

MATERIAL SAFETY DATA SHEET**DICHLOROMETHANE**

PRODUCT CODE NUMBER(S): 3600-1, 3600-3, 3600-4, 3600-30, 3601-2, 3601-7, 3603-2, 3609-1, CAL1338

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** Dichloromethane; Methylene chloride**Chemical Family:** Halogenated aliphatic hydrocarbon**Chemical Formula:** CH₂Cl₂**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	%	PEL	CAS No.
Methylene chloride	~99	25 ppm (TWA)	75-09-2

PHYSICAL DATA**Physical State:** Liquid**Odour and Appearance:** Clear, colourless liquid. Penetrating ether-like odour**Odour Threshold (ppm):** ~150 ppm, detection; ~230 ppm, recognition. Unreliable warning properties, odour threshold above TLV, and olfactory fatigue may occur.**Vapour Pressure (mm Hg):** 355 mm Hg at 20°C**Vapour Density (Air = 1):** 2.93**Evaporation Rate (Bu ac=1):** 27.5**Boiling Point (°C):** 39.8°C**Freezing Point (°C):** -97°C**pH:** Not applicable**Specific Gravity:** 1.3266**Coefficient of Water/Oil distribution:** LogP (oct)=1.25**SHIPPING DESCRIPTION****UN:** 1593**T.D.G. Class:** 6.1**Pkg. Group:** III**REACTIVITY DATA****Chemical Stability:** Normally stable. On prolonged contact with water, slowly decomposes forming hydrochloric acid.**Incompatibility with other substances:** Avoid strong oxidizers, strong bases, amines, alkali metals, pure oxygen, Lewis and mineral acids. Reacts exothermically and uncontrollably with aluminum powder above 95°C, under appropriate pressure. Should not be used in long term contact with aluminum, zinc or their alloys. Attacks some types of rubber, plastics and coatings. Becomes flammable in air at 27°C in the presence of <0.5% vol. of methanol. Mixtures with dinitrogen tetroxide or dinitrogen pentoxide may be explosive. Mixtures with nitric acid may detonate. Not corrosive to metals if dry; at elevated

temperature, or in presence of water, may corrode some stainless steels, iron, copper, aluminum.

Reactivity: Hydrolysis producing small amounts of hydrochloric acid possible with gross water contamination. Avoid open flames, sparks or other high temperature sources. May explode in contact with lithium, sodium, nitric acid, calcium hypochlorite, and sodium sulphide.**Hazardous Decomposition Products:** At high temperatures, decomposition occurs to give off HCl vapour and small quantities of other toxic vapours such as phosgene and chlorine. Prolonged contact with water produces hydrochloric acid.**FIRE AND EXPLOSION DATA****Flammability:** Non flammable. Vapour can burn in air above 100°C. Becomes flammable in air at 27°C in the presence of <0.5% vol. of methanol.**Extinguishing Media:** Water fog or spray, CO₂, foam, dry chemical. Fight fire from upwind, from a safe distance and protected location. Fire fighters must wear protective equipment (positive-pressure self-contained breathing apparatus) and clothing (chemical splash suit) sufficient to prevent inhalation of mist or fumes, and contact with skin and eyes.**Flash Point (Method Used):** None measurable by standard methods. Vapour can burn in air above 100°C.**Autoignition Temperature:** 556°C**Upper Flammable Limit (% by volume):** 19 (oxygen-enriched air, elevated temperature or pressure, high ignition energy)**Lower Flammable Limit (% by volume):** 12 (S/A)**Hazardous Combustion Products:** Emits hydrogen chloride gas, phosgene gas and other toxic vapours**Sensitivity to Impact:** None**Sensitivity to Static discharge:** None identified**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** (oral, rat) 2,100-3,000 mg/kg; (dermal, rabbit) 2,700 mg/kg**LC₅₀:** (mouse) 16,186 ppm/8h, (rat) 57,000 ppm/15 min**Effects of Acute Exposure to Product:**

Persons with angina or other cardiovascular diseases should not be exposed to dichloromethane.

Inhaled: Irritating to upper respiratory tract. May cause dizziness, nausea, vomiting, unconsciousness, central nervous system depression, liver damage, blood effects, cardiac arrhythmia. 200 -500 ppm has caused irritation or mild CNS disturbances in some cases, but not in others.**In contact with skin:** Prolonged exposure may cause skin irritation, drying or flaking of skin. Extensive skin contact (such as immersion) may cause a burning sensation followed by a cold, numb feeling which subsides after contact. Prolonged contact, as under gloves, shoes or tight clothing, can cause severe irritation and burns. May be absorbed through skin, but not in significant amounts.**In contact with eyes:** Both vapour and liquid irritate the eyes, and may cause pain, moderate eye irritation and possibly corneal burns.

