MSDS 120A

Material Safety Data Sheet

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Chemicals PPG INDUSTRIES

Approved by U.S. Dept. of Labor as "Essentially similar" to Form OSHA-20

Date: September, 1980	Edition: Third Edition
Chemical Name and Synonyms: Vinylidene Chloride; 1, 1-dichloroethylene	Trade Name and Synonyms: Vinylidene Chloride, VDCM
Chemical Family: Chlorinated Hydrocarbon	Formula: $CH_2=CCl_2$
DOT Shipping Name: Vinylidene Chloride, Inhibited	DOT Hazard Class: Flammable Liquid (See Section 5)

SECTION 1 · PHYSICAL DATA

Boiling Point @ 760 mm Hg:	Vapor Density (Air=1):	Specific Gravity (H_2O=1):	pH of Solutions:
88.9°F 31.6°C	3.34	(68°/68°F) 1.213	neutral
Freezing/Melting Point:	**Solubility (Weight % in Water):**	**Bulk Density:**	**Volume % Volatile:**
-188.5°F	0.04% @ 68°F	10.1 lbs/gallon	100
Vapor Pressure:	**Evaporation Rate (ethyl ether=1):**	**Heat of Solution:**	**Appearance and Odor:**
495 mmHg @ 68°F	1.0		colorless liquid; sweet odor

SECTION 2 · HAZARDOUS INGREDIENTS

	%	Hazard Data
Vinylidene Chloride (Inhibited)	100	Toxic - Inhalation
		Extremely Flammable

SECTION 3 · FIRE AND EXPLOSION HAZARD DATA

Flash Point °F (Method Used)	Flammable Limits in Air (% by Volume)	Extinguishing Media:
-5°F (Tag Closed Cup)	LEL: 7 UEL: 16	Carbon dioxide, dry chemical, foam, water spray

Special Fire Fighting Procedures: Firefighters must wear NIOSH/MSHA-approved pressure-demand, self-contained breathing apparatus. Water spray should be used to cool storage vessels, to avoid rupture and spread of fire.

Unusual Fire and Explosion Hazards: Products of combustion include toxic, corrosive gases such as hydrogen chloride and possibly traces of phosgene.

SECTION 4 · HEALTH HAZARD DATA

Permissible Exposure Limits (TLV): 10ppm - 8-hour time-weighted average (ACGIH - 1980) STEL is 20ppm. PPG Internal Permissible Exposure Limits - 2.5ppm - 8-hour TWA; 10ppm short term exposure limit (STEL - 15-minute periods).

Toxicity Data (1)	Classification (Poison, Irritant, Etc.)
LC_{50} Inhalation (mouse) 98ppm/22 hours	Inhalation: moderately toxic
LD_{50} Dermal unknown	Skin/Eye: moderately irritating
LD_{50} Ingestion (rats) 200mg/kg	Ingestion: moderately toxic
Fish, LC_{50} (Lethal Concentration) 96 hr. TLm:1000-100ppm	Aquatic: moderately toxic

Human Exposure Information/Data:

See Section 5

24-HOUR EMERGENCY ASSISTANCE: (304) 843-1300

SECTION 5 · EFFECTS OF OVEREXPOSURE

This section covers effects of overexposure for inhalation, eye/skin contact, ingestion and other types of overexposure information in the order of the most hazardous and the most likely route of overexposure.

Acute - Overexposure can lead to drunkenness, anesthesia, and if continued, unconsciousness and ultimately, death. Liquid vinylidene chloride is irritating to the eyes and skin. The inhibitor can cause local skin irritation or burns unless washed off thoroughly.

The odor threshold of vinylidene chloride is not an adequate warning to prevent overexposure.

Although swallowing is not likely to occur in industrial applications, accidental ingestion of vinylidene chloride can result in illness and may be fatal.

Chronic - The following is a summary of recent animal studies conducted on vinylidene chloride:

1) Professor Cesare Maltoni of Bologna, Italy, performed a chronic inhalation study[2] with mice. At 25ppm, an increased incidence of kidney adenomas was observed in the test animals, versus the untreated controls; at the 10ppm exposure level, these effects were not observed.

A chronic inhalation study[3] was also conducted with rats, under the auspices of the Chemical Manufacturers Association (CMA). At the 25ppm exposure level, an increased incidence of liver cell vacuolization was observed in the test animals versus the untreated controls.

3) Other VDCM studies performed under the auspices of the Chemical Manufacturers Association included: 90-day drinking water study in rats; two-year toxicological study in conjunction with a three-generation reproduction study incorporating VDCM in the drinking water of rats; 90-day oral study in dogs; 90-day inhalation study in rats; teratology studies via ingestion and inhalation in rats and inhalation in rabbits; metabolic studies in rats via inhalation and ingestion and mutagenicity (cytogenetics).

In these studies, no adverse effects were observed, except in the drinking water studies in rats, which revealed liver cell vacuolization.

In view of the animal studies performed to date, it appears that chronic exposures to vinylidene chloride may cause liver and kidney injury.

