

MATERIAL SAFETY DATA SHEET

ETHYL ETHER

PRODUCT CODE NUMBER(S): 4700-1, 4700-4, 4703-2, 4709-1, 4800-1, 4800-4, 4800-30, 4801-2, 4802-2, CAL 1340

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: Ethyl ether, Diethyl ether**Chemical Family:** Saturated aliphatic ether**Chemical Formula:** C₄H₁₀O**Product Use:** Laboratory solvent**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.
Ethyl ether	>98	400 ppm	60-29-7
2,6-di-tert-butyl-p-cresol preservative (where indicated)	1 (ppm)	10 mg/m ³	128-37-0
Ethanol preservative (where indicated)	0.25%-2%	1000 ppm	64-17-5

PHYSICAL DATA

Physical State: Liquid**Odour and Appearance:** Clear, colourless liquid. Pungent ether-like odour.**Odour Threshold (ppm):** 1 ppm (detection); 6.6 to 41.3 ppm (recognition). Good warning properties TLV >10x odour threshold.**Vapour Pressure (mm Hg):** 442 mm Hg @ 20°C**Vapour Density (Air = 1):** 2.55**Evaporation Rate (n-Butyl acetate = 1):** 37.5**Boiling Point (°C):** 35°C**Freezing Point (°C):** -116°C**pH:** Neutral**Specific Gravity:** 0.7135 @ 20°C**Coefficient of Water/Oil distribution:** LogP (oct)=0.77 to 0.89

SHIPPING DESCRIPTION

UN: 1155**T.D.G. Class:** 3**Pkg. Group:** 1

REACTIVITY DATA

Chemical Stability: Normally stable. Becomes unstable upon prolonged exposure to light and air. May form explosive peroxides on long standing.**Incompatibility with other substances:** Can react violently or explosively with strong oxidizers. Can react violently with some sulphur compounds causing fire and explosion. Can react violently with interhalogens (BrF₃) in the

presence of light. Can react violently or explosively with nitric acid or other strong oxidants. Not corrosive to metals.

Reactivity: Heat, sparks and open flame. Tends to form explosive peroxides, especially when anhydrous, under the influence of air, light and on long standing. Do not evaporate to dryness. Peroxides, if present, will concentrate and may explode.**Hazardous Decomposition Products:** CO_x, explosive peroxides.

FIRE AND EXPLOSION DATA

Flammability: Extremely flammable liquid and vapour. Readily ignited. Vapour is heavier than air and may travel to distant source of ignition and flash back. Liquid can float on water and spread fire.**Extinguishing Media:** Dry chemical, alcohol foam or carbon dioxide. Water may be ineffective because it may not cool the material below its flash point. Water may be used to cool containers, to disperse vapours that are not ignited, and to flush spills away from ignition sources. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment and clothing (full Bunker Gear) sufficient to prevent inhalation of mist or vapours, and contact with skin and eyes. Containers may explode in heat of fire; withdraw immediately in case of rising sound from vent or discoloration of tank.**Flash Point (Method Used):** -45°C (CC)**Autoignition Temperature:** 160°C**Upper Flammable Limit (% by volume):** 36**Lower Flammable Limit (% by volume):** 1.7**Hazardous Combustion Products:** CO_x, explosive peroxides.**Sensitivity to Impact:** Probably not sensitive if pure. When contaminated by high concentrations of peroxides, may explode on impact.**Sensitivity to Static discharge:** Vapour readily ignited by static discharge. Liquid can accumulate static charge by flow or agitation.

TOXICOLOGICAL PROPERTIES AND HEALTH DATA

Toxicological Data:**LD₅₀:** (oral, rat) 1,200 mg/kg; (dermal, rabbit) >20 mL/kg**LC₅₀:** (rat) 32,000 ppm/4h; (mouse) 42,042/3h**Effects of Acute Exposure to Product:****Inhaled:** Respiratory irritation may occur above 200 ppm. Mild CNS depressant, capable of producing intoxication, drowsiness, and at high concentrations, vomiting, decreased pulse, irregular respiration, muscle relaxation, stupor and unconsciousness. Anaesthesia occurs between 36,000 and 65,000 ppm. At higher concentrations, respiratory arrest and death can occur.**In contact with skin:** No irritation is likely after brief contact but may be irritating after prolonged contact. Not absorbed through skin in significant quantities.**In contact with eyes:** High vapour concentrations will irritate the eyes. Liquid and mists will irritate and may burn eyes, causing mild, reversible injury.**Ingested:** Ingestion of 0.26 g/kg has been reported as fatal in humans. Symptoms as in "Inhaled", but onset is more rapid.

