

MATERIAL SAFETY DATA SHEET**TOLUENE:METHANOL 4:1**

PRODUCT CODE NUMBER(S): CAL 1285

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** Toluene/Methanol mixture**Chemical Family:** Not applicable - mixture**Chemical Formula:** C₆H₅CH₃ and CH₃OH**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.
Toluene	80	50 ppm	108-88-3
Methanol	20	(TWA) 200 ppm	67-56-1

PHYSICAL DATA**Physical State:** Liquid**Odour and Appearance:** Clear, colourless, mobile liquid, with a benzene-like odour.**Odour Threshold (ppm):** 0.16-0.37 ppm (detection); recognition varies widely from 1.9 to 69 ppm. Values for toluene, dominant factor in mixture. Odour not a reliable indicator**Vapour Pressure (mm Hg):** Not available**Vapour Density (Air = 1):** Not available**Evaporation Rate:** Not available**Boiling Point (degrees C):** Not available**Freezing Point (degrees C):** Not available**pH:** Not applicable**Specific Gravity:** Not available**Coefficient of Water/Oil distribution:** Not available**SHIPPING DESCRIPTION****UN:** 1992**T.D.G. Class:** 3**Pkg. Group:** II**REACTIVITY DATA****Chemical Stability:** Stable**Incompatibility with other substances:** Toluene: Increased risk of fire and explosion with strong oxidizers, BrF₃; reaction with nitric acid is extremely violent. Forms explosive mixtures with nitrogen tetroxide, silver perchlorate, tetranitromethane. Iron or ferric chloride catalyses a vigorous exothermic reaction between toluene and sulphur dichloride. Not corrosive to metals. Methanol: Violent reactions or explosions can occur with magnesium, bromine, sodium hypochlorite, Lewis or mineral acids, hydrogen peroxide and other strong oxidizers, chlorides, metals, beryllium hydride, cyanuric chloride, alkylaluminum solutions, tetraphosphorus hexaoxide, isocyanates, diethyl zinc, acetyl bromide. Forms shock-sensitive or explosive compounds with perchloric acid or metal perchlorates. Mixtures with powdered metals can detonate. May be corrosive to lead, aluminum. Attacks some plastics, rubbers, coatings.**Reactivity:** Avoid high temperatures, sparks, open flames, all other sources of ignition, all incompatible materials, generation of mist or vapour.**Hazardous Decomposition Products:** CO_x, irritating, toxic gases**FIRE AND EXPLOSION DATA****Flammability:** Flammable liquid and vapour. Vapour may travel to a distant source of ignition and flash back. Vapour is heavier than air and may spread over long distance. Liquid can accumulate static charge by flow or agitation. Liquid can float on water and may spread to distant locations and spread fire.**Extinguishing Media:** Alcohol-type or all-purpose type foam for large fires. Carbon dioxide or dry chemical for small fires. Use water spray or fog to cool containers, disperse vapours, dilute chemical, or flush it away from fire, it may be ineffective for extinguishing fire. Fight fire from safe distance, from upwind direction. Firefighters must wear protective equipment (NIOSH/OSHA approved positive-pressure, full face-piece self-contained breathing apparatus) and encapsulating chemical splash suit to prevent any inhalation or contact with this chemical. Closed containers may rupture violently during fire; withdraw immediately in case of rising sound from vent or discoloration of tank.**Flash Point (Method Used):** Not available**Autoignition Temperature:** Not available**Upper Flammable Limit (% by volume):** Not available**Lower Flammable Limit (% by volume):** Not available**Hazardous Combustion Products:** CO_x, toxic gases, aldehydes**Sensitivity to Impact:** None identified**Sensitivity to Static discharge:** Vapour is readily ignited by static discharge. Liquid can accumulate static charge by flow or agitation.**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** Toluene:(oral, rat) 2,600 mg/kg; (oral, neonatal rat) <870 mg/kg; (dermal, rabbit) 12,225 mg/kg. Methanol: (oral, rat) 5628 mg/kg; (dermal, monkey) 1.6 g/kg (low toxicity to animals both orally and by skin contact)**LC₅₀:** (rat) 8,800/4h; 6,000/6h (toluene)**Effects of Acute Exposure to Product:****Inhaled:** Causes CNS effects. 50 ppm (toluene) can cause slight drowsiness and headache. 50 to 100 ppm causes irritation of eyes, nose, throat, and respiratory tract, with chest pain and edema. Over 100 ppm, headache, fatigue and dizziness; over 200 ppm, giddiness, numbness, nausea. Higher concentrations can cause confusion, incoordination, eventual unconsciousness, and death. Methanol also causes CNS effects, and visual disturbances or blindness.**In contact with skin:** Direct contact with vapour, mist or liquid may cause defatting, drying and cracking of the skin. Absorbed slowly through skin, not expected to cause systemic toxic effects by skin exposure.**In contact with eyes:** Liquid and vapour may cause irritation, but probably no permanent corneal damage.**Ingested:** May cause irritation and burning of the mouth and throat. Readily absorbed through gastrointestinal tract causing systemic poisoning as in "Inhaled". 60 to 200 mL of methanol is

CODE: CAL 1285

considered fatal for humans; as little as 10 mL has caused blindness. In one case ingestion of 60 mL of toluene was fatal within 30 minutes; death was caused either by CNS depression or by lung damage due to aspiration. Consumption of alcohol or tobacco products may increase toxic effects. Aspiration into the lungs during ingestion or subsequent vomiting may cause severe damage to lung tissue.

