

Material Safety Datasheet

CAS No 75-09-2
Date Issued: 2016/01/15
Methylene Chloride

Company Details

<u>Name</u>	<u>Emergency</u>
	<u>Tel</u>
<u>Address</u>	<u>Tel</u>
	<u>Fax</u>

1. Product and Company Identification

<u>Trade / Commercial Name</u>	Methylene Chloride		
<u>Chemical Name</u>	Dichloromethane		
<u>Formula</u>	CH ₂ Cl ₂		
<u>Chemical Family</u>	HHC - Chlorinated Solvents		
<u>Synonyms</u>	Dichloromethane, Methaklone GR,		
<u>Un No</u>	1593	<u>Hazchem Code</u>	2z
<u>ERG No</u>	160	<u>EAC</u>	55

2. Hazards Identification

* THIS PRODUCT IS POISONOUS.

EC Classification: EU Category 3 Carcinogen (see also section 11)

CARCINOGENIC EFFECTS: Classified + (Proven.) by OSHA. Classified 2B (Possible for human.) by IARC.

Hazards

Do not rely on the odor of MC to warn you of overexposure.

People cannot smell MC until vapor concentrations are above 300 ppm, which is 12 times higher than the 8-hour time-weighted average permissible exposure limit of 25 ppm.

Also, your sense of smell can quickly get used to the odor of MC so that you stop noticing it Harmful by inhalation. Continued or high exposures by inhalation will cause anaesthetic effects. This may result in a loss of

consciousness and could prove fatal. Methylene chloride is converted to carbon monoxide in the body, which reduces the oxygen carrying capacity of the blood.

Irritating to eyes and skin. Repeated exposure to high concentrations may produce adverse effects on the liver and kidney.

Studies in some animals have shown methylene chloride to be carcinogenic.

Long-term exposure causes cancer in laboratory animals. Studies in workers suggest an association between MC exposures and certain types of cancer. OSHA considers MC to be a potential occupational carcinogen. Exposure to MC may also make the symptoms of heart disease (e.g., chest pains, angina) worse.

Explosive mixtures of methylene chloride and air can be formed, but they are difficult to

ignite and require high intensity sources of heat such as welding arcs, sparks and flames or high temperatures and pressures. Due to the risk of explosion DO NOT weld, cut or burn drums or other vessels which contain or have contained methylene chloride.

3. Composition

<u>Hazardous Components</u>	Hazardous ingredient(s) %(w/w) Dichloromethane (Methylene Chloride) - 100% Cas No 75-09-2 Symbol --Xn Risk Phrases R40
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4. First Aid Measures

<u>First Aid Skin</u>	Immediately remove contaminated clothing, including shoes. Wash affected area with plenty of soap and water for at least 20 minutes. Keep victim warm and comfortable to prevent shock.
<u>First Aid Eyes</u>	Remove from contaminated area. Flush eyes with water for 15 minutes. Hold eyelids open while washing.
<u>First Aid Ingested</u>	Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink. Obtain immediate medical attention.
<u>First Aid Inhalation</u>	Remove patient from exposure, keep warm and at rest. Administer oxygen if necessary. Apply artificial respiration if breathing has ceased or shows signs of failing. During resuscitation, care must be taken to avoid contamination by the substance from the patient. In the event of cardiac arrest apply external cardiac massage. Obtain immediate medical attention.

5. Fire Fighting Measures

Explosive mixtures of methylene chloride and air can be formed, but are difficult to ignite and require high intensity sources of heat, such as welding arcs, sparks and flames or high temperatures and pressures; addition of small amounts of flammable substances to methylene chloride (such as flammable liquids or gases) and / or an increase in the oxygen content of the local atmosphere, may strongly enhance these effects.

Welding or cutting should not be carried out on any vessel likely to contain solvent because of the risk of explosion.

Thermal decomposition will evolve toxic and corrosive vapours of hydrogen chloride and phosgene.

Containers may burst if overheated due to thermal expansion of the contents.

Extinguishing Media

Normal extinguishing media. Water spray should be used to cool containers.

Fire Fighting Protective Equipment

A self contained breathing apparatus and full protective clothing must be worn in fire conditions.

6. Accidental Release Measures

Ensure suitable personal protection during removal of spillages. Do not empty into drains.

Absorb onto earth or sand and remove to safe place. Transfer to a container for disposal or recovery.

Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

7. Handling And Storage

HANDLING

Do not breathe vapour. Use only in well ventilated areas.

Avoid contact with skin and eyes.

