

# Material Safety Data Sheet

The Dow Chemical Company Midland, Michigan 48674

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

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24-Hour Emergency Phone Number: 989-636-4400

Product: METHYLENE CHLORIDE, TECHNICAL

Product Code: 55590

Effective Date: 08/23/01

Date Printed: 08/28/01

MSD: 000009

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Methylene chloride

CAS# 000075-09-2 99.9%

#### 3. HAZARDS IDENTIFICATION

#### **EMERGENCY OVERVIEW**

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: May cause pain. May cause moderate eye irritation which may be slow to heal. May cause slight corneal injury. Vapors may irritate eyes.

SKIN: Prolonged or repeated exposure may cause skin irritation, even a burn. Repeated contact may cause drying or flaking of skin. May cause more severe response if confined to skin. Extensive skin contact with methylene chloride, such as immersion, may cause an intense burning sensation followed by a cold, numb feeling which will subside after contact. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.

INGESTION: Single dose oral toxicity is considered to be low.

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Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

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INHALATION: In confined or poorly ventilated areas, vapors can readily accumulate and can cause unconsciousness and death. Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Excessive exposure may cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen. Minimal anesthetic or narcotic effects may be seen in the range of 500-1000 ppm methylene chloride. Progressively higher levels over 1000 ppm can cause dizziness, drunkenness, and as low as 10,000 ppm, unconsciousness and death. These high levels may also cause cardiac arrhythmias (irregular heartbeats).

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: In animals, effects have been reported on the following organs: central nervous system, kidney and liver. Excessive exposure may cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen.

CANCER INFORMATION: For hazard communication purposes, under OSHA Standard 29 CFR Part 1910.1200, this chemical is listed as a potential carcinogen by IARC and NTP. Methylene chloride has been shown to increase the incidence of malignant tumors in mice and benign tumors in rats. Studies have shown that tumors observed in mice are unique to that species. Other animal studies, as well as several human epidemiology studies, failed to show a tumorigenic response. Methylene chloride is not believed to pose a measurable carcinogenic risk to man when handled as recommended.

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

REPRODUCTIVE EFFECTS: In animal studies, has been shown not to interfere with reproduction.

## 4. FIRST AID

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EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

NOTE TO PHYSICIAN: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Exposure may increase "myocardial irritability." Do not administer sympathomimetic drugs unless absolutely necessary. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. Carboxyhemoglobinemia may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias.

#### 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES FLASH POINT: None

METHOD USED: TCC, TOC, COC

AUTOIGNITION TEMPERATURE: 1033 deg F, 556 deg C.

FLAMMABLE LIMITS

LFL: 14% @ 25 deg C.

UFL: 22% @ 25 deg C.

HAZARDOUS COMBUSTION PRODUCTS: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to hydrogen chloride, carbon monoxide, carbon dioxide. Hazardous combustion products may include trace amounts of phosgene, chlorine.

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OTHER FLAMMABILITY INFORMATION: Container may vent and/or rupture due to fire. Although this material does not have a flash point, it can burn at room temperature. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas.

EXTINGUISHING MEDIA: Water fog or fine spray, carbon dioxide, dry chemical, foam. Water fog, applied gently may be used as a blanket for fire extinguishment.

FIRE FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Stay upwind. Keep out of low areas where gases (fumes) can accumulate.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

# 6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Clear all personnel from area. Do not breathe vapors. Ventilate area of leak or spill. Wear protective equipment including positive pressure self contained or air supplied breathing apparatus. Follow confined space entry procedures: ASTM D-4276 and OSHA (29 CFR 1910.146).

PROTECT ENVIRONMENT: Contain liquid to prevent contamination of soil, surface water or ground water. Material is heavier than water and has limited water solubility. It will collect on the lowest surface.

CLEANUP: For large spills: contain liquid; transfer to properly

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labeled closed metal containers. For small spills: mop or soak up immediately. Place in properly labeled metal containers.

