



**Westlake Vinyls Company, L.P**  
**(Geismar)**

**MATERIAL SAFETY DATA SHEET**

**Manufacture's Name:** Westlake Vinyls Company LP  
Geismar, LA 70734

**Address:** PO Box 228  
36045 Hwy 3

**Telephone Number:** (225) 673-0651  
24 hour Number

**Transportation Emergency:**  
Contact CHEMTREC  
**1-800-424-9300**

**Product Name:** **VINYL CHLORIDE MONOMER**  
Date of Issue: January 12, 2005  
Revision Date: March 1, 2006

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**SECTION I. PRODUCT IDENTIFICATION**

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**Product Name:** Vinyl Chloride Monomer  
**Common Names/Synonyms:** Vinyl Chloride, VCM, VCl, VCME, Chloroethylene, Chloroethene  
**CAS Number:** 75-01-4  
**Chemical Formula:** C<sub>2</sub>H<sub>3</sub>Cl  
**Chemical Family:** Vinyl Halide  
**Application:** Use in Manufacture of Polyvinyl Chloride

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**SECTION II. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS**

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<b>Component</b>	<b>CAS No.</b>	<b>Percent</b>	<b>Exposure Limits</b>
Vinyl Chloride Monomer	75-01-4	>99.9%	(reference)

**Exposure Limits**  
OSHA PEL: 1.0 ppm  
OSHA CEILING: 5.0 ppm TWA for any 15 minute period  
ACGIH TLV-TWA: 1.0 ppm  
Classified by OSHA 29 CFR 1910.1017 as a Cancer Suspect Agent  
Classified by American Conference of Governmental Industrial Hygienists (ACGIH)  
As a Confirmed Human Carcinogen  
Classified by the National Toxicology Program (NTP) and the  
Internal Agency for Research on Cancer (IARC) as a Human Carcinogen  
Ingredient listed on SARA Section 313 List of Toxic Chemicals.  
Ingredient listed on the *Pennsylvania Hazardous Substances List*  
Ingredient listed on the California listing of *Chemicals Known to the State to Cause Cancer or Reproductive Toxicity*  
Ingredient listed on the *Massachusetts Substance List*  
*Workplace Hazardous Materials Information System* ingredient found on the  
Ingredient Disclosure List - Canada  
Ingredient listed on the *New Jersey Right to Know Hazardous Substance List*  
Substance is listed on *EPA TSCA Inventory*



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### SECTION III. CHEMICAL AND PHYSICAL PROPERTIES

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<b>Boiling Point:</b>	7 °F (-13.8 °C)
<b>Melting Point:</b>	-245 °F (-154 °C)
<b>Vapor Density (Air = 1) :</b>	2.2 gm/ Liter
<b>Molecular Weight:</b>	62.5
<b>Solubility in Water (1% by weight):</b>	0.11 g/100 g @ 77°F (25°C)
<b>Appearance and Odor:</b>	A colorless gas with a mild, sweet odor.
<b>Vapor Pressure:</b>	1300 @ 32°F (0°C) mmHg And, 2500 @ 68°F (20°C) mmHg
<b>Specific Gravity (Water = 1):</b>	0.97 @ 9°F (-13°C) liquid
<b>% Volatilities By Weight:</b>	100%
<b>Physical State:</b>	Gas (Under normal temperatures)
<b>pH:</b>	Not Applicable (N/A)

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### SECTION IV. FIRE AND EXPLOSION HAZARD DATA

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**Flash Point:** -108°F (-78°C)

**Self Ignition Temperature:** 882 °F (472°C)

**Flammable Limits In Air:** LEL: 3.6% UEL: 33.0%  
Expressed as Lower Explosive Limit LEL & Upper Explosive Limit UEL

**National Fire Protection Association Hazard Identification Code (NFPA 704)**

**Health: 2\* Flammability: 4 Reactivity: 2**

\* See Chronic Health Effects – Section V (Repeated or chronic exposures to VCM.)

**Fire Extinguishing Media:** Stopping the flow of gas, rather than extinguishing the fire is usually the best procedure to follow when escaping gas is burning. It may be dangerous to extinguish the flame and allow the gas to continue to flow as an explosive mixture may formed with air which, if ignited, may cause far greater damage than if the original fire had been permitted to burn. Extinguishing the flame by dry chemical, water fog, foam, or carbon dioxide may be desirable where necessary to permit immediate access to shut off the supply. Water may be ineffective as an extinguishing agent since it can scatter and spread the fire. Use water spray to cool fire-exposed containers, flush spills away from exposures, disperse VCM vapor, and protect personnel attempting to stop a leak. Do not fully extinguish burning gas until flow is stopped due to the vaporization characteristics of VCM.



