



Material Safety Data Sheet (Canada) Molten Sulphur

Section 1 – Material Identification and Use

Material Name: MOLTEN SULPHUR
Use: Process stream, chemical feedstock
WHMIS Classification: Class D, Div. 1, Subdiv. A
TDG: UN: 2448 **Class:** 4.1 **Packing Group:** III
Shipping Name: , MOLTEN SULPHUR
Manufacturer/Supplier: ENCANA CORPORATION
500 Centre Street SE
CALGARY, ALBERTA, T2P 2S5
Emergency Telephone: CANUTEC: 1-613-996-6666
Chemical Family: Elemental sulphur

Section 2 – Hazardous Ingredients of Materials

Hazardous Ingredients	Approximate Concentrations %	C.A.S. Nos.	LD50/LC50 Specify Species & Route	Exposure Limits
Sulphur	100	7704-34-9	N.Av.	10 mg/m ³ (PNOS, TLV)
Hydrogen Sulphide	<0.1	7783-06-4	LC50, rat, 4 hr, 444 ppm	10 (c)/15 (c) /1 (5) ppm (BC/AB/TLV(STEL))
Sulphur Dioxide	<1	7446-09-5	LC50, rat, 1 hr, 2500 ppm	2, (5)/(0.25) ppm (AB & BC/TLV (STEL))

All exposure levels are 8-hour time-weighted exposure limits unless otherwise indicated. STEL is a short-term exposure limit over a 15 minute time-weighted average. (c) – denotes ceiling exposure limit.

Section 3 – Physical Data for Material

Physical State: Liquid
Specific Gravity: 1.8 – 1.96
Vapour Density (air=1): N.Av.
Percent Volatiles, by volume: N.Av.
pH: N.Av.
Coefficient of Water/Oil Distribution: N.Av.
N.AV. = not available N.App. = not applicable)

Vapour Pressure (mmHg): 1 @ 183 deg. C.
Odour Threshold (ppm): 0.13
Evaporation Rate: N.Av.
Boiling Pt. (deg.C): 444
Freezing Pt. (deg.C): 119
Odour & Appearance: Amber viscous liquid, sulphurous and rotten eggs odour

Section 4 – Fire and Explosion

Flammability: Yes **Conditions:** Hydrogen sulphide gas will ignite at normal temperatures. Explosive accumulations can build up in tank headspaces and other poorly ventilated locations.
Means of Extinction: Foam, CO₂, steam
Flash Point (deg. C): 168 - 207
Upper Explosive Limit (% by vol.): 46 (H₂S)
Lower Explosive Limit (% by vol.): 4.0 (H₂S)
Auto-Ignition Temp. (deg.C): 232
Hazardous Combustion Products: Sulphur oxides

Special Procedures: Use water spray to cool fire-exposed containers, and to disperse toxic gases.
Sensitivity to Impact: No
Sensitivity to Static Discharge: Yes, may ignite
TDG Flammability Classification: 4.1

Section 5 – Reactivity Data

Chemical Stability: Yes **Conditions:** Heat
Incompatibility: Yes **Substances:** Oxidizing agents (reaction may be violent), halogens, mineral acids and alkalis, zinc, tin, copper and alloys
Reactivity: Yes **Conditions:** Heat
Hazardous Decomposition Products: Hydrogen sulphide and sulphur dioxide.



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Section 6 – Toxicological Properties of Product

Routes of Entry:

Skin Absorption: No **Skin Contact:** Yes **Eye Contact:** Yes
Inhalation: **Acute:** Yes **Chronic:** N.Av. **Ingestion:** Yes

Effects of Acute Exposure: Hydrogen sulphide and sulphur dioxide gases cause irritation of eyes, nose, throat and lungs, which may be severe at high concentrations. Caution: delayed pulmonary edema may develop. Hydrogen sulphide may cause loss of sense of smell at 100 ppm. Unconsciousness and respiratory failure may happen without warning. Death may result if not promptly revived. Contact with skin and eyes causes severe burns and injury.

Effects of Chronic Exposure: N.Av.

Sensitization to Product: No.

Irritancy: Yes

Synergistic Materials: None reported

Carcinogenicity: N.Av. **Reproductive Effects:** N.Av. **Teratogenicity:** N.Av. **Mutagenicity:** N.Av.

Section 7 – Preventative Measures

Personal Protective Equipment: Use a NIOSH approved positive pressure self-contained breathing apparatus or supplied air breathing apparatus when working with this product or where concentrations may exceed exposure limits. Use approved gas detectors to assist in the detection and management of both H₂S and SO₂.

Gloves: Heat resistant gloves

Respiratory Protection: Use positive pressure self-contained breathing apparatus or supplied air breathing apparatus where concentrations may exceed exposure limits. **Eye:** Full facepiece SCBA or SABA required.

Footwear: As per safety policy **Clothing:** Fire retardant garments that meet NFPA 2112.

Engineering Controls: Use only in well ventilated areas. Mechanical ventilation required in confined areas. Equipment must be explosion proof.

Leaks & Spills: Remove all ignition sources. Use respiratory and personal protective equipment. Stop leak if safe to do so. Dyke to contain. Use water spray to cool material. Provide explosion-proof clearing ventilation, if inside. When cool, drum for recycling or disposal. Notify appropriate regulatory authorities.

Waste Disposal: Contact appropriate regulatory authorities for disposal requirements.

Handling Procedures & Equipment: Avoid contact with liquid. Avoid inhalation. Bond and ground all transfers. Avoid sparking conditions. Exposure controls to prevent overexposure and those that are detailed in the Canadian Association of Petroleum Producers (CAPP) publication entitled "Occupational Health and Safety of Hydrogen Sulphide (H₂S)" are recommended. **Caution: hydrogen sulphide hazard in tank headspaces.**

Storage Requirements: Store in a cool, dry, well ventilated area away from heat, strong sunlight, and ignition sources.

Special Shipping Information: TDG Special Provision 32.

Section 8 – First aid Measures

Skin: Flush area with cold water. Contact burns may be covered with a thin layer of solidified sulphur. Cover burn area with dry dressing. Do not remove sulphur. Treat for shock. Get immediate medical attention.

Eye: Immediately flush with large amounts of luke warm water for 15 minutes, lifting upper and lower lids at intervals. Get immediate medical attention.

Inhalation: Ensure own safety. Remove victim to fresh air. Give oxygen, artificial respiration, or CPR if needed. Get immediate medical attention. Maintain watch for delayed pulmonary edema.

Ingestion: Give 2-3 glasses of milk or water to drink. DO NOT INDUCE VOMITING. Keep warm and at rest. Get immediate medical attention.

Section 9 – Preparation Date of MSDS

Prepared By: Encana Environment, Health and Safety (EHS)

Phone Number: (403) 645-2000 Preparation Date: July 1, 2014 Expiry Date: July 1, 2017