Material Safety Data Sheet

From Genium's Reference Collection
Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855

GENIUM PUBLISHING CORP.

No. 373

METHYL CHLORIDE
(Revision A)
Issued: May 1981
Revised: November 1987

SECTION 1. MATERIAL IDENTIFICATION

24

Material Name: METHYL CHLORIDE

Description (Origin/Uses): Used as a refrigerant.

Other Designations: Chloromethane; CH_3Cl; NIOSH *RTECS* No. PA6300000; CAS No. 0074-87-3

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

HMIS
H 2
F 4 R 1
R 1 I 3
PPG* S 1
*See sect. 8 K 4

SECTION 2. INGREDIENTS AND HAZARDS

Ingredients	%	Exposure Limits
Methyl Chloride, CAS No. 0074-87-3 H_3CCl *This material can be absorbed through intact skin, which contributes to overall exposure. **Maximum allowable concentration ***NIOSH views methyl chloride as an occupational carcinogen and suggests that all exposures to it be reduced to the lowest feasible level. ****See NIOSH, *RTECS*, for additional data with references to reproductive and mutagenic effects.	ca 100	**ACGIH TLVs (Skin*), 1987-88** TLV-TWA: 50 ppm, 105 mg/m³ TLV-STEL: 100 ppm, 205 mg/m³ **OSHA PELs (Skin*)** 8-Hr TWA: 100 ppm Ceiling: 200 ppm (30 Min) MAC**: 300 ppm for 5 Min in any 3-Hr period **NIOSH REL: Ca***** **Toxicity Data****** Rat, Inhalation, LC_{50}: 15,200 mg/m³ (30 Min) Mouse, Inhalation, LC_{50}: 3146 ppm (7 Hrs)

SECTION 3. PHYSICAL DATA

Boiling Point: -10.7°F (-23.7°C)
Melting Point: -143°F (-97°C)
Vapor Density (Air = 1): 1.8
Molecular Weight: 50.49 Grams/Mole
Water Solubility: 100 (complete)
% Volatile by Volume: 100%

Appearance and Odor: A colorless, odorless gas that compresses under pressure to a cryogenic liquid with poor warning properties (see sect. 6).

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
*	*	% by Volume	8.1	17.2

Extinguishing Media: *Methyl chloride is an extremely explosive and flammable gas. If it is burning, try to stop the flow of gas; use a water spray to protect men effecting the shutoff and to cool fire-exposed containers.

Unusual Fire or Explosion Hazards: Methyl chloride is denser than air and will collect in enclosed or low-lying areas like sumps, so eliminate ignition sources there.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION 5. REACTIVITY DATA

Methyl chloride is stable in closed containers at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization.

Chemical Incompatibilities: This material is incompatible with strong oxidizing agents; amines; amides; and metals like Zn, Al, Mg, Na, and K.

Conditions to Avoid: Do not allow ignition sources like open flame, unprotected heaters, lighted tobacco products, electric sparks, and excessive heat in work areas because of the extreme flammability of this material.

Hazardous Products of Decomposition: Extremely toxic gases like phosgene and HCl are produced during fire conditions.

SECTION 6. HEALTH HAZARD INFORMATION

Methyl chloride is listed as an occupational carcinogen by NIOSH.

Summary of Risks: "Inhalation of high concentrations of methyl chloride causes serious central nervous system (CNS) damage, lingering illness, and sometimes death. Because methyl chloride has so little odor and [often a slowly progressive or] a mild narcotic action, a person may be exposed to considerable concentrations without being aware of the danger. The onset of symptoms of poisoning such as dizziness, headache, optical difficulties, nausea, and vomiting may be delayed for many hours" (Genium ref. 84, pp. 49-62). "Severe exposures require hospitalization, monitoring, and treatment for acidosis. . . . Recovery may be prolonged and permanent neurologic impairment has been reported" (Genium ref. 100, p. 354).