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**Special Fire Fighting Procedures:** Isolate hazard area and deny entry. Since fire may produce toxic fumes, wear a self-contained breathing apparatus (SCBA) with a full face-piece operated in the positive-pressure mode and full protective equipment. Structural firefighter's protective clothing provides limited protection. Stay out of low areas. Be aware of runoff from

fire control methods. Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic combustion gases from any source.

**Unusual Fire Or Explosion Hazards:** Upon standing, it can produce peroxides, which may then explode. Vapor explosion hazard indoors, outdoors or in sewers. Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by flame, sparks, heaters, or other ignitions sources at distant locations (flash-back potential).

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## SECTION V. HEALTH HAZARDS

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**Primary Routes of Entry:** Inhalation, skin and eye contact.

**Acute Health Effects:** Symptoms of acute overexposure include fatigue, dizziness, light headedness, euphoria, nervousness, abdominal pain, drowsiness, headache, blurred vision, impaired hearing and confusion.

Extremely high concentrations (>70,000 ppm) may cause unconsciousness and death. Vapor is moderately irritating to the eyes, nose and throat. Liquid vinyl chloride can produce immediate pain and severe irritation and may cause permanent damage to the eyes.

Frostbite may cause permanent damage to the skin. Prolonged exposure to high concentrations may cause degeneration of the ends of the finger bones.

Vinyl chloride has been reported to cause angiosarcoma of the liver, a rare form of liver cancer in humans. Transplacental carcinogenicity has been observed in long term studies with animals.

**Eyes/Skin:** Contact with eyes can cause and skin may cause irritation. Contact with liquid may cause localized pain followed by possible eye damage.

**Inhalation:** See acute and chronic health effects

**Ingestion:** May cause frostbite, cancer and possible death.

**Chronic Health Effects:** Long term, chronic exposure may result in headaches, mental confusion, melena (blood in stool) depression, fatigue, loss of appetite, nausea, vomiting, cough, loss of sense of balance, visual disturbances and liver and kidney damage. Repeated over-exposure to VCM can produce cancer called liver angiosarcoma.

**Carcinogenicity Status:** Classified as cancer suspect agent by NIOSH, ACGIH, NTP, IARC and OSHA. Long term exposure to vinyl chloride is known to cause cancer in animals, including angiosarcoma (a very rare malignant tumor of the blood vessels of the liver.)

**Target Organs:** Skin, Spleen, Liver, Kidneys.



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**EMERGENCY OVERVIEW: (Summary of Risks)** EXTREMELY FLAMMABLE, VOLATILE SOLVENT. MAY CAUSE IRRITATION BY ALL ROUTES OF EXPOSURE. INHALATION OR INGESTION MAY CAUSE SYMPTOMS OF INTOXICATION AND CENTRAL NERVOUS SYSTEM DEPRESSION. MAY BE FATAL IF SWALLOWED. PROLONGED OR REPEATED INHALATION OR INGESTION MAY RESULT IN LIVER, KIDNEY OR ADRENAL DAMAGE. CANCER SUSPECT AGENT. RISK OF CANCER DEPENDS ON DURATION AND LEVEL OF EXPOSURE.  
VCM IS A COLORLESS GAS WITH A SLIGHTLY WEET AROMA.

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**SECTION VI. FIRST AID PROCEDURES**

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**Inhalation:** (Of Process Emissions)

Remove affected person to fresh air. Emergency personnel should protect against inhalation exposure. Provide CPR to support breathing or circulation as necessary. Call a physician. Keep awake and transport to a medical facility. Never give anything by mouth to an unconscious person. Obtain medical attention immediately.

**Eyes:** Gently lift the eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.

**Skin:** Quickly remove contaminated clothing. Immediately rinse with flooding amounts of luke-warm water for at least 20 minutes. Carefully cut around clothing sticking to damaged skin and remove rest of garment. Obtain immediate medical attention.

**Ingestion:** Avoid eating, drinking and smoking where VCM is produced or used and always wash thoroughly after handling the product. Ingestion is not an anticipated hazard but should ingestion occur, GET IMMEDIATE MEDICAL ATTENTION.