Effects of Chronic Exposure to Product:

Prolonged or repeated contact may cause dermatitis. May cause nervous system disturbances, such as memory loss, sleep disturbances, loss of ability to concentrate, incoordination, brain disorders, impaired vision or blindness. May adversely affect persons with chronic disease of the central nervous system, skin, gastrointestinal tract, and/or eyes.

Carcinogenicity: A4; not considered carcinogenic by NTP, IARC.

Teratogenicity: Methanol may cause teratogenic/ embryotoxic effects based on studies with laboratory animals, at dose levels non-toxic to mother (RTECS No. PC 1400000). Toluene is developmental toxicity hazard, based on animal studies.

Fetotoxicity, behavioural effects, and hearing loss observed in offspring of rats exposed to 1200 -1800 ppm (inhalation) without maternal toxicity. Extreme exposures (associated with solvent abuse, e.g. glue-sniffing) have caused kidney effects. Other studies that have shown increased birth defects or spontaneous abortion have involved exposure to organic solvents, including, but not exclusively, toluene.

Reproductive Effects: Inhalation has caused effects in situations not considered relevant to occupational exposures..

Mutagenicity: Insufficient information available

Synergistic Products: Other solvents, such as benzene, xylene, and alcohol slow the rate of clearance of toluene from the body, therefore increasing its toxic effects. Alcohols may interact synergistically with chlorinated solvents (e.g. carbon tetrachloride, chloroform, bromotrichloromethane), dichlorocarbamates (e.g. disulphiram), dimethylnitrosamine and thiocetamide)

PREVENTIVE MEASURES

Engineering Controls: Non-sparking, grounded, separate, exhaust ventilation required.

Respiratory Protection: NIOSH/OSHA approved organic vapour cartridge respirator, or powered air-purifying respirator with organic vapour cartridge, for concentrations up to 500 ppm. Higher or unknown concentrations, as in fire or spill conditions: positive pressure, full facepiece self-contained breathing apparatus, or positive pressure, full face-piece air-supplied respirator with an auxiliary positive pressure self-contained breathing apparatus.

Eye Protection: Chemical goggles and/or face shield.

Skin Protection: PVA, Teflon™, Viton™, 4H™, Barricade™, CPF3™, TrelchemHPS™, Tychem 10000™, or Responder™ gloves. Other protective clothing, apron, sleeves, coveralls, boots, as required to prevent contact.

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

Leak and Spill Procedure: Evacuate and ventilate area. Eliminate all sources of ignition. Cleanup personnel must be thoroughly trained in the hazards of this material and must wear protective equipment and clothing sufficient to prevent inhalation of vapours or mists, and contact with skin, eyes or clothing. Stop or reduce discharge if safe to do so. Contain spill and collect using inert absorbent material. Do not touch spilled material or contaminated absorbent. Prevent from entering sewers or waterways. Contaminated absorbent may pose the same hazards as the chemical; treat with caution. Flush area of spill with copious amounts of running water.

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

Handling Procedures and Equipment: FLAMMABLE, TOXIC LIQUID AND VAPOUR, POSSIBLE REPRODUCTIVE HAZARD, IRRITANT. Workers must be thoroughly trained in the hazards of

this material and its safe use, and must wear appropriate protective equipment and clothing suitable for the application. Post "No Smoking" signs. Ground and bond equipment to prevent static charge accumulation. Use non-sparking tools. Avoid splash filling. Keep storage and work areas free of combustible or incompatible materials. Use the smallest amount possible for the purpose, in a designated area with adequate ventilation. Avoid contact with skin and eyes and inhalation of vapours. Avoid generating vapours or mists. Empty containers may contain hazardous residues; treat with extreme 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 heat and 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. Post "NO SMOKING" signs. Have appropriate fire extinguishers and spill cleanup equipment near the storage area. Ground and bond equipment and containers to prevent a static charge buildup. Storage facilities should be made of fire-resistant materials. Provide raised sills and trenches to drain to a safe area.

FIRST AID MEASURES

Specific Measures:

Eyes: IMMEDIATELY FLUSH EYES with warm running water for at least twenty (20) minutes, holding eyelids open during flushing. Take care not to flush contaminated water into unaffected eye. Get medical advice immediately.

Skin: Remove contaminated clothing (including rings, watches, belts, and shoes), under running water. IMMEDIATELY flush exposed area with large amounts of warm running water for about twenty (20) minutes. Get medical advice. Decontaminate clothing, shoes, before reuse, or discard.

Inhalation: IMMEDIATELY remove to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Eliminate ignition sources. Give oxygen for breathing difficulty. If breathing has stopped give artificial respiration. 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. Danger of aspiration if vomiting occurs. If the casualty is alert and not convulsing, have them drink 2 to 4 glasses of water to dilute the material. 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

Royal Society of Chemistry, Chemical Safety Data Sheets, Vol. 1, 1992

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: November 1, 1988

Revision: April 2011

MSDS: CAL 1285

Proposed WHMIS Designation: B2, D2A; D2B (irritation) (Toluene); B2; D1B; D2A; D2B (Methanol)

Prepared by: Caledon Laboratories Ltd. (905) 877-0101
Caledon Laboratories Ltd. believes the information contained herein is reliable and accurate. Caledon makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such information is solely for your consideration, investigation, and verification.