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MATERIAL  
SAFETY  
DATA SHEET

No. 43

PRODUCT NAME Methyl Chloride	CAS # 74-87-3
TRADE NAME AND SYNONYMS Methyl chloride (D.O.T.); Chloromethane	DOT I.D. No.: UN 1063 RQ 100(45.4)
CHEMICAL NAME AND SYNONYMS Methyl Chloride, Chloromethane	DOT Hazard Class: Division 2.1
ISSUE DATES AND REVISIONS Revised May 1998	Formula CH <sub>3</sub> Cl
	Chemical Family: Chloro Alkane

### HEALTH HAZARD DATA

#### TIME WEIGHTED AVERAGE EXPOSURE LIMIT

TWA = 50 Molar PPM; STEL = 100 Molar PPM with skin notation and an A4 (Not Classifiable as a Human Carcinogen) carcinogen rating (ACGIH 1997). OSHA 1995 (Continued on Page 4)

#### SYMPTOMS OF EXPOSURE

Slight Exposure: Appearance of drunkenness, staggering, dizziness, nausea and possible hiccups. The effects of slight exposure(s) may be delayed for several days. (Continued on Page 4)

#### TOXICOLOGICAL PROPERTIES

When inhaled it enters the body cells where hydrolysis to hydrochloric acid and methyl alcohol occurs. This results in degenerate changes in the lungs, brain, kidney and liver. Methyl chloride is readily absorbed in the body, but is very slowly given up, resulting in the possibility of latent toxicological effects. In fatal cases, autopsy has shown congestion of the lungs, liver and kidney.

Frostbite effects are a change in color of the skin to gray or white possibly followed by blistering. (Continued on Page 4)

#### RECOMMENDED FIRST AID TREATMENT

**PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO METHYL CHLORIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.**

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Medical assistance should be sought immediately. The physician should be instructed not to use adrenaline as a stimulant in cases of methyl chloride poisoning. Further treatment should be symptomatic and supportive. (Continued on Page 4)

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METHYL CHLORIDE

**HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES**

Reacts with moisture in air or with water to form hydrochloric acid. It also forms explosive mixtures with air. Reacts with zinc and its alloys and galvanized iron. It explodes on contact with magnesium.  
(Continued on Page 4)

**PHYSICAL DATA**

BOILING POINT -10.77°F (-23.76°C)	LIQUID DENSITY AT BOILING POINT 62.61 lb/ft <sup>3</sup> (1002.9 kg/m <sup>3</sup> )
VAPOR PRESSURE @ 70°F (21.1°C) = 77.8 psia (536 kPa)	GAS DENSITY AT 70°F, 1 atm @ 32°F (0°C), 1 atm = .109 lb/ft <sup>3</sup> (1.74 kg/m <sup>3</sup> )
SOLUBILITY IN WATER Very slightly	FREEZING POINT -143.9°F (-97.71°C)
EVAPORATION RATE N/A (Gas)	SPECIFIC GRAVITY (AIR=1) @ 70°F (21.10°C) =1.4
APPEARANCE AND ODOR Colorless gas with slightly sweet odor. Liquid is water white.	

**FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT (Method used) <32°F (<0°C) (Open Cup)	AUTO IGNITION TEMPERATURE 1170°F (632°C)	FLAMMABLE LIMITS % BY VOLUME (See Page 4) LEL 8.1 UEL 17.2
EXTINGUISHING MEDIA Carbon dioxide, dry chemical	ELECTRICAL CLASSIFICATION Group C - See NFPA No.70	
SPECIAL FIRE FIGHTING PROCEDURES Fire fighters should use self-contained breathing apparatus to protect them from toxic combustion products. If possible, stop flow of gas and allow fuel to consume itself. Use water spray to cool surrounding containers.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Should flame be extinguished and flow of yes continue, increase ventilation to prevent explosive mixture formation in low areas or "pockets."		