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**SECTION VII. PERSONAL PROTECTION**

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**Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH/MSHA-approved respirator. Read 29CFR1910.1017 (G)4 for complete details for selection of respirators for vinyl chloride. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks) or where unknown atmospheric concentrations or when >3,600 ppm VCM, wear and open-circuit, pressure demand, self-contained breathing apparatus with full face piece. If atmospheric concentrations are not over 1,000 ppm, Type C supplied air respirator, continuous flow type is required.

**Skin:** Wear impervious gloves, coveralls, boots and/or other resistant protective clothing. Wear chemical safety goggles and face shield. Have a safety shower/ eye wash station readily available in the immediate work area. An impervious full-body encapsulating suit and respiratory protection may be required in some operations. (Remove contaminated clothing promptly and keep contaminated clothing in a closed container. Discard or launder contaminated clothing before reuse. Inform laundry personnel of contaminant hazards.)



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**DO NOT SMOKE OR CONSUME FOOD OR BEVERAGES IN THE WORK AREA.  
WASH THOROUGHLY AFTER HANDLING THE PRODUCT.**

**Eyes:** Wear splash resistant, chemical safety goggles with a faceshield, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Face shields should be worn to avoid facial exposure when working equipment that may contain this product. Provide emergency eyewash facilities and quick drench shower in the immediate work area.

**Ventilation:** Provide general and local explosion-proof ventilation systems to maintain airborne concentrations at least below the OSHA PELs (Sec.2) and away from works to prevent routine inhalation. Local exhaust ventilation is preferred since it prevents containment dispersion into the work area by controlling it at its source.

**Contaminated Equipment:** Remove contaminated equipment from service and decon prior to putting back in service. PPE should be worn when deconning contaminated equipment.

**Other:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

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**SECTION VIII. REACTIVITY DATA**

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**Stability:** Stable (Hazardous peroxide can form by oxidation with atmospheric oxygen when stored for prolonged periods in the presence of a variety of contaminants).

**Hazardous Thermal Decomposition Products:** Hydrogen chloride gas, carbon monoxide, carbon dioxide, and possibly trace amounts of phosgene and other gases.

**Incompatibility (Materials to Avoid):** Avoid contact with strong oxidizers. Can cause violent polymerization increasing risks of fire and explosion. Metals such as copper, aluminum and certain catalytic impurities can initiate a violent polymerization.

**Incompatible Conditions:** Avoid heat and ignition sources.

**Hazardous Polymerization:** Will occur. (Polymerizes in the presence of air, sunlight or heat.)

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**SECTION IX. SPILL, LEAK AND DISPOSAL PROCEDURES**

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**Spill and Leak:** Design and practice a VCM spill prevention control and countermeasure plan (SPCC plan). Restrict access to area until completion of clean-up. Insure clean-up is conducted by trained personnel. Wear personal protection and ventilate area. Extinguish or remove all ignition sources and remove or isolate flammable and combustible materials. Notify governmental authorities as required. Do NOT touch spilled material bare-handed. Prevent material from entering sewers or confined spaces. Stop or reduce leak if safe to do so. Keep materials that can burn away from spilled material. Permit small spills to evaporate. For large spills, dike or flush to ground and allow it to evaporate. Remove contaminated soil and dispose of as a hazardous waste. Follow applicable OSHA regulations (29 CFR 1910.1017).



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Due to processing, reformulation, etc., it is the responsibility of the user to determine the status of waste material. Dispose of according to federal, state and local regulations. All materials used in the clean up and the material itself should be treated as hazardous waste. If burned, incinerator should be equipped with a hydrogen chloride scrubber. Contaminated soil and containers must be managed as (U043 and D043) hazardous waste as applicable.

**Disposal:** Listed - EPA Hazardous Waste: # U043 & D043 (as applicable). (40CFR261.24 and 261.33)

Listed Reportable Quantity (RQ):

1 lb [\*per Clean Water Act, Sec. 307 (a), 311 (b) (4), 112; and per RCRA, Sec. 3001]

SARA Extremely Hazardous Substance (40 CFR 355): Not listed.

