

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

December 1977

SECTION I

MANUFACTURER'S NAME PPG Industries, Inc.		EMERGENCY TELEPHONE NO. (412) 434-3131
ADDRESS (Number, Street, City, State, and ZIP Code) One Gateway Center, Pittsburgh, PA 15222		
CHEMICAL NAME AND SYNONYMS Methylene Chloride, Dichloromethane		TRADE NAME AND SYNONYMS Methylene Chloride
CHEMICAL FAMILY Halogenated Hydrocarbons	FORMULA CH ₂ Cl ₂	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Stabilized Methylene Chloride				100	500 (ppm)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	104	SPECIFIC GRAVITY (H ₂ O=1)	1.32
VAPOR PRESSURE (mm Hg.) @ 20°C	349	PERCENT VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR=1) @ 20°C	2.93	EVAPORATION RATE (ethyl ether=1)	0.71
SOLUBILITY IN WATER @ 20°C	2 g/100 ml.	Molecular Weight	84
APPEARANCE AND ODOR Clear, colorless liquid with ether-like odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	See attached sheet	FLAMMABLE LIMITS	LFL	UFL
		See attached sheet		
EXTINGUISHING MEDIA	Water, dry chemical or carbon dioxide			
SPECIAL FIRE FIGHTING PROCEDURES	Wear pressure-demand self-contained breathing apparatus for possible exposure to hydrogen chloride and phosgene.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	Vapors can be ignited by high-intensity source of ignition.			
	Can decompose or burn to form hydrogen chloride and traces of phosgene.			

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	See attached sheet
EFFECTS OF OVEREXPOSURE	See attached sheet
EMERGENCY AND FIRST AID PROCEDURES	See attached sheet

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID Open flames, hot glowing surfaces, electric arcs
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)			
HAZARDOUS DECOMPOSITION PRODUCTS Hydrogen chloride and traces of phosgene.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID None
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Immediately evacuate area and provide maximum ventilation. Only personnel equipped with proper respiratory and skin/eye protection should be allowed in area. Collect spilled material on sawdust or vermiculite and sweep into closed containers for disposal then flush area with plenty of water and maintain ventilation until vapors are eliminated.	
WASTE DISPOSAL METHOD	
EPA-approved incineration or contact local waste disposal contractor.	

SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type) See attached sheet.			
VENTILATION	LOCAL EXHAUST		SPECIAL
	MECHANICAL (General) Sufficient to maintain workplace concentration below TLV.		OTHER
PROTECTIVE GLOVES Polyethylene, neoprene or polyvinyl alcohol		EYE PROTECTION	Splash-proof goggles used in accordance with 29 CFR 1910.133.
OTHER PROTECTIVE EQUIPMENT Safety shoes, eye-wash fountain			

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	See attached sheet
OTHER PRECAUTIONS	See attached sheet

ADDENDUM TO MATERIAL SAFETY DATA SHEET

ON METHYLENE CHLORIDE (DECEMBER 1977)

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

Flash Point - None when tested in accordance with standard accepted laboratory techniques; however, methylene chloride vapors concentrated in a confined or poorly ventilated area can be ignited upon contact with a spark, flame or high-intensity source of heat. This can occur at concentrations ranging between 12% and 19% by volume.

SECTION V -- HEALTH HAZARD DATA

Acute-Toxicity Values⁽¹⁾ Oral LD₅₀ (rat): 2136 mg/kg
Inhalation LCL₀ (guinea pig): 5000 ppm/2 hours
Inhalation TCL₀* (human): 500 ppm/8 hours

Threshold Limit Value: Current OSHA permissible exposure limits (29 CFR 1910.1000) are 500 ppm (8-hour TWA); 500 - 1000 ppm periodic excursions are allowed providing 8-hour TWA is at or below 500 ppm; 1000 - 2000 ppm excursions allowed only for maximum of five minutes in any two-hour period, 2000 ppm maximum allowable concentration (must not be exceeded).

