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Vulcan CHEMICALS
A Business Group of Vulcan Materials Co

MATERIAL SAFETY DATA SHEET

24 Hour Emergency Phone 316/524-5751

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Methylene Chloride, Special Grade, Aerosol Grade, Degreasing Grade

CHEMICAL NAME
Dichloromethane

SYNONYMS
Methylene Chloride

MANUFACTURER
Vulcan Chemicals, P O Box 530390, Birmingham, AL 35253-0390

SECTION 2 COMPOSITION INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	%RANGE	OSHA PEL
* Dichloromethane	75-09-2	100	25 ppm
* Propylene oxide	75-56-9		100 ppm

* Denotes chemical subject to reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

A dense, nonflammable, colorless, clear liquid with a mildly sweet odor.
WARNING! Harmful if inhaled. Can cause skin and eye irritation.
POSSIBLE CANCER HAZARD May cause cancer based on animal data.

POTENTIAL HEALTH EFFECTS

INHALATION

Inhalation is the major potential route of exposure. Exposure to high concentrations of vapor or mist can cause central nervous system depression with symptoms of headache, dizziness, stupor, loss of consciousness or death depending on concentration and duration of exposure. Exposure to high concentrations can cause irregular heartbeat, cardiac arrest and death. Overexposure has been shown to cause adverse effects on the lungs, liver, kidney, nervous system and other internal organs.

Carboxyhemoglobin levels can be elevated in persons exposed to methylene chloride and can cause a substantial stress on the cardiovascular system. This elevation can be additive to the increase caused by smoking and other carbon monoxide sources.

SKIN

Prolonged or repeated contact of liquid can cause irritation, defatting of skin, and dermatitis. Prolonged single exposure can result in progressively severe burning sensation and redness. Can be absorbed through the skin causing adverse health effects as described above in the INHALATION section.

EYE

Liquid in eyes produces pain and irritation with mild temporary damage possible. Vapor can irritate eyes.

INGESTION

Single dose toxicity low to moderate. If vomiting occurs, methylene chloride can be aspirated into lungs, which can cause chemical pneumonia and systemic effects. Ingestion may cause adverse health effects as described above in the INHALATION section.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Alcoholism, acute and chronic liver and kidney disease, chronic lung disease, anemia, coronary disease or rhythm disorders of the heart. Exposure can result in cardiac sensitization and increase the risk of cardiac arrest.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

Consumption of alcoholic beverages may increase potential for development of toxic effects resulting from exposure to this product.

CHRONIC EFFECTS

Prolonged overexposure has caused toxic effects on the liver and kidneys, and has caused cancer in certain laboratory animal tests. IARC has classified methylene chloride in Group 2B as a substance considered possibly carcinogenic to humans. Methylene Chloride appears on the NTP carcinogen list. See Section 11 for additional toxicological information.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove to fresh air. If breathing has stopped, administer artificial respiration. Contact physician or emergency medical facility immediately.

SKIN

Remove contaminated clothing and shoes. Wash exposed area thoroughly with soap and water for at least 15 minutes. Wash contaminated clothing before reuse.

EYES

Immediately flush eyes with large amounts of water for at least 15 minutes while frequently lifting the upper and lower eyelids. If irritation persists, call a physician.

INGESTION

Do not induce vomiting. Contact physician or emergency medical facility immediately. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN

Chlorinated hydrocarbons may sensitize the heart to epinephrine and other circulating catecholamines so that arrhythmias may occur. Careful consideration of this potential adverse effect should precede administration of epinephrine or other cardiac stimulants and the selection of bronchodilators. See Section 11 for Toxicological Information

SECTION 5 FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT
None (TCC)

AUTOIGNITION TEMPERATURE
556°C (1032°F)

FLAMMABLE LIMITS IN AIR (PERCENT BY VOLUME)
12 - 19% (Vol.) @ 100°C

HAZARDOUS COMBUSTION PRODUCTS
Hydrogen chloride, phosgene, chlorine.

EXTINGUISHING MEDIA
Water spray, dry chemical, foam, carbon dioxide.

FIRE FIGHTING INSTRUCTIONS

Concentrated vapors can be ignited by high intensity energy source. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Use water spray to keep fire-exposed containers cool. Extinguish fire using agent suitable for surrounding fire.

Firefighters should wear full protective clothing and use positive pressure, full facepiece SCBA.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Evacuate the area, ventilate, and avoid breathing vapors. Dike area to contain spill. If spill occurs indoors, turn off heating and/or air conditioning systems to prevent vapors from contaminating entire building. Clean up area (wear protective equipment - refer to Section 8) by mopping or with absorbent material and transfer to closed containers for disposal. Avoid contamination of ground and surface waters. Do not flush to sewer. All spills or leaks of this material must be handled and disposed of in accordance with local, state and Federal regulations.