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# 7. HANDLING AND STORAGE

HANDLING: To avoid uncontrolled emissions, vent vapor from container to storage tank. Do not eat, drink, or smoke in working area. Refer to Exposure Controls/Personal Protection, Section 8, of the MSDS. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Vapors of this product are heavier than air and will collect in low areas such as pits, degreasers, storage tanks, and other confined areas. Do not enter these areas where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance. Manual operations (such as cold cleaning or paint stripping) using methylene chloride should be engineered to provide for confining solvent vapors, adequate ventilation and/or respiratory protection to reduce the potential for overexposure to vapors. Gloves or other protective equipment should be worn if skin contact is likely.

STORAGE: Keep containers tightly closed when not in use. For more Storage and Handling information refer to Bulletin #100-06170. Store in a dry place. Significant vapor pressures (>5 psi) can be generated above 55F. This may result in venting or rupture. Do not store in zinc, aluminum, aluminum alloys, plastics. Product should not be packaged in aluminum aerosol cans or with finely divided aluminum or its alloys in an aerosol can. Product is denser than water. Design storage containers appropriately.

# 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Lethal concentrations may exist in areas with poor ventilation.

PERSONAL PROTECTIVE EQUIPMENT
EYE/FACE PROTECTION: Use chemical glasses. If vapor exposure causes eye discomfort, use a full-face respirator.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as faceshield,

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gloves, boots, apron, or full body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before

RESPIRATORY PROTECTION: For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus. Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved positive-pressure supplied-air respirator. In confined or poorly ventilated areas, use an approved positive-pressure supplied-air respirator.

EXPOSURE GUIDELINE(S): Methylene chloride: ACGIH TLV is 50 ppm, A3. OSHA PEL is 25 ppm TWA, 125 ppm short-term exposure limit.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless liquid.

ODOR: Irritating odor.

VAPOR PRESSURE: 355 mmHg @ 20C

VAPOR DENSITY: 2.93
BOILING POINT: 104F (39.8C)
SOLUBILITY IN WATER: 2.0g/100g @ 25C SPECIFIC GRAVITY: 1.320 @ 25/25C

## 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under recommended storage conditions. See Storage, Section 7.

CONDITIONS TO AVOID: Product can decompose at elevated temperatures. Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition. Avoid direct sunlight or ultraviolet sources.

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid contact with oxidizing materials. Avoid contact with strong bases. Avoid unintended contact with amines. Avoid contact with metals such as zinc powders, aluminum powders, magnesium powders, potassium, sodium. Water contamination may cause corrosion of metals due to formation of hydrochloric acid.

HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous decomposition

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products depend upon temperature, air supply and the presence of other materials. Hazardous decomposition products may include and are not limited to hydrogen chloride. Hazardous decomposition products may include trace amounts of chlorine, phosgene.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

SKIN: The dermal LD50 has not been determined.

INGESTION: The oral LD50 for rats is 1500-2500 mg/kg.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Negative or equivocal results have been obtained in mutagenicity tests with methylene chloride using mammalian cells or animals. This is consistent with the lack of interaction with DNA in rats and hamsters. Although results of Ames bacterial tests have generally been positive, overall the data suggest that genotoxic potential does not appear to be a significant factor in the toxicity of methylene chloride.

12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

ENVIRONMENTAL FATE

MOVEMENT AND PARTITIONING: Bioconcentration potential is low (BCF less than 100 or Log Pow less than 3). Measured log octanol/water partition coefficient (log Pow) is 1.25. Henry's Law Constant (H) is estimated to be 3.69E-03 atm-m3/mol. Potential for mobility in soil is very high (Koc between 0 and 50). Soil organic carbon/water partition coefficient (Koc) is estimated to be 24.

DEGRADATION & PERSISTENCE: Based on the stringent test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions. Biodegradation rate may increase soil and/or water with acclimation. In the atmospheric environment, material is estimated to have a tropospheric half-life of 79-110 days. Biodegradation reached in Modified MITI Test (I) (OECD Test No. 301C) after 28 days: 5-26%.

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ECOTOXICITY: Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 >100 mg/L in most sensitive species). Acute LC50 in water flea (Daphnia magna) is 244 mg/L. Acute LC50 in fathead minnow (Pimephales promelas) is 320 mg/L. Acute LC50 in bluegill (Lepomis macrochirus) is 224 mg/L. Acute LC50 in mysid (Mysidopsis bahia) is 256 mg/L. Acute LC50 in golden orfe (Leuciscus idus) is 524 mg/L. Maximum acceptable toxicant concentration (MATC) in fathead

minnow (Pimephales promelas) is 108 mg/L.