NOTE: Vinylidene Chloride is an EPA hazardous substance. Reportable quantity is 5000 lbs./2270 kilograms. The United Nations identification number is UN1303.

EMERGENCY AND FIRST AID PROCEDURES:

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

Eye or Skin Contact: Immediately flush with plenty of water (soap and water for skin) for at least 15 minutes, while removing contaminated clothing and shoes. If irritation occurs, consult a physician. Thoroughly clean contaminated clothing and shoes before reuse or discard.

Ingestion: If conscious, drink a quart of water. Do not induce vomiting. Take immediately to a hospital or physician. If unconscious, or in convulsions, take immediately to a hospital or physician. Do not give anything by mouth to an unconscious person.

Notes to Physician (Including Antidotes):

SECTION 6 · REACTIVITY DATA

Stability: Stable	**Conditions to Avoid:** Direct sunlight, excessive heat, exposure to atmospheric oxygen.
Hazardous Polymerization: May occur	**Conditions to Avoid:** Exposure to atmospheric oxygen; contamination with free-radical initiators; sunlight, excessive heat.

Incompatibility (Materials to Avoid): Contamination with water, free-radical initiators, copper, aluminum and their alloys.

Hazardous Decomposition Products: Exposure of uninhibited or inhibitor-depleted monomer to oxygen may form shock-sensitive, explosive peroxides. Burning or decomposition of VDCM forms toxic, corrosive hydrogen chloride and possibly traces of phosgene.

SECTION 7 · SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Spilled or Released: Evacuate area, provide maximum ventilation and remove all sources of ignition. Keep evacuated personnel upwind to avoid exposure. Only personnel equipped with proper respiratory and skin/eye protection should be allowed in area (See Section 8). Dike area of spill, using sand or vermiculite to avoid spread of spilled material. Then pump diked material into covered container for disposal (See Section 6, Hazardous Decomposition Products). Any remaining material should be absorbed on sand or vermiculite and swept into closed containers for disposal. After all visible traces of spilled material have been removed, remove upper layer of contaminated soil and place in covered container for disposal.

Waste Disposal Method: PPG recommends incineration for liquid vinylidene chloride--Hazardous waste landfill recommended for contaminated solids. Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination. It is your duty to dispose of the chemical materials and/or their containers in accordance with the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act and all state or local Laws/regulations regarding disposal.

SECTION 8 · SPECIAL PROTECTION INFORMATION

Respiratory Protection: NIOSH/MSHA-approved pressure-demand supplied air, respiratory protection where concentrations cannot be maintained below recommended limits. Respiratory protection program must be in accordance with 29CFR 1910.134.

Ventilation (Type): Local exhaust - Sufficient to maintain employee exposures below recommended limits.

Eye Protection: Chemical safety goggles, unless full face piece respirator is worn.	**Gloves:** Neoprene

Other Protective Equipment: Protective clothing to prevent skin contact with liquid vinylidene chloride; eye-wash fountain and safety shower in immediate area. Personnel protective clothing and use of equipment must be in accordance with 29CFR 1910.133.

SECTION 9 · SPECIAL PRECAUTIONS

Precautions to be Taken During Handling and Storing:

- MATERIAL SHOULD NOT BE STORED LONGER THAN FOUR (4) MONTHS.
- Store in a cool, dry place, away from direct sunlight and other sources of heat.
- Adequate ventilation must be maintained in storage areas to reduce fire hazard in the event of a leak.
- Do not store in open, unlabeled or mislabeled containers.
- Wear goggles, gloves and skin protection when handling.
- Wear respiratory protection in any case where exposure may be above permissible exposure limits.
- Container and system must be electrically grounded before unloading.
- Before unloading, purge air from unloading system with nitrogen and keep vinylidene chloride in a nitrogen atmosphere.
- Relieve internal pressure in drums by slowly loosening bung. NOTE: If drum is bulged due to internal pressure, DO NOT ATTEMPT TO UNLOAD. Immediately contact PPG Industries at (304) 843-1300 for advice.

Other Precautions:

- Keep away from heat, sparks and flames.
- Avoid breathing vapor. Excessive vapor inhalation can cause illness or death. Long-term, low-level vapor inhalation can cause kidney and liver injury.
- Use only with ventilation sufficient to limit employee exposure in work areas below permissible exposure limits.
- Avoid contact with eyes, skin or clothing. Eye or skin contact causes severe irritation and may result in burns.
- Do not allow air into containers or storage vessels. Exposure of vinylidene chloride to air may form explosive peroxides.

References:

1. NIOSH - Registry of Toxic Effects of Chemical Substances (DHEW Publ. No. 70-100), 1978

2. Maltoni, C., Environmental Health Perspectives, 21:1 (1977)

3. Rampy, L. W., et. al., Environmental Health Perspectives, 21:33 (1977)

Comments: AVOID CONTAMINATION WITH WATER SUPPLIES: Handling, storage and use procedures must be carefully monitored to avoid spills or leaks. Any spill or leak has the potential to cause underground water contamination which may, if sufficiently severe, render a drinking water source unfit for human consumption. Contamination that does occur cannot be easily corrected.

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