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The stomach may become distended due to "boiling" of the chemical. Aspiration of the liquid into the lungs, which can occur during ingestion or vomiting, can cause chemical pneumonitis, pulmonary edema, with severe lung damage, even death.

Effects of Chronic Exposure to Product:

Prolonged skin exposure can cause drying and cracking. Prolonged eye exposure to concentrated vapour may cause slight reversible injury to eyes. Chronic exposure to small amounts (as in operating rooms) may cause general fatigue, weakness, loss of appetite, nausea, shortness of breath, irritability, susceptibility to dental disease, blood and heart abnormalities. Symptoms are reversible on removal from exposure.

Carcinogenicity: No human or animal information available.

Teratogenicity: No human information available; some developmental effects demonstrated in animal testing, but only at maternally toxic levels.

Reproductive Effects: No human or animal information available

Mutagenicity: Effects have occurred in humans

Synergistic Products: Slows metabolism of some drugs. In animal testing, liver toxicity of acetaminophen is markedly increased by exposure to ethyl ether.

PREVENTIVE MEASURES

Engineering Controls: Local, non-sparking, grounded exhaust ventilation system required.

Respiratory Protection: Up to 1,900 ppm: NIOSH approved full facepiece chemical cartridge respirator with organic vapour cartridges or full facepiece supplied-air respirator; higher or unknown concentrations, fire or spill conditions, positive pressure, full face-piece self-contained breathing apparatus or supplied-air respirator with an auxiliary positive pressure self-contained breathing apparatus.

Eye Protection: Chemical goggles and/or face shield.

Skin Protection: Over 8 hr use: polyvinyl alcohol, Barrier (PE/PA/PE), Silver Shield/4H™ (polyethylene/ethylene vinyl alcohol), Tychem™BR/LV, Tychem™TK gloves; over 4 hr use: Responder™ or Trelchem™HPS. Other impervious protective clothing (apron, sleeves, coveralls, splash suit, boots) sufficient to prevent contact.

Other Personal Protective Equipment: Safety shower and eye bath located close to chemical exposure area.

Leak and Spill Procedure: Eliminate all sources of ignition. Evacuate area. Cleanup personnel must be thoroughly trained in the hazards of this chemical and must wear protective equipment and clothing sufficient to prevent inhalation of vapours or mists and contact with skin and eyes. Stop or reduce discharge if safe to do so. Contain spill with inert absorbent (sand, earth). Prevent from entering sewers or waterways. Collect product and contaminated absorbent for disposal. Contaminated absorbent may pose the same hazards as the spilled product. Flush area of spill with copious amounts of running water.

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

Handling Procedures and Equipment: EXTREMELY FLAMMABLE material. Workers must be thoroughly trained in the hazards of this material, and its safe use, and must wear appropriate protective equipment and clothing. May form explosive peroxides on long standing; open containers with caution. Ground and bond all equipment to prevent static charge accumulation. Use non-sparking tools. Post "No Smoking" signs. Use inert gas in container to reduce fire/explosion hazard. 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. 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 leading to a safe area.

FIRST AID MEASURES

Specific Measures:

Eyes: Immediately flush eyes with gently running water for at least five (5) minutes, holding eyelids open while flushing. Get medical attention.

Skin: Remove contaminated clothing (including rings, watches and shoes). Immediately flush exposed area with large amounts of running water for at least five (5) minutes. If irritation persists, get medical attention. Wash contaminated clothing before reuse, or discard.

Inhalation: IMMEDIATELY remove to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Eliminate all ignition sources. Give oxygen for breathing difficulty. If breathing has STOPPED give artificial respiration. If breathing and pulse are ABSENT, give CPR. IMMEDIATELY IMMEDIATELY GET MEDICAL ATTENTION. Stay with casualty until medical assistance is reached.

Ingestion: DO NOT INDUCE VOMITING. Danger of aspiration with emesis. If casualty is alert and not convulsing, rinse out mouth with water. Give 2 to 4 glasses of water to dilute material. IMMEDIATELY GET MEDICAL ATTENTION. If spontaneous vomiting occurs have casualty lean forward with head down to avoid breathing in of vomitus.

REFERENCES USED

CCINFO disc: Cheminfo

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: November 1, 1988

Revision: June 2009

MSDS: 4700-1, 4700-4, 4703-2, 4709-1, 4800-1, 4800-4, 4800-30, 4801-2, 4802-2, CAL 1340

Proposed WHMIS Designation: B2; Insufficient information for toxicity classification.

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