Notify National Response Center (800/424-8802), and any state and local agencies as applicable, of uncontained releases to the environment in excess of the EPA Reportable Quantity (RQ). See Section 15 for regulatory information.

For all transportation accidents, call CHEMTREC at 800/424-9300.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid contact with skin and avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using restroom. Any clothing or shoes which become contaminated with methylene chloride should be removed immediately and thoroughly laundered before wearing again.

Follow protective controls set forth in Section 8 when handling this product. Do not use in poorly ventilated or confined spaces. Vapors are heavier than air and will collect in low areas. Do not enter confined spaces such as tanks or pits without following proper entry procedures as required by 29 CFR 1910.146.

STORAGE

STORAGE CONDITIONS

Store in labeled, sealed containers in a cool, dry, well-ventilated area out of sunlight. Keep containers tightly closed when not in use. Do not store in open, unlabeled or mislabeled containers. Do not remove or deface label. Prevent water or moist air from entering storage tanks or containers.

Do not reuse drum without recycling or reconditioning in accordance with any applicable federal, state or local laws. Do not use cutting or welding torches, open flames, or electric arcs on empty or full containers.

SHELF LIFE LIMITATIONS

Methylene chloride has an indefinite shelf life when stored under recommended conditions.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT

Aluminum equipment should not be used for storage and/or transfer. Contact with aluminum parts in a pressurizable fluid system may cause violent reactions. Consult equipment supplier for further information.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

ENGINEERING CONTROLS

VENTILATION

Do not use in closed or confined spaces. Open doors and/or windows. Use ventilation to maintain exposure levels below 25 ppm time-weighted average (TWA).

To determine exposure level(s), monitoring should be performed as required by 29 CFR 1910.1052.

PERSONAL PROTECTIVE EQUIPMENT

EYE AND FACE PROTECTION
Wear safety glasses. Contact lenses should not be worn. Chemical goggles and/or face shields should be worn where splashing is a possibility.

SKIN PROTECTION
Wear solvent-resistant gloves such as Viton, polyvinyl alcohol, or equivalent. Solvent-resistant boots, apron, headgear and/or faceshield should be worn where splashing is a possibility. Safety shower and eyewash station should be available.

RESPIRATORY PROTECTION
Where vapor concentration exceeds or is likely to exceed 25 ppm, a NIOSH-approved, continuous flow supplied air-respirator, hood or helmet is acceptable. A NIOSH approved self-contained breathing apparatus or supplied-air respirator, with full facepiece, is required for vapor concentrations above 625 ppm. A NIOSH approved self-contained positive pressure breathing apparatus, with full facepiece, is required for spills and/or emergencies. The minimum requirements for respiratory protection for methylene chloride appear in 29 CFR 1910.1052 (f).

GENERAL
Protective equipment and clothing should be selected, used, and maintained according to applicable standards and regulations. For further information, contact the clothing or equipment manufacturer or the Vulcan Chemicals Technical Service Department.

EXPOSURE GUIDELINES

The OSHA Final Rule on Occupational Exposure to Methylene Chloride (29 CFR Part 1910.1052) was published in the Federal Register on January 10, 1997 (62 FR 1493) and became effective April 10, 1997. In addition to the new exposure limits, the rule also establishes an action level which triggers the requirement for additional compliance activities including medical surveillance.

Methylene Chloride:
ACGIH: 50 ppm TWA (8 hr)

OSHA: 25 ppm TWA (8 hr)
125 ppm STEL
12.5 ppm (8 hr TWA) Action Level

Propylene Oxide:
ACGIH: 20 ppm TWA (8 hr)

OSHA: 100 ppm TWA (8 hr)

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH
2300 ppm

ODOR THRESHOLD
Odor threshold approximately 200-300 ppm; causes olfactory fatigue (temporary loss of odor perception for this product).

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

CHEMICAL FORMULA
CH_2Cl_2

MOLECULAR WEIGHT
84.94

APPEARANCE AND ODOR
Colorless, clear liquid; mildly sweet odor

SPECIFIC GRAVITY
1.32 @ 25/25°C

VAPOR PRESSURE
350 mm Hg @ 20°C

VOLATILES, PERCENT BY VOLUME
100

BOILING POINT
40.1°C. (104°F.)

VAPOR DENSITY
2.9

EVAPORATION RATE
(ether = 1): 0.7

SOLUBILITY IN WATER
1.32 gm/100 gm @ 25°C

SECTION 10 STABILITY AND REACTIVITY

CHEMICAL STABILITY
Stable

CONDITIONS TO AVOID
Avoid contact with open flame, electric arcs, or other hot surfaces which can cause thermal decomposition.

INCOMPATIBILITY WITH OTHER MATERIALS
Strong alkalies, oxygen, nitrogen peroxide, sodium, potassium, and other oxidizers and reactive metals.

