

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)

November, 1978

SECTION I

MANUFACTURER'S NAME PPG Industries, Inc.		EMERGENCY TELEPHONE NO. (304) 843-1300
ADDRESS (Number, Street, City, State, and ZIP Code) One Gateway Center, Pittsburgh, PA 15222		
CHEMICAL NAME AND SYNONYMS Monochloroethane		TRADE NAME AND SYNONYMS Ethyl Chloride
CHEMICAL FAMILY Chlorinated Hydrocarbons	FORMULA C ₂ H ₅ Cl	

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)
Ethyl Chloride				100	1000 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.) (54°F)	°C	12.2	SPECIFIC GRAVITY (H ₂ O=1) 15/4°C	0.903
VAPOR PRESSURE (mm Hg.) 0°C (32°F)		464	PERCENT VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR=1)		2.23	EVAPORATION RATE (ethyl ether=1)	1
SOLUBILITY IN WATER	0.477 gm/100 ml			
APPEARANCE AND ODOR	colorless gas; liquid under pressure; etherlike odor.			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) -43°C (open cup)	-45°F open cup	FLAMMABLE LIMITS	L _{FL} 3.16%	U _{FL} 15%
EXTINGUISHING MEDIA foam, water spray, carbon dioxide, dry chemicals				
SPECIAL FIRE FIGHTING PROCEDURES Wear NIOSH/MSHA-approved, self-contained breathing apparatus while fighting fire. Use water spray to cool fire exposed containers.				
UNUSUAL FIRE AND EXPLOSION HAZARDS See attached sheet				

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	1000 ppm (2600 mg/m ³) 8-hour TWA--OSHA 29 CFR 1910.1000
EFFECTS OF OVEREXPOSURE	See attached sheet
EMERGENCY AND FIRST AID PROCEDURES	See attached sheet

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID Materials listed below
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) alkali metals, copper metals and oxidizers			
HAZARDOUS DECOMPOSITION PRODUCTS Burning forms hydrogen chloride and phosgene gases. Reacts with alkali and copper metals forming flammable and toxic products.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	See attached sheet
WASTE DISPOSAL METHOD	Suggested method is by incineration in a liquid burning hazardous waste incinerator. Small quantities might be handled in an approved hazardous waste landfill. Contact with local pollution control agency is suggested.

SECTION VIII - SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type) NIOSH/MSHA-approved respiratory protection apparatus for exposures potentially encountered.		
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General) See attached sheet	OTHER
PROTECTIVE GLOVES	rubber	EYE PROTECTION close fitting chemical safety goggles.
OTHER PROTECTIVE EQUIPMENT rubber safety shoes, rubber apron, long-sleeved shirt, eye-wash fountain, safety shower, sparkproof tools.		

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 ETHYL CHLORIDE

(NOVEMBER, 1978)

SECTION IV - UNUSUAL FIRE AND EXPLOSION HAZARDS

Severely explosive when exposed to flame or heat. Can react vigorously with oxidizing materials. Ethyl chloride burns with a green-edged flame producing hydrogen chloride, carbon dioxide, water and traces of phosgene.

SECTION V - HEALTH HAZARD DATA

Acute Toxicity Values

Acute Vapor Inhalation:

Animal Toxicity Data⁶ - G. Pig - By inhalation LCL₀ 4000 ppm/45 min.

Aquatic Toxicity Rating⁶ - 96 hour TL_m: over 1000 ppm

Effects of Overexposure

Acute

Inhalation³: Can produce varying degrees of narcotic intoxication, eg., incoordination, drunkenness, possible convulsions, abdominal cramps and coma. Because of its narcotic action, ethyl chloride has been used as an inhalation anesthetic. It has been reported in humans that concentrated vapors can produce narcotic and anesthetic effects and may produce deep or even fatal anesthesia.

Skin Contact²: Liquid spilled on skin may cause rapid cooling and possible frostbite.

Eye Contact: No specific known effects; however, it can be inferred that the same would occur as contact with skin - that is, tissue damage due to rapid cooling (frostbite).

Chronic

There is no available toxicity information on the effects of chronic (long-term) vapor exposure to man or laboratory animals.

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Emergency and First Aid Procedures

Inhalation: Remove patient to fresh air. If unconscious, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

Skin Contact: Wash with water, then soap and water. Because of ethyl chloride's rapid evaporation rate, it can produce frostbite; for frostbite, do not rub. Place in lukewarm water and make warm. Give patient a warm drink. Exercise after thawing. If irritation persists, contact a physician.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. If irritation occurs, consult a physician.

NOTE TO PHYSICIAN: Avoid use of adrenalin in any case where a person has been overcome by ethyl chloride.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled - Evacuate area and eliminate all sources of ignition. Provide maximum ventilation. Only persons equipped with proper respiratory protection permitted in area. Attempt to shut off source of leak. Allow spilled material to evaporate.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation

Mechanical: Sufficient to maintain employee exposure below TLV and prevent accumulation of explosive mixtures or high concentration of ethyl chloride vapors.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storage

- Store away from direct sunlight and other sources of heat.
- Do not shed, drag or drop cylinders.
- Before unloading purge air from unloading system.
- Container, system and storage tank must be electrically grounded before unloading. Storage tank should be grounded at all times.
- Adequate ventilation must be maintained in storage areas to reduce fire hazard in the event of a leak.

- Ethyl chloride is heavier than air and will collect in low areas in the absence of ventilation.
- Do not store in open, unlabeled or mislabeled containers.

Other Precautions

- Keep away from heat, sparks, flame or any other type of ignition source.
- Avoid contact with skin/eyes. Can cause frostbite and/or tissue damage due to rapid evaporation.
- Avoid prolonged or repeated breathing of vapors. High vapor concentration can cause unconsciousness--or death.
- Use only with adequate ventilation. Ventilation must be sufficient to limit employee exposure to ethyl chloride in work area at or below OSHA permissible exposure limits.

REFERENCES

1. Industrial Hygiene and Toxicology, Sec. Ed., Vol. II, Frank A. Patty, 1962.
2. Dangerous Properties of Industrial Materials, Fourth Edition, Sax, 1975
3. Documentation of Threshold Limit Values, American Conference of Governmental Hygienists, 1977
4. Handbook of Toxicology, Plunkett, 1976
5. Chemical Safety Data Sheet SD-50, Manufacturing Chemists Association, 1953
6. NIOSH Registry of Toxic Effects of Chemical Substances, Vol. II, 1977, Pg. 387