

**MATERIAL SAFETY DATA SHEET****2-MERCAPTOETHANOL**

PRODUCT CODE NUMBER(S): 4990-5

**PRODUCT IDENTIFICATION****Chemical Name and Synonyms:** 2-Mercaptoethanol; thioethylene glycol; 2-hydroxy-1-ethanethiol;

Beta-mercaptoethanol, 2-thioethanol

**Chemical Family:** Alkyl mercapto alcohol**Chemical Formula:** HSCH<sub>2</sub>CH<sub>2</sub>OH**Product Use:** Laboratory reagent**Manufacturer's Name and Address:**

Caledon Laboratories Ltd.

40 Armstrong Avenue

Georgetown, Ontario L7G 4R9

**Telephone No:** (905) 877-0101**Fax No:** (905) 877-6666**Emergency Telephone No:** CANUTEC (613) 996-6666**HAZARDOUS INGREDIENTS OF MATERIALS**

| Ingredients       | %  | TLV Units       | CAS No. |
|-------------------|----|-----------------|---------|
| 2-Mercaptoethanol | 99 | Not established | 60-24-2 |

**PHYSICAL DATA****Physical State:** Liquid**Odour and Appearance:** Water white liquid, very strong disagreeable sulphide odour**Odour Threshold (ppm):** 0.383 to 2.04 mg/m<sup>3</sup>. Normally detectable before harmful levels are reached.**Vapour Pressure (mm Hg):** 1 mm Hg @ 20°C**Vapour Density (Air = 1):** 2.69**Evaporation Rate (Bu ac=1):** <1**Boiling Point (degrees C):** 157°C (may decompose)**Freezing Point (degrees C):** <-73.5°C**pH:** ~5.2 (0.1M, aqueous)(calculated)**Specific Gravity:** 1.114 @ 20°C**Coefficient of Water/Oil distribution:** logP=-0.20**SHIPPING DESCRIPTION****UN:** 2966**T.D.G. Class:** 6.1**Pkg. Group:** II**REACTIVITY DATA****Chemical Stability:** Stable**Incompatibility with other substances:** May react violently with oxidizing agents, causing ignition. Reaction with fumong nitric acid can be explosive. May react vigorously or violently with reducing agents, strong alkalis, strong acids, alkali metals, aliphatic amines, isocyanates. Reacts with moisture to produce toxic material.**Reactivity:** Avoid excessive heat, all ignition sources, all incompatible materials, generation of mist.**Hazardous Decomposition Products:** SO<sub>x</sub>, CO<sub>x</sub>**FIRE AND EXPLOSION DATA****Flammability:** Combustible liquid and vapour. Vapors may be heavier than air, and may spread along the ground and collect in low or confined areas, creating a fire or toxicity hazard.**Extinguishing Media:** Alcohol foam, CO<sub>2</sub>, dry chemical, water spray. Water may be ineffective for extinguishing fire, but may be used to cool containers, disperse vapours, and flush spills or vapours away from ignition sources. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment (positive-pressure, full face-piece self-contained breathing apparatus) and clothing (chemical splash suit) sufficient to prevent inhalation of mist or vapours, and contact with skin and eyes. Closed containers may explode in heat of fire; withdraw immediately in case of rising sound from venting device, or discolouration in container.**Flash Point (Method Used):** 68°C (OC)**Autoignition Temperature:** 295°C**Upper Flammable Limit (% by volume):** 2.7**Lower Flammable Limit (% by volume):** 1.1**Hazardous Combustion Products:** SO<sub>x</sub>, CO<sub>x</sub>, H<sub>2</sub>S**Sensitivity to Impact:** None identified**Sensitivity to Static discharge:** No information available**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD<sub>50</sub>:** (oral, rat) 244 mg/kg; (oral, mouse) 190 mg/kg; (dermal, rabbit) 150 µL/kg**LC<sub>50</sub>:** (mouse) 13,200 mg/m<sup>3</sup> (duration not specified). Exposure of rats to saturated vapour at room temperature for maximum 4 h produced no deaths.**Irritation:** (skin, rabbit) 10 mg/24h open; (eye, rabbit) 2 mg severe**Effects of Acute Exposure to Product:****VERY TOXIC.** May be fatal if absorbed through the skin or swallowed. **CORROSIVE** to the eyes and skin. May cause permanent eye injury.**Inhaled:** Toxic and irritating. Low concentrations of vapour cause irritation, headache, nausea. High concentrations can be extremely destructive to tissue, causing spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema with shortness of breath, eventual cyanosis, and respiratory failure. Systemic effects of ingestion, inhalation or absorption include CNS effects such as headache, nausea and vomiting, tremors, muscle paralysis, convulsions, eventual coma and death.**In contact with skin:** Corrosive. Concentrated liquid or vapours may cause severe irritation, redness, pain, chemical burns. Toxic if absorbed, with systemic effects as in "Inhaled".

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**In contact with eyes:** Corrosive. May cause severe irritation, burns and corneal opacities, possible permanent damage.