HAZARDOUS DECOMPOSITION PRODUCTS
Hydrogen chloride, phosgene, chlorine.

HAZARDOUS POLYMERIZATION
Will not occur

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

INHALATION
Methylene chloride depresses the central nervous system. Concentrations between 900-1,000 ppm may cause dizziness. Nausea, headache, and vomiting can occur at concentrations above 2,000 ppm. At 7,000 ppm, numbness and tingling in arms and legs and rapid heartbeat have occurred. Loss of consciousness and death have occurred at levels above 9,000 ppm, if exposure is prolonged.

Carboxyhemoglobin levels can be elevated in persons exposed to methylene chloride and can cause a substantial stress on the cardiovascular system. This elevation can be additive to the increase caused by smoking and other carbon monoxide sources.

ANIMAL TOXICOLOGY

Inhalation LC_{50}:	14,400 ppm - 7 hours (mouse)
Dermal LD_{50}:	Not determined
Oral LD_{50}:	1600 mg/kg (rats)

CHRONIC TOXICITY

Adverse effects on the liver and kidneys have been reported in laboratory animal studies. The finding of chronic toxic effects in laboratory animals may indicate toxicity to humans. Overexposure should be avoided, failure to do so could result in injury, illness or even death, depending on the level and duration of exposure.

CARCINOGENICITY
Methylene chloride has been evaluated for possible cancer causing effects in laboratory animals. Inhalation studies at concentrations of 2,000, and 4,000 ppm increased the incidence of malignant liver and lung tumors in mice. Three inhalation studies of rats have shown increased incidence of benign mammary gland tumors in female rats at concentrations of 500 ppm and above and increases in benign mammary gland tumors in males at concentrations of 1,500 ppm and above. Rats exposed to 50 and 200 ppm via inhalation showed no increased incidence of tumors. Mice and rats exposed by ingestion at levels up to 250 mg/kg/day lifetime and hamsters exposed via inhalation to concentrations up to 3,500 ppm lifetime did not show an increased incidence of tumors.

Propylene oxide has caused increased incidence of nasal tumors in rats exposed by inhalation, forestomach tumors in rats exposed by gavage (forced-fed in oil) and injection site tumors when injected under the skin of rats.

The International Agency for Research on Cancer (IARC) has concluded that, with respect to both methylene chloride and propylene oxide, there is sufficient evidence of the carcinogenicity to experimental animals and inadequate evidence of the carcinogenicity to humans, resulting in a classification as a 2B animal carcinogen. The NTP has identified methylene chloride and propylene oxide as animal carcinogens. ACGIH classifies methylene chloride and propylene oxide as A3 - Animal Carcinogens.

Epidemiology studies of 751 humans chronically exposed to methylene chloride in the workplace of which 252 were exposed for a minimum of 20 years did not demonstrate any increase in deaths caused by cancer or cardiac problems. A second study of 2,227 workers confirmed these results.

MUTAGENICITY

Methylene chloride has been evaluated for its potential to induce genotoxic effects in both *in vivo* and *in vitro* systems, with mixed results. Based on this evidence, methylene chloride may be considered to be a weak mutagen in mammalian systems.

REPRODUCTIVE TOXICITY

Laboratory animal studies on mice, rats and rabbits have been conducted to evaluate the potential reproductive and developmental effects of methylene chloride exposures. Methylene chloride exposure has not been shown to cause teratogenic effects (birth defects) in experimental animals.

SECTION 12 ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE

Water: Methylene chloride in water is subject to rapid evaporation, with estimated evaporative half-lives ranging from 3 to 5.6 hours under moderate mixing conditions. Hydrolysis is not significant in water under normal environmental conditions. Biodegradation may occur in groundwater, but will be very slow compared with evaporation. Methylene chloride is not expected to bioconcentrate, with an estimated bioconcentration factor of 5. Henry's Law Constant is 3.19×10^{-3} atm m^3/mol.

Octanol/Water Partition Coefficient (log K_{ow}) is 1.25

Soil: Methylene chloride is expected to evaporate rapidly from near-surface soil. It is probable that methylene chloride can leach through subsoil into groundwater. Soil adsorption potential is low. Calculated Adsorption Coefficient (log K_{oc}) is 1.68.

Air: Methylene chloride in the atmosphere will degrade by reaction with hydroxyl radicals, with a half life of several months. It is not subject to direct photooxidation.

ECOTOXICITY

Acute LC_{50} (96 Hours, flow-through) for Fathead Minnow:	193 mg/L
Acute LC_{50} (96 Hours, static) for Fathead Minnow:	310 mg/L
Acute LC_{50} (96 Hours, static) for Bluegill:	220 mg/L @ 21-23 °C
Acute LC_{50} (96 Hours) for Mysid Shrimp	256 mg/L

SECTION 13 DISPOSAL CONSIDERATIONS

All disposals of this material must be done in accordance with local, state and Federal regulations. Waste characterization and compliance with disposal regulations are the responsibilities of the waste generator.