OSHA Destinations: Listed as an Air Contaminant (29 CFR 1910.1000, Tables Z-1-A and Z-2)  
CAS # 75-01-4

SARA Hazardous Category: (40 CFR 372):

Fire Hazard	Reactivity Hazard
Immediate Health Hazard	Delayed Health Hazard
Sudden Release of Pressure (explosion) Hazard	

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**SECTION X. ADDITIONAL PRECAUTIONS**

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**Storage:** Under normal conditions, product may be stored satisfactorily in a cool, dry, well-ventilated area, out of direct sunlight and away from incompatible materials. Store away from heat and ignition sources. Store in suitable, labeled containers. Containers should be tightly closed. When not in use and when empty, protect from damage. Emptied containers may contain residual liquid or vapors which may ignite or explode. Use non-sparking ventilation systems and electrical equipment.

Vent indoor tanks to an outside location so escaping vapors will not contaminate any work areas. Vents should be protected by a flame arrester and sized according to suggested Flammable Liquids Ordinance of the NFPA or according to local ordinances. Atmospheric tanks should be located 100 feet from ignition sources. Pressure tanks should be located 150 feet from ignition sources.

**Engineering Controls:** Odor may indicate concentrations above the allowed OSHA and ACGIH exposure limits. Educate workers about its potential hazards and precautions to take to avoid exposure. Use this material with extreme caution and only if absolutely essential. Avoid vapor inhalation and skin and eye contact. Use only with adequate ventilation and appropriate personal protective gear. Institute a respiratory protection program that includes regular training, maintenance, inspection, and evaluation. Use adequate local exhaust ventilation.



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**Material Handling:** Handle under well ventilated conditions. Keep product away from sparks, flames and other ignition sources. Sources of ignition, such as static discharge, should be addressed by the user to prevent the ignition and sudden release of energy.

Post “**NO SMOKING OR OPEN FLAMES**” signs in the area of use or storage. Bond and ground all containers. Label containers according to OSHA Standards (29 CFR 1910.1017 (1) ). All wiring and equipment in storage or use areas must be suitable for Class I, Group D.

Other: Prevent skin contact with VCM liquid. Emergency shower and eyewash facilities are necessary and should be in close proximity. (ANZI Z358.1)

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## SECTION XI. TRANSPORTATION DATA

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Department of Transportation: (49 CFR 172.101(c)):  
Proper Shipping Name: VINYL CHLORIDE, Inhibited or Vinyl Chloride, Stabilized  
Placards: Flammable Gas  
Labels: Flammable Gas  
UN/NA ID. No.: 172.101(e): UN1086  
DOT Packaging Exceptions: NONE  
DOT Packaging Requirements: 173.202 & 173.243  
IMO Shipping Name: VINYL CHLORIDE, Stabilized  
IMO Hazard Class: 172.101(d): 3  
ID No. UN1086  
IMO Label: Flammable Gas

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## SECTION XII. OTHER REGULATORY DATA

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**This Material is Regulated Under:**

Occupational Safety and Health Administration (OSHA): 49 CFR 1910.1017

Federal Resource Conservation and Recovery Act: (40 CFR 261.33)  
EPA Hazardous Waste # U043 and D043 as applicable.

Risk Management Plan: (40 CFR 68): Not listed

Superfund Amendments Reauthorization Act of 1986 (SARA): Listed

Section 313 SARA Title III - Toxic Chemical (40 CFR 372):  
Reportable Quantity (RQ) 1 lb.

All ingredients can be found on the TOSCA chemical inventory.



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**SECTION XIII. USERS RESPONSIBILITY**

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This bulletin cannot cover all possible situations that the user may experience during processing. Each aspect of the user's operation should be examined to determine, if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to employees and/or customers. Geismar Vinyl Company LP (GVC) must rely on the user to use this information to develop appropriate work practice guideline and employee instructional programs specific to the user's operation.

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**SECTION XIV. DISCLAIMER OF RESPONSIBILITY**

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As the conditions and methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein based on credible published data and is believed to be true and accurate, but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information or the hazards connected with the use thereof. Compliance with all applicable federal, state and local laws and regulations regarding the use, storage, sale, transport or disposal of this material is the responsibility of the user.