Do not mix with nitric acid because detonable mixtures may be formed. Avoid contact with naked flames and hot surfaces as toxic

and corrosive decomposition products (hydrogen chloride) can be formed. The vapour is heavier than air and may reach

dangerously high concentrations in pits, tanks, and other confined spaces. In such cases provide adequate ventilation or wear

suitable respiratory protective equipment with positive air supply.

When using do not smoke.

*Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements

or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

STORAGE

Keep in a cool, well ventilated place. Keep away from direct sunlight. Keep only in the original container. Keep away from nitric

acid. All bulk storage vessels should be made of steel and require a suitable vent or pressure relief valve and secondary

containment to prevent uncontrolled losses from accidental release. Do not use aluminium or its alloys in the construction of

storage vessels, pipework and ancillary equipment, including internal components e.g. pump impellers.

Due to the risk of explosion DO NOT weld, cut or burn drums or other vessels which contain or have contained methylene chloride.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits UK - EEC limits

LTEL ppm 100

LTEL mg/m³ 350
STEL ppm 300
STEL mg/m³ 1060
US limits
OSHA
Permissible Exposure Limit (PEL) - 25 ppm (TWA), 125 ppm (STEL),
12.5 ppm (8-hour TWA - Action Level)
- ACGIH Threshold Limit Value (TLV) - 50 ppm (TWA),
A3 - suspected human carcinogen.

Controls

Wear suitable protective clothing and gloves. Gloves should be changed when permeation is likely. PVC has a breakthrough time of approximately 5 minutes. PVA gives longer protection, but is weakened by alcohols and water and will provide less effective protection as a result. Wear eye/face protection. Wear suitable respiratory protective equipment if exposure to levels above the occupational exposure limit is likely. Positive air supplied RPE is recommended.

Personal Protection

If engineering controls and work practices are not effective in controlling this material, then wear suitable personal protection equipment, including chemical safety goggles & face shield, boots, imperious gloves, coveralls, & respiratory protection. Have appropriate equipment available for use in emergencies. Wear two pairs of gloves when using MC. The inner glove should be made of polyethylene (PE)/ethylene vinyl alcohol (EVOH), PE, or laminate to prevent MC penetration. The outer glove should be made of nitrile or neoprene to protect against puncture or rips. [Note: Because MC can readily penetrate nitrile and neoprene, wearing just the outer glove will not protect your skin from MC exposure.] Wear shoulder length gloves, or the longest gloves possible. Before use, inspect gloves for pin-holes, cracks, thin spots, softening, swelling, and stiff or sticky surfaces. Change gloves frequently, before breakthrough occurs. Rotate several pairs of gloves throughout the day. Let gloves dry in a warm, well-ventilated area at least overnight before reuse.
*Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

9. Physical & Chemical Properties

Colourless, volatile liquid with penetrating ether-like odour.
Odour threshold limit ~200ppm
Boiling Point: 40,1 oC.
Melting Point -97
Relative Density: vapour: 2,93
liquid: 1,33 at 20 o/4 oC.
Vapour Pressure: 50,5 kpa at 22 oC (~380 mm Hg) 355 mm hg at 20 Deg C , 529 mm hg at 30 Deg C
Vapour Density (air =1) 2.93
Autoignition Temperature: 662 oC.
Solubility in water ~1.32% at 25 oC
Corrosivity: Non-corrosive at normal atmospheric temperatures when dry, to common metals (e.g. iron, copper) but reacts with aluminium and titanium.
In presence of water and at elevated temperatures corrodes iron, some stainless steels, copper, nickel and certain other metals.
Explosive limits (Company test method) :
at 25 Deg C LEL 18.8% v/v, UEL 19.5% v/v
at 50 Deg C LEL 17.5% v/v, UEL 20.1% v/v
at 100 Deg C LEL 16.1% v/v, UEL 21.5% v/v

10. Stability And Reactivity

<u>Conditions to Avoid</u>	Contact with red hot surfaces, sparks or naked flames may generate toxic and corrosive fumes of hydrogen chloride and phosgene. Forms a detonable mixture with nitric acid.
<u>Incompatible Materials</u>	May react with certain amines, ie. polyurethane catalysts. Prolonged contact with aluminium or light alloys may cause a reaction resulting in the generation of hydrogen chloride gas and heat.
<u>Other</u>	Hazardous Decomposition Product(s) hydrogen chloride , phosgene.

11. Toxicological Information

This health hazard assessment is based on a consideration of the composition of this product. CARCINOGENIC EFFECTS: Classified + (Proven.) by OSHA. Classified 2B (Possible for human.) by IARC.

Toxicological Data:

Dichloromethane: Oral rat LD50: 1600 mg/kg; inhalation rat LC50: 52 gm/m³; investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity: Dichloromethane has been linked to spontaneous abortions in humans.