Acute immobilization EC50 in water flea (Daphnia magna) is 480 mg/L.

Growth inhibition EC50 in green alga (Selenastrum capricornutum) is >662 mg/L.

Growth inhibition EC50 in marine diatom (Skeletonema costatum) is >662 mg/L.

Acute LC50 in grass shrimp (Palaemonetes pugio) is 110 mg/L.

# 13. DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted recycler, reclaimer, incinerator or other thermal destruction device.

For additional information, refer to Dow Technical Bulletin discussing considerations for this product. Bulk Lit No 100-06170.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Center at

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800-258-2436 or 517-832-1556 for further details.

## 14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (D.O.T.):

For DOT regulatory information, if required, consult transportation regulations, product shipping papers or contact your Dow representative.

CANADIAN TDG INFORMATION:

For TDG regulatory information, if required, consult transportation regulations, product shipping papers, or your Dow representative.

# 15. REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

#### U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME CAS NUMBER CONCENTRATION
DICHLOROMETHANE (METHYLENE CHLORIDE) 000075-09-2 99.9 %

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

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# REGULATORY INFORMATION (CONTINUED)

An immediate health hazard A delayed health hazard

CALIFORNIA PROPOSITION 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986:

#### WARNING:

This product contains a chemical(s) known to the State of California to cause cancer.

## TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME		CAS NUMBER	LIST
DICHLOROMETHANE	(METHYLENE CHLORIDE)	000075-09-2	NJ2 NJ3 PA1 PA2 PA3

NJ2=New Jersey Environmental Hazardous Substance (present at greater than or equal to 1.0%).

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).

PAl=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).

PA2=Pennsylvania Special Hazardous Substance (present at greater than or equal to 0.01%).

PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

#### OSHA HAZARD COMMUNICATION STANDARD:

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# REGULATORY INFORMATION (CONTINUED)

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND):

This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases: Category:

CAS#

RQ

% in Product

Methylene chloride

000075-09-2 1000

99.9%

# CANADIAN REGULATIONS

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

DIB - poisonous substance defined by TDG regulations

D2A - possible, probable or known human carcinogen according to classifications by IARC or ACGIH

D2B - eye or skin irritant

Refer elsewhere in the MSDS for specific warnings and safe handling information. Refer to the employer's workplace education program.

CPR STATEMENT: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

HAZARDOUS PRODUCTS ACT INFORMATION: This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA section 13 and 14): AMOUNT (%w/w) COMPONENTS: CAS #

Methylene Chloride

CAS# 000075-09-2

99.9%

#### 16. OTHER INFORMATION

HAZARD RATING SYSTEM:

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NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Health 2 Flammability 1 Reactivity 0

Process water in contact with solvent and/or water separators of cleaning or distillation equipment should be treated as hazardous waste. Do not discharge water from water separators to drain.

Dow does NOT recommend the use of this product in applications where:

- soil or ground water contamination is likely (direct applications to the ground, sink drains, sewers, or septic tanks).
- where over exposure is likely (small rooms or confined space, or where there would be inadequate ventilation).
- where skin contact is likely (adhesive tape removal from skin or as hand cleaner to remove oils and greases).
- where there is direct food contact.
- where vapor concentrations would be in the flammable range.
- where disposal of waste would pose an environmental or health risk.
- where chemical reactivity poses a danger (contact with strong alkali, or in areas where welding is done).

For more Storage and Handling information refer to bulletin "100-06170".

The Consumer Products Safety Commission has issued a Statement of Policy for household products containing methylene chloride. The policy statement established labeling guidelines for consumer products containing methylene chloride (including paint strippers, wood stains and varnishes, spray paints, adhesives and glues, and a number of other household products). The policy requires labels to include statements of principal hazard and indicate that the risk to the user is related to the level and duration of exposure. It appeared in the Federal Register, Vol. 52, No. 177, on Monday, September 14, 1987.

MSDS STATUS: Revised Section 15 (added NJ definitions).

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For Further Information.