

SECTION 1 – MATERIAL IDENTIFICATION AND USE**Material Name:** SULPHUR (LIQUID) / MOLTEN SULPHUR**Use:** Process stream, chemical feedstock**WHMIS Classification:** Class D, Div. 1, Subdiv. A**Fire:** 4 **Reactivity:** 0 **Health:** 4**TDG:** UN: 2448 **Class:** 4.1 **Packing Group:** III**Shipping Name:** SULPHUR, MOLTEN**Manufacturer/Supplier:** ENCANA CORPORATION#1800, 855 - 2nd Street S.W., P.O. BOX 2850,

CALGARY, ALBERTA, T2P 2S5

Emergency Telephone: 403-645-3333**Chemical Family:** Elemental sulphur**SECTION 2 – HAZARDOUS INGREDIENTS OF MATERIAL**

Hazardous Ingredients	Approximate Concentrations (%)	C.A.S. Nos.	LD50/LC50 Specify Species & Route	Exposure Limits
Sulphur	100	7704-34-9	N.Av.	10 mg/m3 (OEL)
Hydrogen Sulphide	<0.1	7783-06-4	LC50, rat, 4 hr, 444 ppm	10, 1 ppm (OEL, TLV)

OEL = 8 hr. Alberta Occupational Exposure Limit; TLV = Threshold Limit Value (8 hrs)

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.**Odour & Appearance:** Amber viscous liquid, sulphurous and rotten eggs odour

(N.A.V. = 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**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.):** 4.3 (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 alkalies, zinc, tin, copper and alloys**Reactivity:** Yes **Conditions:** Heat**Hazardous Decomposition Products:** Hydrogen sulphide, sulphur oxides.

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 oedema 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.

Exposure Limits of Product: 10 ppm (8 hr Alberta OEL for hydrogen sulphide)

Irritancy: Yes

Synergistic Materials: None reported

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

SECTION 7 – PREVENTIVE MEASURES

Personal Protective Equipment

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: Fire resistant as per safety policy

Clothing: Fire retardant clothing

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 inhalation, skin and eye contact. **Caution: hydrogen sulphide hazard in tank headspaces.** Avoid contact with clothing. Bond and ground all transfers. Avoid sparking conditions.

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 oedema.

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, 2011 Expiry Date: July 1, 2014