**ISSUED: BY GEISMAR VINYL COMPANY, LP January, 2005.**

**PRODUCT: Vinyl Chloride Monomer VCM**

**SHIPPING INFORMATION**

**IDENTIFICATION - DOMESTIC TRANSPORTATION**

Proper Shipping Name: 172.101(c): VINYL CHLORIDE, Inhibited or Vinyl Chloride, Stabilized  
Technical Name(s) 172.203(k): N/A  
Hazard Class 172.101(d): 2.1  
UN/NA# 172.101(e): UN 1086  
Haz. Substance 171.8: Vinyl Chloride  
Reportable Quantity: 1 lb.  
Inhalation Hazard 172.2a(b): N/A  
Placarded: FLAMMABLE GAS

**PACKAGING (Part 173)**

- Packaging Section: 172.101(i) - Col. 8(a): 173.306  
Col. 8(b): 173.304  
Col. 8(c): 173.314, 173.315
- General Packaging Section - General 173.24  
Package Group: N/A Hazard Class: Flammable Gas

**DANGEROUS GOODS DETERMINATION (38<sup>TH</sup> Edition) IATA**

Proper Shipping Name (Col. B): Vinyl Chloride, Inhibited  
Class/Division (Col. C): 2.1  
UN/ID# (Col. A): UN 1086  
U.S. Haz. Substance (US1): RQ, Vinyl Chloride  
N/A  
Carrier Special Provisions (Col. K): A1

Subsidiary Risk (Col. D): None  
Other/ Inhalation Haz. (US 34):

**PACKAGING**

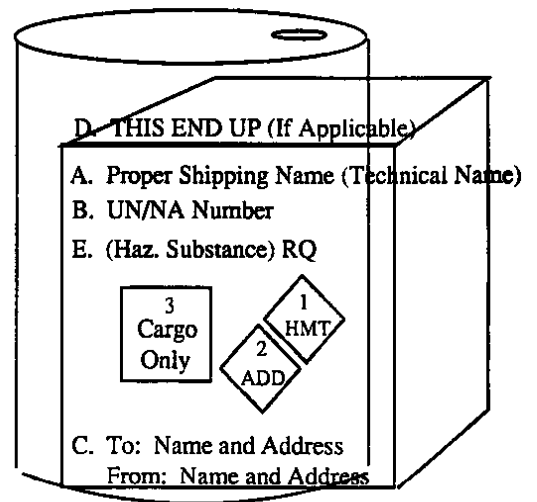
- Max. Qty. Per Pkg. (Cols. H/J) - Passenger: Forbidden
  - Packaging Instructions (Cols. G/I) – Passenger: Forbidden
- Cargo: 150 Kg.  
Cargo: 200 Kg.

**MARKING**

- A. Proper Shipping Name -172.301(a)  
Technical Name -172.301(b)
- B. UN/NA Number - 172.301(a)
- C. Name & Address - 172.301(d)
- D. THIS END UP - 172.312(a)
- E. Hazardous Substance RQ (Name) (172.324)  
ORM Designation - 172.316(a)  
Inhalation Hazard - 172.313(a)

**DOMESTIC LABELING**

- 1. HMT LABELS (172.400)
- 2. Additional Subsidiary Hazard - 172.402(a):



**PRODUCT: Vinyl Chloride Monomer VCM**

**PRODUCT LABELING INFORMATION**

Product: Vinyl Chloride

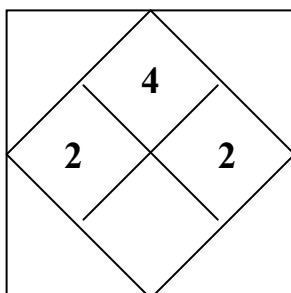
WVC - Westlake Vinyls Company LP  
PO Box 228 / 4338 Hwy 73  
Geismar, LA 70734

Telephone No: (225) 673-0651  
Transportation Emergency No:  
CHEMTREC: (800) 424-9300  
Medical Emergency No:  
POISON CENTER:(216) 379-8562

**READ MATERIAL SAFETY DATA SHEET (MSDS) BEFORE USE**

**Vinyl Chloride  
Contains Vinyl Chloride  
Vinyl Chloride is an OSHA Cancer-Suspect Agent**

**NFPA**



**HMIS**

Health 3  
Flammability 4  
Reactivity 2  
Personal Protection \*

\*See MSDS Sect. VI

**CAUTION!**

Inhalation of the material can cause dizziness, euphoria, nervousness, drowsiness, headache, blurred vision. Extremely high concentrations may cause unconsciousness and death. Vinyl chloride is a confirmed human carcinogen of the liver.

**WARNING! Flammable Gas.**

**FIRST AID**

Inhalation of process emissions – Remove affected individual to fresh air. Contact a physician immediately.

Eye Contact – Flush eyes with water for at least 20 minutes while lifting both upper and lower eyelids. Seek medical attention immediately.

Skin Contact – Immediately flush area with luke warm water for 20 minutes.

Contains: Vinyl Chloride (CAS No. 75-01-4) 100%