**REACTIVITY DATA**

STABILITY Unstable		CONDITIONS TO AVOID Temperatures above 750°F (399°C) Hydrolyzes slowly below 212°F (100°C)
Stable	X	
INCOMPATIBILITY (Materials to avoid) Zinc, aluminum, magnesium, sodium and other alkali metals		
HAZARDOUS DECOMPOSITION PRODUCTS Hydrogen chloride, phosgene, chlorine or carbon monoxide		
HAZARDOUS POLYMERIZATION May Occur		CONDITIONS TO AVOID
Will Not Occur	X	None

**SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact your closest supplier location or call the emergency telephone number listed herein.
WASTE DISPOSAL METHOD Do not attempt to dispose of waste or unused quantities. Return in the shiDping container properly labeled, with any valve outlet plug or caps secured and valve protection cap in place to your supplier. For emergency disposal assistance, contact your closest supplier location or call the emergency telephone number listed herein.

**SPECIAL PROTECTION INFORMATION**

<b>RESPIRATORY PROTECTION</b> (Specify type)			Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.		
<b>VENTILATION</b>  Hood with forced ventilation	<b>LOCAL EXHAUST</b> To prevent accumulation above the TWA	<b>SPECIAL</b>	N/A		
	<b>MECHANICAL (Gen.)</b> In accordance with electrical codes	<b>OTHER</b>	N/A		
<b>PROTECTIVE GLOVES</b> Neoprene or butyl rubber. Do not use PVC or polyethylene.					
<b>EYE PROTECTION</b> Safety goggles or glasses					
<b>OTHER PROTECTIVE EQUIPMENT</b> Safety shoes, safety shower, eyewash "fountain" face shield					

**SPECIAL PRECAUTIONS\***

<b>SPECIAL LABELING INFORMATION</b>					
DOT Shipping Name: Methyl chloride		DOT Hazard Class: Division 2.1			
DOT Shipping Label: Flammable Gas		I.D. No.: UN 1063 (RQ 100/45.4)			
<b>SPECIAL HANDLING RECOMMENDATIONS</b>					
Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<100 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. For additional handling recommendations, consult Compressed Gas Association's Pamphlet P-1.					
<b>SPECIAL STORAGE RECOMMENDATIONS</b>					
Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125F (52C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area. For additional handling recommendations, consult Compressed Gas Association's Pamphlet P-1.					
<b>SPECIAL PACKAGING RECOMMENDATIONS</b>					
Most metals corrode rapidly with wet methyl chloride. Anhydrous methyl chloride (water content less than a dew point of -40°F or C) can be handled in carbon or stainless steels, copper and bronze. Avoid the use of zinc (galvanized steel), aluminum and magnesium. Gasketing materials should be of Teflon® or Kel-F®. Avoid using PVC or polyethylene.					
<b>OTHER RECOMMENDATIONS OR PRECAUTIONS</b>					
Earth-ground and bond all lines and equipment associated with the methyl chloride system. Electric equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR). (Continued on Page 4)					

\*Various Government Agencies (i.e. Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.

## METHYL CHLORIDE

### HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT: (Continued) 8 Hr. TWA = 100 Molar PPM; acceptable ceiling concentration = 200 Molar PPM; acceptable max. peak for 8 hrs.= 300 Molar PPM (for 5 mins. in any 3 hrs.).

### SYMPTOMS OF EXPOSURE: (Continued)

Moderate Exposure: Mental confusion and possible temporary loss of consciousness.

Severe Exposure: Abdominal pains, vomiting, extreme nervousness or trembling to convulsions and death.

Contact with evaporating liquid could cause frostbite or freezing of dermal tissue.

### TOXICOLOGICAL PROPERTIES: (Continued)

IARC has shown inadequate evidence for man or animal for methyl chloride as a carcinogen or potential carcinogen.

Persons in ill health where such illness would be aggravated by exposure to methyl chloride should not be allowed to work with or handle this product. Also see statement in Other Recommendations or Precautions.

Neither NTP or OSHA list methyl chloride as a carcinogen or potential carcinogen.

### RECOMMENDED FIRST AID TREATMENT: (Continued)

Dermal Contact or Frostbite: Remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

### HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES: (Continued)

It reacts with aluminum and its alloys to form methylated aluminum compounds which are spontaneously flammable in air. It reacts explosively with sodium and other alkali metals.

### SPECIAL PRECAUTIONS

#### OTHER RECOMMENDATIONS OR PRECAUTIONS: (Continued)

Individuals with anemia, diseases of the central nervous system or diseases of the kidney or liver should not be exposed to methyl chloride.

Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

Methyl chloride is considered a toxic chemical and is subject to the reporting requirements of SARA, Title III, Section 313.

NFPA NO. for methyl chloride = 2 4 0 None