Medical Conditions Aggravated by Long-Term Exposure: CNS disorders. **Target Organs:** CNS, liver, kidneys, eyes, and skin. **Primary Entry:** Inhalation, skin absorption/contact. **Acute Effects:** Neurologic effects like mental confusion, dizziness, staggering gait, slurred speech, and drowsiness. **Chronic Effects:** Anorexia, nervousness, insomnia, incoordination, diminished vision, and emotional instability.

FIRST AID

Eye Contact: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. **Skin Contact:** Immediately wash the affected area with soap and water because of the increased hazard from absorption. Carefully monitor the exposed skin area for frostbite damage (cryogenic injuries) and treat it accordingly. **Inhalation:** Remove victim to fresh air; restore and/or support his breathing as needed. **Ingestion:** This type of exposure to methyl chloride is extremely unlikely because it appears as a pressurized cryogenic (extremely low-temperature) liquid.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel, provide ventilation, and eliminate all ignition sources immediately. Cleanup personnel need protection against contact and inhalation of vapor (see sect. 8). Try to shut off the flow of methyl chloride gas.

Waste Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations
Air Contaminant (29 CFR 1910.1000 Subpart Z)
EPA Designations (40 CFR 302.4)
RCRA Hazardous Waste, No. U045
CERCLA Hazardous Substance, Reportable Quantity: 1 lb (0.454 kg)

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Follow the eye- and face-protection guidelines of 29 CFR 1910.133. **Respirator:** Use a NIOSH-approved respirator per the *NIOSH Pocket Guide to Chemical Hazards* (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow the respirator guidelines in 29 CFR 1910.134. For emergency or nonroutine use (e.g., cleaning reactor vessels or storage tanks) use an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Other Equipment:** Wear neoprene or polyvinyl alcohol-impregnated gloves, boots, aprons, and clean, impervious, body-covering clothing to prevent any possibility of skin contact. **Ventilation:** Install and operate general and local maximum explosion-proof ventilation systems of sufficient power to control airborne levels of methyl chloride below the OSHA PELs cited in section 2. **Safety Stations:** Make eyewash stations, washing facilities, and safety showers available in areas of use and handling. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from shoes and equipment.

Comments: Practice good personal hygiene; always wash thoroughly after using this material. Avoid transferring it from hands to mouth while eating, drinking, or smoking. Do *not* smoke, eat, or drink in any work area. Avoid inhalation of vapor!

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage Segregation: Store methyl chloride in a cool, dry, well-ventilated area away from oxidizing agents, ignition sources, and chemical incompatibilities (see sect. 5). Outside or detached storage is advised for this highly flammable gas. **Special Handling/Storage:** Methyl chloride is shipped or stored as a pressurized liquid in cylinders or tank cars. Protect these containers against physical damage and regularly inspect them for leaks, cracks, or faulty valves. All containers used in shipping/transferral operations must be electrically grounded to prevent static sparks. ***Engineering Controls:*** Preplan handling and emergency response procedures prior to use. All engineering systems (ventilation, production, etc.) must be of maximum explosion-proof design. Methyl chloride must be used in closed engineering systems because of its flammability/explosivity hazards (see sect. 4). This prevents dispersion of this highly flammable gas into work areas. **Warning:** Methyl chloride gas has extremely poor warning properties. An automatic air-monitoring system is needed if this gas is used in large amounts because even highly toxic concentrations of this material will be colorless and odorless.

Comments: All operations with methyl chloride must be done carefully to prevent accidental ignition of this highly flammable liquid. Do not smoke in any use or storage area! Follow recommended standard operating procedures for using liquefied cryogenic gases.

Transportation Data (49 CFR 172.101-2)
DOT Shipping Name: Methyl Chloride
DOT Hazard Class: Flammable Gas
IMO Class: 2.3
References: 1, 2, 12, 73, 84-94, 100, 103. PJI

DOT ID No. UN1063
IMO Label: Poison Gas and Flammable Gas
DOT Label: Flammable Gas

Approvals
Indust. Hygiene/Safety
Medical Review