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Ingested: Single dose oral toxicity is low. However, it will irritate the mouth and throat and may cause systemic effects as in "Inhaled".

Effects of Chronic Exposure to Product:

Chronic effects of methylene chloride are due to the formation of carbon monoxide. Exposure to 500-1000 ppm for over three years may cause memory loss, speech and balance problems, confusion, and auditory hallucinations. Exposure to 475 ppm for 10 years produced no liver, cardiac or neurological changes.

Carcinogenicity: Increases the rate of malignant tumour formation in mice. Human evidence inadequate, Group 2B, possible human carcinogen (IARC)

Teratogenicity: Fetotoxicity occurred at doses which caused toxic effects to mother. However, presence of chemical in fetal tissue indicates that it crosses placental barrier.

Reproductive Effects: Greater risk of male sterility and increased risk of spontaneous abortion in pregnant females was found in exposed workers.

Mutagenicity: Positive results in short-term tests with mice, bacteria, and cultured human cells. Negative results in other animal studies.

Synergistic Products: Carbon monoxide, alcohols. As cigarette smoking is a source of carbon monoxide, smokers should be particularly careful when working with dichloromethane.

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation required.

Respiratory Protection: NIOSH approved positive-pressure full face-piece self-contained breathing apparatus or positive-pressure full face-piece supplied-air respirator with auxiliary positive-pressure self-contained breathing apparatus for concentrations exceeding the TLV, for any detectable concentrations, or for high or unknown concentrations, as in fire or spill conditions.

Eye Protection: Chemical safety goggles, face shield.

Skin Protection: Polyvinyl alcohol, Silver Shield/4H™ (polyethylene/ethylene vinyl alcohol), Responder™, Trelchem HPS™, Tychem™ TK gloves. Tychem™ BR/LV is suitable for 4-6 hour use. Other protective impervious clothing, sleeves, coveralls, boots sufficient to prevent contact.

Other Personal Protective Equipment: An eyewash and safety shower should be nearby and ready for use.

Leak and Spill Procedure: Restrict access to area of spill. Ventilate area. Eliminate all sources of ignition. Cleanup personnel must be thoroughly trained in the hazards of the product and must wear protective equipment and clothing sufficient to prevent inhalation of mists or vapours and contact with skin and eyes. Do not touch spilled material. Dike spills. Prevent from entering sewers or waterways. Collect on inert absorbent material and transfer to suitable, labelled, covered containers for recovery or disposal. Contaminated material 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: VERY TOXIC, SKIN/EYE IRRITANT, POSSIBLE MUTAGEN, REPRODUCTIVE HAZARD, AND CARCINOGEN. Workers handling this material must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective equipment and clothing. Keep away from heat and ignition sources. Avoid generating mists or vapours. Concentrated vapours are heavier than air and will collect in low areas such as pits and other confined areas. Do not enter these areas where vapour of this product is suspected unless special breathing apparatus is used. Use the smallest amount possible for the purpose, in a designated area with proper ventilation. Stand

upwind of operations. Keep work area free of incompatible substances. Do not return contaminated material to the original containers.

Storage Requirements: Solvents should not be stored in basement premises (risk of accumulation of heavy solvent vapour). Do not use containers of aluminum or its alloys for storage. Store in suitable, labelled containers, in a cool, dry, well-ventilated place, out of direct sunlight, and away from ignition sources and incompatible materials. Keep air out of container. Keep container tightly closed when not in use and when empty. Protect from damage, and inspect frequently for signs of leaking. Storage facilities should have raised sills or ramps, with trenching 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 attention immediately.

Skin: Under running water, 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. Get medical attention. Decontaminate clothing before reuse, or discard.

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. If breathing AND PULSE are absent give CPR. Get medical attention IMMEDIATELY. Stay with casualty until medical assistance is reached.

Ingestion: Do NOT induce vomiting; danger of aspiration. If casualty is alert and not convulsing, rinse out mouth with water. Give 1 to 2 glasses of water to drink to dilute material. IMMEDIATELY GET MEDICAL ATTENTION. If breathing has STOPPED give artificial respiration. If breathing AND PULSE are absent begin CPR. If spontaneous vomiting occurs, have casualty lean forward with head down to avoid breathing in of vomitus. Rinse mouth and give more water to drink.

REFERENCES USED

CCINFO: Cheminfo

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

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

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

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: November 1, 1988

Revision: September 2009

MSDS: 3600-1, 3600-3, 3600-4, 3600-30, 3601-2, 3601-7, 3603-2, 3609-1, CAL 1338

Proposed WHMIS Designation: D2A; D2B

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