



SAFETY DATA SHEET

1. Identification

Product identifier Sulfur, Liquid
Other means of identification
SDS number 10
Recommended use Feedstock.
Recommended restrictions None known.
Manufacturer / Importer / Supplier / Distributor information
Company name DCP Midstream
Address 370 17 Street Suite 2500 Denver, CO 80202
Telephone (303) 595-3331
E-mail safety@dcpmidstream.com
Contact person Mark Prewitt
Emergency phone number CHEMTREC - 24 HOURS: 800-424-9300

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Skin corrosion/irritation Category 2
OSHA hazard(s) Not classified

Label elements

Hazard symbol



Signal word Warning

Hazard statement Causes skin irritation.

Precautionary statement

Prevention Wash hands thoroughly after handling.

Response If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Storage Store away from incompatible materials.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) Not classified.

3. Composition/information on ingredients

Mixture

Hazardous components

Chemical name	Common name and synonyms	CAS number	%
Sulfur		7704-34-9	99
Hydrogen Sulfide		07783-06-4	1

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others.
Skin contact	Immediately remove contaminated clothing. Wash with soap and water. Continue to rinse for at least 15 minutes. In case of rashes, wounds or other skin disorders: Seek medical attention and bring along these instructions.
Eye contact	Immediately flush with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.
Ingestion	Seek immediate medical attention or advice.
Most important symptoms/effects, acute and delayed	Exposed individuals may experience eye tearing, redness and discomfort.
Indication of immediate medical attention and special treatment needed	Treat symptomatically. May cause lung edema. For inhalation exposures, person should be monitored for delayed development of pulmonary edema up to 48 - 72 hours post-exposure.
General information	Treat symptomatically if comfort continues.

5. Fire-fighting measures



NFPA 704 Hazard Class

Health: 2

Flammability: 1

Instability: 0

(0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Suitable extinguishing media	Water spray, foam, dry powder or carbon dioxide.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Not applicable.
Special protective equipment and precautions for firefighters	Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	Move containers from fire area if you can do it without risk. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Stay upwind. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Avoid inhalation of vapors and spray mist and contact with skin and eyes. Wear suitable protective clothing, gloves and eye/face protection. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Wipe up with absorbent material (e.g. cloth, fleece)
Environmental precautions	Avoid release to environment.

7. Handling and storage

Precautions for safe handling

Provide adequate ventilation. Avoid inhalation of vapors/mist and contact with skin and eyes. The product is extremely flammable, and explosive vapor/air mixtures may be formed even at normal room temperatures. Ground container and transfer equipment to eliminate static electric sparks. Use non-sparking hand tools and explosion-proof electrical equipment. Wear appropriate personal protective equipment. Immediately change contaminated clothes. Do not eat, drink or smoke when using the product. Observe good industrial hygiene practices. Use only bottom loading of tankers, in compliance with European legislation. Do not use compressed air for filling, discharging, or handling operations. Empty containers may contain flammable product residues.

Conditions for safe storage, including any incompatibilities

Liquid sulfur should not be put into any tank, railcar, or truck trailer that contains trace quantities of hydrocarbons, or more than trace amounts of moisture. Store solid sulfur in clearly labeled containers that are tightly closed. The storage location must be cool, dry, well-ventilated, and away from flames or other sources of ignition. Keep away from any incompatible material. Protect containers against physical damage. Post area "No Smoking or Open Flame".

8. Exposure controls/personal protection

Occupational exposure limits

U.S. OSHA Table Z-2 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Hydrogen Sulfide (CAS 07783-06-4)	Ceiling	20 ppm

U.S. ACGIH Threshold Limit Values

Components	Type	Value
Hydrogen sulfide (CAS 07883-06-4)	STEL	5 ppm
	TWA	1 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Hydrogen Sulfide (CAS 07783-06-4)	Ceiling	15 mg/m ³
		10 ppm

Biological Limit Values No biological exposure limits noted for the ingredient(s).

Exposure guidelines No exposure standards allocated.

Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Risk of eye contact: wear safety glasses with side shields. (Or goggles)

Skin protection Hand protection

Protective gloves are recommended.

Other

Wear chemical-resistant gloves, footwear and protective clothing appropriate for risk of exposure. Contact glove manufacturer for specific information. Lab coat.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Yellow. Dark yellow. Liquid.
Physical state	Liquid.
Form	Liquid
Color	Yellow. Dark yellow.
Odor	Rotten egg or sulfur smell
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	246.2 °F (119 °C)
Initial boiling point and boiling range	831.2 °F (444 °C)
Flash point	404.6 °F (207 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit – lower (%)	35 g/m ³
Flammability limit – upper (%)	1400 g/m ³
Vapor pressure	1 mm Hg
Vapor density	Not available.
Relative density	1.8 (Water=1)
Relative density temperature	68 °F (20 °C)
Solubility(ies)	Insoluble in water
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	449.6 °F (232 °C)
Decomposition temperature	Not available.
Viscosity	6.5 cP (184°C / 363°F)
Bulk Density	15 lb/gal

10. Stability and reactivity

Reactivity	Not available.
Chemical stability	Stable under normal temperature conditions.
Possibility of hazardous Reactions	Hazardous polymerization does not occur.

