	Wear goggles and faceshield when handling hot material.
Skin and body protection	Insulated gloves to prevent burns to molten product. Rubber gloves for contact with dust.
Respiratory protection	Use a NIOSH approved organic vapor chemical cartridge or supplied air respirators when there is the potential for airborne exposures to exceed permissible exposure limits or if excessive vapors are generated. Self-contained breathing apparatus should be used for fire fighting.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with

skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Yellow Liquid
Physical State	Liquid
Color	Pale yellow
Odor	Rotten egg like
Odor Threshold	No data available.

<u>Property</u>	<u>Values (method)</u>
pH	Not applicable.
Melting Point / Freezing Point	115 °C / 239 °F
Initial Boiling Point / Boiling Range	444 °C / 832 °F
Flash Point	207 °C / 405 °F
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%):	
Upper Flammability Limit:	46 (Hydrogen sulfide)
Lower Flammability Limit:	3.3 (Hydrogen sulfide)
Explosion Limits	No data available.
Vapor Pressure	10 Pa @ 135°C
Vapor Density	1.1 (Air = 1)
Specific Gravity / Relative Density	2.07 @ 70°F
Water Solubility	No data available.
Partition Coefficient	No data available.
Autoignition Temperature	248-266 °C / 478-511 °F
Decomposition Temperature	No data available.
Kinematic Viscosity	No data available.
VOC Content (%)	No data available.
Density	1.819 g/cm ³ @ 115°C (15.18 lb/gal @ 239°F)

10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions.
Chemical stability	The material is stable at 70°F (21°C), 760 mmHg pressure.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Will not occur.
Conditions to avoid	Excessive heat, sources of ignition, open flame.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation	May release highly toxic hydrogen sulfide gas that quickly fatigues the sense of smell. Concentrations of >1000 ppm will cause immediate unconsciousness and death through respiratory paralysis.
Eye contact	Contact with hot material may cause thermal burns.
Skin contact	Irritating to skin. Contact with hot material may cause thermal burns.

Ingestion Swallowing hot material may cause burns to the mouth, throat, and stomach.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Sulfur, Elemental 7704-34-9	> 3000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 9.23 mg/L (Rat) 4 h
Hydrogen sulfide 7783-06-4	-	-	444 ppm (Rat) 4 h

Immediate and delayed effects as well as chronic effects from short and long-term exposure

SULFUR: Prolonged or repeated exposure to sulfur dust can cause allergic sensitization and reduced pulmonary function. Permanent eye damage (corneal opacities and cataract-like lesions) have been associated with long-term and high-level exposure to sulfur.

HYDROGEN SULFIDE: Hydrogen sulfide has a strong, unpleasant odor resembling that of rotten eggs. Odor, however, is not a reliable means for detecting potentially dangerous concentration of the gas, as the sense of smell diminishes very rapidly at concentrations of 50 ppm or higher. Eye irritation has been reported at 4 ppm. Irritation of the respiratory tract may occur at 50 ppm. Hydrogen sulfide gas may be fatal if inhaled in sufficient concentrations. Immediate loss of consciousness and death resulting from respiratory paralysis has occurred at concentrations as low as 500 ppm.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and symptoms	Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. Contact with hot product may cause burns. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since loss of smell rapidly occurs. Effects of overexposure include irritation of the nose and throat, nausea, vomiting, diarrhea, abdominal pain and signs of nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination and fatigue), irregular heartbeats, pulmonary edema, weakness and convulsions.
Acute toxicity	None known.
Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	None known.
Sensitization	Not expected to be a skin or respiratory sensitizer.
Mutagenic effects	None known.
Carcinogenicity	This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP
Reproductive toxicity	None known.
Specific Target Organ Toxicity (STOT) - single exposure	Not classified.
Specific Target Organ Toxicity (STOT) - repeated exposure	Not classified.
Aspiration hazard	No data available.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered harmful to aquatic organisms.

Name	Fish	Crustacea	Algae/aquatic plants
Sulfur, Elemental 7704-34-9	96-hr LC50 >10,000 mg/L Western mosquitofish 96-hr LC50 = 866 mg/L Zebrafish	-	-
Hydrogen sulfide 7783-06-4	96-hr LC50 = 0.016 mg/l Fathead minnow 96-hr LC50 = 0.013 mg/l Rainbow trout	-	-

Persistence and degradability	No information available.
Bioaccumulation	Not expected to bioaccumulate in aquatic organisms.
Mobility in soil	Not classified in terms of mobility in air, soil and water.
Other adverse effects	No information available.

13. DISPOSAL CONSIDERATIONS

Description of waste residues	Allow molten sulfur to cool and solidify prior to disposal.
Safe handling of wastes	Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.
Disposal of wastes / methods of disposal	The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.
Contaminated packaging disposal	Empty containers should be completely drained and then discarded or recycled, if possible. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT

UN/Identification No:	NA 2448
UN Proper Shipping Name:	Sulfur, Molten
Transport Hazard Class(es):	9
Packing Group:	III

IATA

UN/Identification No:	Not applicable
UN Proper Shipping Name:	Forbidden
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable

IMDG

UN/Identification No:	UN 2448
UN Proper Shipping Name:	Sulfur, Molten
Transport Hazard Class(es):	4.1
Packing Group:	III
EmS No:	F-A, S-H

15. REGULATORY INFORMATION

Regulatory Information

US TSCA Chemical Inventory	This product and/or its components are listed on the TSCA Chemical Inventory or are exempt.
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Canada DSL/NDSL Inventory This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

EPA Superfund Amendment & Reauthorization Act (SARA)

SARA Section 302 This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Hydrogen sulfide	500

SARA Section 304 This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	Hazardous Substances RQs
Hydrogen sulfide 7783-06-4	100 lb 45.4 kg

SARA Section 311/312 The following EPA hazard categories apply to this product:

Hazard Not Otherwise Classified (HNOC)-Physical
Skin corrosion or irritation
Hazard Not Otherwise Classified (HNOC)-Health

SARA Section 313 This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting
Hydrogen sulfide 7783-06-4	1.0 % de minimis concentration

U.S. State Regulations

California Proposition 65 This product does not contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.

State Right-To-Know Regulations The following component(s) of this material are identified on the regulatory lists below:

Name	New Jersey Right-To-Know	Pennsylvania Right-To-Know	Massachusetts Right-To-Know
Sulfur, Elemental 7704-34-9	Listed	Listed	Listed
Hydrogen sulfide 7783-06-4	Listed	Listed	Listed

16. OTHER INFORMATION

Prepared by Toxicology & Product Safety

Revision Notes

Revision date 12/28/2021
Revised sections The following sections (§) have been updated:
 4. FIRST AID MEASURES
 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- 9. PHYSICAL AND CHEMICAL PROPERTIES
- 11. TOXICOLOGICAL INFORMATION
- 14. TRANSPORT INFORMATION
- 15. REGULATORY INFORMATION

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.