Effects of Overexposure⁽²⁾

Acute: Inhalation effect is primarily narcosis. Principal symptoms may be dizziness, nausea, tingling or numbness of the extremities, sense of fullness in the head, sense of warmth, stupor or dullness, lethargy and drunkenness. Exposure to very high concentrations may lead to unconsciousness or even death in confined or poorly ventilated areas.

Eye contact can result in irritation, pain and discomfort. Prolonged or repeated contact with the skin can cause irritation and dermatitis.

Research⁽⁴⁾ has recently shown that methylene chloride is metabolized by the body to carbon monoxide. Further, the amount of carbon monoxide formed is directly related to the amount of methylene chloride absorbed and can be sufficient to produce a substantial stress on the cardiovascular system through the elevation of the level of carboxyhemoglobin (COHb) - the product formed by the combination of carbon monoxide and the blood's hemoglobin thus effectively reducing the amount of hemoglobin available for the transport of oxygen throughout the body.

* Lowest Published Toxic Concentration

Employees working with methylene chloride should be aware of this hazard. This toxic effect is "additive" in nature with the risk being greater for smokers, who generally have higher levels of carboxyhemoglobin. Further, employees with a history or even a suspicion of having cardiovascular disease should not be exposed to methylene chloride for any length of time.

Methylene chloride is mildly irritating to the skin on prolonged or repeated contact. The problem may be accentuated by liquid becoming trapped against the skin by contaminated clothing and shoes. Eye contact can be painful and irritating but is not likely to cause serious injury. Skin absorption is possible.

Chronic: Animal studies showed only light to moderate narcosis, and some deaths apparently due to pulmonary congestion. Other animal studies⁽³⁾ ranging from 50 to 75 days' exposure at concentrations ranging from 1,300 to 7,200 ppm showed kidney and liver changes. Neither currently available scientific literature nor human experience with methylene chloride indicate any adverse human effects attributable to chronic exposure.

Emergency and First Aid Procedures

Inhalation Overexposure: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

Note to Physician: Avoid use of adrenalin in any case where a person has been overcome by methylene chloride.

Eye Contact: Flush with plenty of water for at least fifteen minutes. If irritation occurs, consult a physician.

Skin Contact: Wash thoroughly with plenty of soap and water. If irritation occurs, consult a physician.

Swallowing: If conscious, drink a quart of water then induce vomiting by placing a finger far back in the throat. Call a physician. If vomiting cannot be induced, take immediately to a hospital or physician. If unconscious, or in convulsions, take immediately to a hospital or physician. DO NOT induce vomiting or give anything by mouth.

SECTION VIII -- SPECIAL PROTECTION INFORMATION

Respiratory Protection -- NIOSH/MESA approved organic vapor respirator for concentrations below 1,000 ppm. For 1,000 ppm and above, use air-supplied respiratory protection. Consult 29 CFR 1910.134 for specific requirements.

SECTION IX -- SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing

- Do not use in poorly ventilated or confined spaces.
- Keep containers tightly closed when not in use.
- Do not store in unlabeled or mislabeled containers.
- Do not store degreaser clean-out sludge in tightly sealed containers.

Other Precautions

- Avoid prolonged or repeated breathing of vapor.
- Use only with ventilation sufficient to limit employee exposure below OSHA permissible exposure limits.
- Avoid contact with eyes.
- Avoid prolonged or repeated contact with skin.
- Do not take internally.

REFERENCES

- (1) NIOSH Registry of Toxic Effects of Chemical Substances, 1975.
- (2) Industrial Hygiene and Toxicology, Volume II, Second Edition, F.A. Patty, 1963.
- (3) Documentation of the Threshold Limit Values, American Conference of Governmental Industrial Hygienists, Third Edition, 1971.
- (4) Journal of the American Medical Association, Volume 235, Number 4 (January 26, 1976)