SPILL RESIDUES

Recovered liquids may be sent to an EPA permitted reclaimer or incineration facility. Contaminated material must be disposed of in a permitted waste management facility. Consult federal,state, or local disposal authorities for approved procedures.

SECTION 14 TRANSPORT INFORMATION

DOT IDENTIFICATION NO.
UN 1593

DOT SHIPPING DESCRIPTION (49 CFR 172.101)
Dichloromethane, 6.1, UN 1593, PG III, RQ

PLACARD REQUIRED
KEEP AWAY FROM FOOD, 1593, Class 6

LABEL REQUIRED
KEEP AWAY FROM FOOD, Class 6
Label as required by OSHA Hazard Communication Standard, and any applicable state and local regulations.

IMO REQUIREMENTS
EmS No.: 61.02 MFAG Table No.: 340 IMDG Code Page 6127

SECTION 15 REGULATORY INFORMATION

U S FEDERAL REGULATIONS

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
Occupational exposures to methylene chloride are regulated under 29 CFR 1910.1052.

REPORTABLE QUANTITY (RQ)
Reportable Quantity is 1000 lbs.

TOXIC SUBSTANCES CONTROL ACT
Listed on TSCA Inventory

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III
Components identified with an asterisk (*) in Section 2 are subject to the reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372.

SARA HAZARD CATEGORIES (40 CFR 370.2)
HEALTH: Immediate Health, Delayed Health

INTERNATIONAL REGULATIONS

CANADA

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) CLASSIFICATION
WHMIS Classifications applicable to this product:
D-1B (Toxic Material) based on assignment to TDG Class 6.1, PG III
D-2A (Very Toxic Material) based on classification as 2B carcinogen by IARC

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
All components of this product are on the Domestic Substances List (DSL).

HAZARDOUS PRODUCTS ACT
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR).

EUROPE
EINECS No.: 200-838-9

Vulcan CHEMICALS **MATERIAL SAFETY DATA SHEET** Methylene Chloride, Aerosol 6/12/97

STATE REGULATIONS

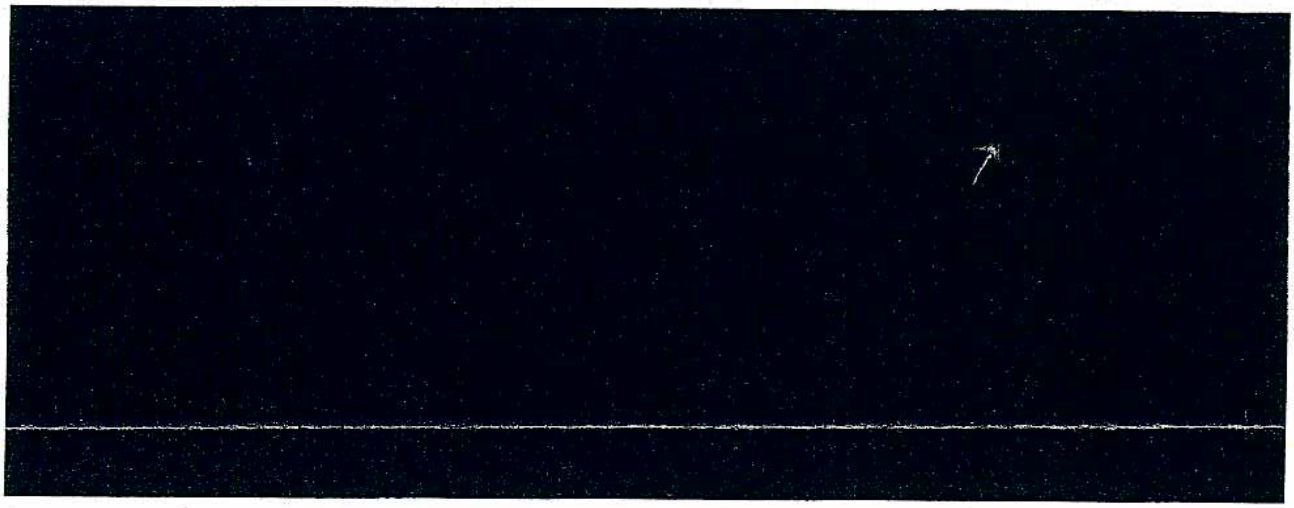
CALIFORNIA PROPOSITION 65

The State of California has listed methylene chlonde and propylene oxide under Proposition 65 as chemicals known to the state to cause cancer.

SECTION 16 OTHER INFORMATION

NFPA RATINGS

Health 2, Flammability 1, Reactivity 0



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