Inhalation

Do not rely on the odor of MC to warn you of overexposure.

People cannot smell MC until vapor concentrations are above 300 ppm, which is 12 times

higher than the 8-hour time-weighted average permissible exposure limit of 25 ppm. Also, your sense of smell can quickly get used to the odor of MC so that you stop noticing it Harmful by inhalation. High concentrations of vapour may be irritant to the respiratory tract. High atmospheric concentrations will lead to anaesthetic effects and adverse effects on the central nervous system. Symptoms may include lightheadedness, nausea, vomiting and headache. Exposure to concentrations of 1000 ppm methylene chloride for 20 minutes causes lightheadedness.

Very high concentrations may result in a loss of consciousness. Very high exposures may cause an abnormal heart rhythm and prove suddenly fatal.

Methylene chloride is converted to carbon monoxide in the body, which reduces the oxygen carrying capacity of the blood. This is reflected by a raised carboxyhaemoglobin concentration in the blood.

Skin Contact

Slight/mild irritant. Will remove the natural greases resulting in dryness, cracking and dermatitis. Repeated and/or prolonged skin contact may cause reddening, burning and blisters. Can be absorbed through skin but not in sufficient amounts to cause adverse effects.

Eye Contact

Moderate irritant. Liquid splashes may result in transient eye damage.

Ingestion

The swallowing of small splashes is unlikely to cause any adverse effects. Large amounts may produce internal irritation, nausea, vomiting and diarrhoea and can lead to drowsiness and unconsciousness.

Long Term Exposure

Repeated exposure to high concentrations may produce adverse effects on the liver and kidney.

Chronic inhalation studies in mice have shown increases in lung and liver tumours, when exposed to concentrations of methylene chloride well in excess of the occupational exposure limit.

Extensive mechanistic research has shown that these carcinogenic effects are specific to the mouse and are not relevant to human health. This is due to well established differences in metabolic pathways between rodents and man. Several major studies on humans occupationally exposed to methylene chloride have shown no demonstrable link with cancer.

12. Ecological Information

Environmental Fate and Distribution

High tonnage material produced in wholly contained systems.

High tonnage material used in open systems.

Liquid with high volatility. The product is sparingly soluble in water. The product partitions into the atmosphere.

The product has low potential for bioaccumulation.

Persistence and Degradation

This product does not persist in the atmosphere. It is naturally degraded to hydrogen chloride and carbon dioxide.

Atmospheric lifetime is approximately 6 months.

The product is slowly biodegradable in water.

The product is slowly biodegradable in soil.

Biodegradability : half-life (bacteria) approximately 18 months. Biodegradability :

psuedomonas strain - 0.8g/l/hr.

Toxicity

May cause harm to aquatic organisms.

Effect on Effluent Treatment

The product is substantially removed in biological treatment processes. There is no evidence of inhibition to the aerobic treatment process at a concentration (mg/l) of 200.

13. Disposal Considerations

<u>Disposal Method Product</u>	Disposal should be in accordance with local, state or national legislation. Transfer solvent residues to a labelled, sealed container for disposal or recovery. Waste disposal must be by an accredited contractor. Large volumes may be suitable for redistillation by solvent recovery contractors. Solvent residues must not be allowed to enter drains, sewers or watercourses or to contaminate the ground. Due to the risk of explosion DO NOT weld, cut or burn drums or other vessels which contain or have contained methylene chloride.
<u>Disposal Method Packaging</u>	Due to the risk of explosion DO NOT weld, cut or burn drums or other vessels which contain or have contained methylene chloride.

14. Transport Information

<u>UN No</u>	1593	<u>Hazchem Code</u>	2z
<u>ERG No</u>	160	<u>EAC</u>	55
<u>IMDG-Shipping Name</u>	DICHLOROMETHANE		
<u>IMDG Code</u>	6070.3	<u>IMDG-Packaging Group</u>	III
<u>Marine Pollutant</u>	Yes		
<u>Class</u>	Class: 6.1 Poison Group: III		
<u>Subsidiary Risks</u>	None		

15. Regulatory Information

<u>EEC Hazard Classification</u>	6.1 Harmful : Xn
<u>Risk Phases</u>	R40 Limited evidence of a carcinogenic effect.
<u>Safety Phases</u>	S23 Do not breathe vapour. S24/25 Avoid contact with skin and eyes. S36/37 Wear suitable protective clothing and gloves.

National Legislation

OSHA Act

16. Other Information

The information contained herein is based on the present state of our knowledge.
It characterizes the product with regard to the appropriate safety precautions.
It does not represent a guarantee of the properness of the product.