CALEDON LABORATORY CHEMICALS

MATERIAL SAFETY DATA SHEET

DICHLOROMETHANE

PRODUCT IDENTIFICATION

Chemical Name and Synonyms:
1,2-Dichloroethane; Ethylene dichloride; Dichloroethylene
Chemical Family:
Halogenated aliphatic hydrocarbon
Chemical Formula:
CH_2ClCH_2Cl
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.***
Ethylene dichloride	*99*	*10 ppm*	*107-06-2*
ACGIH TWA	*NIOSH TWA 1 ppm, 50 ppm IDLH*		

PHYSICAL DATA

Physical State:
Liquid
Odour and Appearance:
Colourless liquid, pleasant, chloroform-like odour
Odour Threshold (ppm):
26 ppm (detection); 87 ppm (recognition). Poor warning qualities; well above TLV
Vapour Pressure (mm Hg):
66.1 mm Hg at 20°C
Vapour Density (Air = 1):
3.42
Evaporation Rate (Bu ac = 1):
0.2
Boiling Point (°C):
83.5°C
Freezing Point (°C):
-35.5°C
pH:
Not available
Specific Gravity:
1.2569 at 20°C
Coefficient of Water/Oil distribution:
logP(oct) = 1.48

SHIPPING DESCRIPTION

UN:
1184
T.D.G. Class:
3.2, 6.1
Pkg. Group:
II

REACTIVITY DATA

Chemical Stability:
Stable. Decomposes slowly, becoming acidic and darkening in colour. Decomposes on ontact with steam, forming hydrochloric acid.
Incompatibility with other substances:
Reacts violently with alkali amides and most metal powders and alloys with risk of fire and explosion. Reacts vigorously or violently with bases, oxidizing materials. Mixtures with nitric acid are easily detonated by heat, impact or friction. Corrosive to steel, cast iron, copper and bronze, brass and aluminum. Attacks many plastics, rubbers, and coatings.
Reactivity:
Avoid heat, sparks, open flame, all ignition sources, generation of mist. Avoid moisture.
Hazardous Decomposition Products:
CO_x, hydrogen chloride gas, phosgene gas

FIRE AND EXPLOSION DATA

Flammability:
Flammable liquid and vapour. Vapours can form explosive mixtures with air at or above 13°C. Vapour is heavier than air and may travel considerable distance to source of igntion and flash back
Extinguishing Media:
CO_2, dry chemical powder, alcohol or polymer foam. Water spray or fog may be used to cool containers, disperse vapours, and flush material away from fire, but will be ineffective for fighting 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):
13°C (TCC)
Autoignition Temperature:
413°C
Upper Flammable Limit (% by volume):
16
Lower Flammable Limit (% by volume):
6.2
Hazardous Combustion Products:
CO_x, hydrogen chloride gas, phosgene gas
Sensitivity to Impact:
None identified
Sensitivity to Static discharge:
Mixtures of vapour with air at concentrations in the flammable range may be ignited by static discharge.

TOXICOLOGICAL PROPERTIES AND HEALTH DATA

Toxicological Data:
LD_{50}:
(oral, rat) 500 mg/kg; (oral, mouse) 413 mg/kg; (dermal, rabbit) 2,800 mg/kg
LC_{50}:
(rat) 1,000 ppm/7h
Effects of Acute Exposure to Product:
Inhaled:
Toxic. Inhalation of vapours causes irritation to the respiratory tract and CNS depression. Prolonged exposure may cause headache, dizziness, weakness, muscular spasms, nausea, vomiting, diarrhea, unconsciousness and cyanosis. Severe over-exposure can cause pulmonary edema and death.
In contact with skin:
Causes irritation. If confined to the skin, as under shoes, belts

or rings, may cause burns. Readily absorbed through skin causing systemic effects as in "Inhaled".

In contact with eyes:

Causes severe irritation and possible transient corneal injury.

Ingested:

Toxic. Symptoms may include dizziness, nausea, vomiting, diarrhea, internal bleeding, cyanosis, weak and rapid pulse, and unconsciousness. Death may occur from cardiac arrest and respiratory failure. Symptoms are usually delayed for an hour after ingestion. Exposure is known to produce neurological disorders and dysfunction of the liver, kidney and adrenal glands.

Effects of Chronic Exposure to Product:

Prolonged or repeated exposure may cause liver and kidney damage, and changes in heart rhythm. Prolonged skin contact can cause ulceration, necrosis and dermatitis.

Carcinogenicity:

Group 2B IARC (animal carcinogen, possibly carcinogenic to humans). Some animal experiments have produced tumours when the chemcial was administered orally, no increase in tumour incidence with inhalation or skin exposure. Swiftly metabolized to chloroacetaldehyde and chloroethanol; metabolic activation seems to be significant in the manifestation of carcinogenic and mutagenic effects.

Teratogenicity:

Crosses placental barrier, but no congenital malformations have been found in animal experiments.

Reproductive Effects:

Slight adverse effects on fertility in animal experiments.; insufficient evidence at present.

Mutagenicity:

Weakly mutagenic in Ames test (RTECS No. KI 0525000).

Synergistic Products:

None known

PREVENTIVE MEASURES

Engineering Controls:

Non-sparking, grounded exhaust ventilation, separate from other ventilation systems.

Respiratory Protection:

NIOSH/OSHA approved full face-piece, positive pressure, full-facepiece self-contained breathing apparatus, or positive pressure, full-facepiece supplied-air respirator with an auxiliary positive pressure self-contained breathing apparatus, for any exposure above TLV (1 ppm), or for unknown concentrations, as in fire or spill conditions.

Eye Protection:

Chemical safety goggles and /or face shield.

Skin Protection:

Viton™, Teflon™, Barrier ((PE/PA/PE), Silver Shield/4H™(polyethylene/ethylene vinyl alcohol), Tychem™BR/LV, Tychem™TK, Responder™ gloves. Other impervious clothng, apron, sleeves, overalls, boots, sufficient to prevent contact if splash occurs.

Other Personal Protective Equipment:

Safety shower and eye wash in work 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. Before working with this product ensure that engineering controls are operating and that proper equipment is being used. 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 and equipment. Keep away from heat and all sources of ignition. Avoid splash filling. Keep storage and work areas free of combustible or incompatible materials. Do not use rubber or plastic hoses for transfer, unless material is approved for this chemical. 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 (corrosive to aluminum, zinc, and iron), labelled containers, in a cool, dry, well-ventilated area, away from heat, all ignition sources and incompatible or combustible materials. Keep containers tightly closed; material slowly decomposes in air. Protect from damage, and inspect frequently for signs of damage. Post "NO SMOKING" signs. Have appropriate fire extinguishers and spill cleanup equipment near the storage area. Storage facilities should be made of fire-resistant materials, and have raised sills or ramps, with trenching to a safe area.

FIRST AID MEASURES

Specific Measures:

Eyes:

IMMEDIATELY flush eyes with gently running water for at least fifteen (15) minutes, holding eyelids open during flushing. Take care not to flush contaminated water into unaffected eye. Wear protective gloves to avoid contact during first aid procedures. Get 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. Get medical attention. 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). Give oxygen and get medical attention for breathing difficulty. If breathing has STOPPED give artificial respiration; use mouth guard to avoid contact. 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 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. Get medical attention immediately.

REFERENCES USED

CCINFO disc: Cheminfo
Budavari: The Merck Index, 12th ed., 1997
Royal Society of Chemistry: Chemical Safety Data Sheets, Vol. 1, 1992
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:
March 1, 1989
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MSDS:
3400-1, CAL 1339
Proposed WHMIS Designation:
B2; D1B; D2A
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