Conditions to avoid	Heat, flames and sparks. Elevated temperatures and incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Molten Sulfur reacts with hydrocarbons to form carbon disulfide and hydrogen sulfide. Combustion can yield oxides of sulfur..

11. Toxicological information

Information on likely routes of exposure

Ingestion	May be fatal if swallowed and enters airways.
Inhalation	May cause drowsiness or dizziness.
Skin contact	Causes skin irritation.
Eye contact	May cause eye irritation.
Symptoms related to the physical, chemical and toxicological characteristics	Headaches, dizziness, fatigue, nausea and vomiting. Prolonged skin contact may cause redness, irritation and dry skin.

Information on toxicological effects

Acute toxicity	Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness.
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Components	Species	Test Results
Hydrogen Sulfide (CAS 07783-06-4)		
Acute		
<i>Inhalation</i>		
LC50	Rat	0.38 mg/l, 4 Hours

Skin corrosion/irritation	Causes skin irritation. Contact with heated material may cause burns.
Serious eye damage/eye Irritation	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye. Exposure to hot material may cause thermal burns.
Respiratory sensitization	None known.
Skin sensitization	Not a skin sensitizer.
Germ cell mutagenicity	None known.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Reproductive toxicity	None known.
Specific target organ toxicity - single exposure	None known.
Specific target organ toxicity - repeated exposure	None known.
Aspiration hazard	None known.
Chronic effects	Solid and liquid sulfur may release hydrogen sulfide gas. Hydrogen sulfide may rapidly cause irritation, breathing failure, coma, and death without necessarily any warning odor being sensed.

Other information Hydrogen sulfide (H₂S) may be given off when this material is heated. Do not depend on sense of smell for warning.

12. Ecological information

Ecotoxicity Toxic to aquatic organisms, may cause long term adverse effects to the environment.

Components	Species	Test Results
Hydrogen sulfide (CAS 7783-06-4)		
Aquatic		
Fish	LC50 Lake Whitefish (<i>Coregonus clupeaformis</i>)	0.002 mg/l, 96 hours
Sulfur (CAS 7704-34-9)		
Aquatic		
Fish	LC50 Western mosquitofish (<i>Gambusia affinis</i>)	> 10000 mg/l, 96 hours

Persistence and degradability No data available.

Mobility in soil Not available.

Mobility in general The product is miscible with water. May spread in water systems.

Other adverse effects Not established.

13. Disposal considerations

Disposal instructions Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration.

Local disposal regulations Dispose of in accordance with local regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 °F

Waste from residues / unused

Products Dispose of in accordance with local regulations
Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number UN2448
UN proper shipping name Sulfur, molten
Transport hazard class(es) 4.1
Subsidiary class(es) -
Packing group III
Special precautions for user Not available.
Labels required 4.1
Special provisions 30, IB1, T1, TP3
Packaging exceptions None
Packaging non bulk 213
Packaging bulk 247

IATA

UN number UN2448
UN proper shipping name Sulfur, molten
Transport hazard class(es) 4.1
Subsidiary class(es) -
Packaging group III
Labels required 4.1
ERG Code Not available.
Special precautions for user Not available.

IMDG

UN number UN2448

UN proper shipping name Sulfur, molten
Transport hazard class(es) 4.1
Subsidiary class(es) -
Packaging group III
Labels required 4.1
EmS Not available.
Special precautions for user Not available.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
No information available.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not on regulatory list.

CERCLA Hazardous Substance List (40 CFR 302.4)

Hydrogen sulfide (CAS 7783-06-4) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - Yes

Pressure Hazard - No

Reactivity Hazard - No

SARA 302 Extremely hazardous substance

No

SARA 311/312 Hazardous Chemical

Yes

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrogen sulfide (CAS 7783-06-4)

Safe Drinking Water Act (SDWA)

Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not listed.

DEA Exempt Chemical Mixtures Code Number

Not listed.

Food and Drug Administration (FDA)

Not regulated.

US state regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Hydrogen sulfide (CAS 7783-06-4)

Sulfur (CAS 7704-34-9)

US. New Jersey Worker and Community Right-to-Know Act

Hydrogen sulfide (CAS 7783-06-4) 500 LBS

US. Pennsylvania RTK - Hazardous Substances

Hydrogen sulfide (CAS 7783-06-4)

Sulfur (CAS 7704-34-9)

US. Rhode Island RTK

Hydrogen sulfide (CAS 7783-06-4)

Sulfur (CAS 7704-34-9)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed.

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

16. Other information, including date of preparation or last version

Issue date 12-5-2012

Revision date – 2-5-2013

Version # 01

Further information Not available.

References ACGIH

EPA: Acquire database

NLM: Hazardous Substances Data Base

US. IARC Monographs on Occupational Exposures to Chemical Agents

Disclaimer This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.