**Ingested:** Toxic and irritating. Causes severe irritation with nausea, vomiting, abdominal pain, systemic effects as in "Inhaled". Can cause severe burns to mouth and gastrointestinal tract with risk of perforation. Not a typical route of industrial exposure.

**Effects of Chronic Exposure to Product:**

Prolonged or repeated skin contact may cause defatting and dermatitis. Repeated or prolonged inhalation may cause CNS stimulation.

**Carcinogenicity:** Not evaluated as a carcinogen

**Teratogenicity:** No human or animal information available.

**Reproductive Effects:** No human or animal information available.

**Mutagenicity:** Some evidence of mutagenicity, inconclusive

**Synergistic Products:** None found

## PREVENTIVE MEASURES

**Engineering Controls:** Non-sparking, grounded ventilation system, separate from other ventilation systems, and electrical equipment that does not provide a source of ignition.

**Respiratory Protection:** Dust/mist mask. Fumehood. NIOSH approved respirator for conditions where local ventilation is not sufficient to prevent inhalation of vapours. For higher or unknown concentrations, as in fire or spill conditions, positive-pressure, full face-piece self-contained breathing apparatus, or full face-piece supplied-air respirator with auxiliary positive-pressure self-contained breathing apparatus.

**Eye Protection:** Chemical safety goggles, face shield.

**Skin Protection:** Silver Shield/4H (polyethylene/ethylene vinyl alcohol) gloves. Other impermeable protective clothing, apron, sleeves, coveralls, boots, as required to prevent contact.

**Other Personal Protective Equipment:** Safety shower and eye-wash fountain in work area.

**Leak and Spill Procedure:** Evacuate area. Ventilate area. Cleanup personnel must wear protective equipment and clothing sufficient to prevent inhalation of vapours or mist and contact with skin, eyes, or clothing. Do not touch spilled material. Use non-sparking tools. Prevent from entering sewers or waterways. Absorb on inert absorbent, transfer carefully into container and arrange removal by disposal company. Wash site of spillage thoroughly with water and detergent. Ventilate area to dispel residual vapour. Contaminated absorbent may pose the same hazards as the material; treat with caution.

**Waste Disposal:** Follow all federal, provincial and local regulations for disposal.

**Handling Procedures and Equipment:** COMBUSTIBLE, VERY TOXIC, VERY IRRITATING. Workers must be thoroughly trained in the hazards of this material, and its safe use, and must wear appropriate protective equipment and clothing. Ground and bond all equipment to prevent static charge accumulation. Use non-sparking tools. Post "No Smoking" signs. Use smallest amount possible for the purpose in a designated area with appropriate ventilation. Avoid generating vapour or mist. Avoid all contact with eyes, skin or clothing. Avoid inhalation. Keep away from all incompatible and combustible materials. Keep containers closed when not in use. Empty containers may contain hazardous residues; treat with caution.

**Storage Requirements:** Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight and away from all sources of ignition and incompatible materials. Keep tightly closed when not in use. Protect from damage. Inspect regularly for signs of leaking or damage. Keep storage area clear of combustible materials. Ground and bond equipment and containers to prevent a static charge buildup. Storage area should be made of non-combustible material and should have raised sills or ramps at doorways, with trenching to a safe area.

## FIRST AID MEASURES

### Specific Measures:

**Eyes:** IMMEDIATELY flush eyes with gently running water for at least thirty (30) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into unaffected eye. Wear protective gloves to avoid contact during first aid procedures. Obtain medical attention immediately.

**Skin:** Remove contaminated clothing (including rings, watches, belts and shoes). IMMEDIATELY flush exposed area with large amounts of warm running water for at least twenty (20) minutes. Wear protective gloves to avoid contact during first aid procedures. Get medical attention immediately. Discard contaminated clothing.

**Inhalation:** Remove to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Give oxygen for breathing difficulty. If breathing has STOPPED give artificial respiration; use mouth guard to avoid possible contact with chemical. If breathing and pulse are ABSENT give CPR. IMMEDIATELY OBTAIN MEDICAL ATTENTION. Stay with casualty until medical assistance is reached.

**Ingestion:** DO NOT INDUCE VOMITING. If the casualty is alert and not convulsing, have him drink 2 to 4 glasses of water to dilute the material. Obtain medical attention immediately. If spontaneous vomiting occurs, have casualty lean forward to avoid breathing in of emesis. Rinse mouth and administer more water.

## REFERENCES USED

CCINFO disc: Cheminfo

Budavari: The Merck Index, 12th ed., 1997

Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987

Sax: Dangerous Properties of Industrial Materials, 5th ed., 1979  
Suppliers' Material Safety Data Sheets

## ADDITIONAL INFORMATION

**Date Issued:** February 20, 1990

**Revision:** February 2011

**MSDS:** 4990-5

**Proposed WHMIS Designation:** B3; D1A; D2B

Prepared by: Caledon Laboratories Ltd. (905) 877-0101  
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