

TAIWAN VCM CORP.

SAFETY DATA SHEET

SECTION 1 **CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

TAIWAN VCM CORP.

12F-B NO.39 JI-HU ROAD

NEI-HU DISTRICT

TAIPEI 114, TAIWAN

24 HOUR EMERGENCY TELEPHONE: +886 7 643-2201 ext 1113,1114

TO REQUEST AN SDS: +886 7 643-2201 ext 1140

CUSTOMER SERVICE: +886 7 643-2201 ext 1130

SDS NUMBER: SDS-02

SUBSTANCE: VINYL CHLORIDE MONOMER

SYNONYMS:

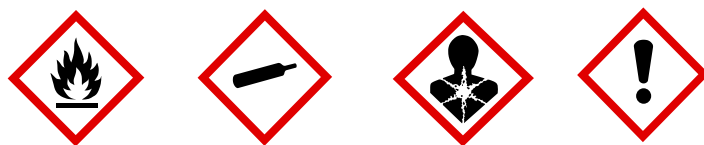
VC、VCM、VINYL CHLORIDE、CHLOROETHENE、CHLOROETHYLENE、ETHYLENE
MONO CHLORIDE、MONOCHLORDETHENE、MONO CHLORETHYLENE

PRODUCT USE: process chemical

REVISION DATE: JAN. 07. 2025

SECTION 2 **HAZARDS IDENTIFICATION**

GHS Classification and Labelling:



Signal word : Danger

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=4 REACTIVITY=1

EMERGENCY OVERVIEW:

COLOR: colorless

PHYSICAL FORM: Extremely flammable gas

ODOR: slightly sweet odor

MAJOR HEALTH HAZARDS: Exposure to Vinyl Chloride may be irritating and burning to respiratory tract, skin and eyes. Contact with liquid or gas can cause central nervous system frostbite effects. Long-term exposure can damage the liver, nervous system and lungs may cause cancer based on animal data.

PHYSICAL HAZARDS: Extremely flammable liquid and vapor, Category 1

HEALTH HAZARDS:

INHALATION: not classified

SHORT TERM EXPOSURE: irritation, central nervous system effects, absorption will occur

LONG TERM EXPOSURE: irritation, central nervous system effects, kidney damage, liver damage, cancer

SKIN CONTACT: Category 2

SHORT TERM EXPOSURE: irritation, central nervous system effects, absorption will occur

LONG TERM EXPOSURE: can irritate and burn the skin, contact with the liquid or gas can cause frostbite, dermatitis, central nervous system effects

EYE CONTACT: Category 2B

SHORT TERM EXPOSURE: irritation, absorption will occur

LONG TERM EXPOSURE: can severely irritate and burn

INGESTION: not classified

SHORT TERM EXPOSURE: nausea, vomiting, central nervous system effects, absorption will occur

LONG TERM EXPOSURE: central nervous system effects, kidney damage, liver damage, cancer

CARCINOGEN STATUS: 1. Germ cell mutagenicity Category 2

2. Carcinogenicity Category 1

**3. Specific target organ systemic toxicity after single exposure
Category 1 and 3**

**4. Specific target organ systemic toxicity after repeated exposure
Category 1**

OSHA: Yes

NTP: Yes

IARC: Yes

HAZARDOUS TO THE AQUEOUS ENVIRONMENT:

Acute : Category 3

Chronic : Category 3

SECTION 3 COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: VINYL CHLORIDE MONOMER C₂H₃Cl

CAS NUMBER: 75-01-4

PERCENTAGE: 99-100

SECTION 4 FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer Basic Life Support and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: Never give anything by mouth to an unconscious or convulsive person. If swallowed, do not induce vomiting. If vomiting occurs spontaneously, keep airway clear. Do not give fluids. GET MEDICAL ATTENTION IMMEDIATELY.

SECTION 5 FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. Vapor/air mixtures are explosive. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

EXTINGUISHING MEDIA: Use carbon dioxide, regular dry chemical, foam or water.

FIRE FIGHTING: Water may be ineffective as an extinguishing media. Wear NIOSH approved positive-pressure self-contained breathing apparatus. Eliminate all sources of ignition. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

SENSITIVITY TO MECHANICAL IMPACT: Not sensitive

SENSITIVITY TO STATIC DISCHARGE: Electrostatic charges may build up during handling. Grounding Of equipment is recommended.

VAPOR Pressure: 2524 mmHg at 68°F (20°C)

FLASH POINT: -78°C (-108 °F)

LOWER FLAMMABLE LIMIT: 3.6%

UPPER FLAMMABLE LIMIT: 33%

AUTOIGNITION: 472°C

HAZARDOUS COMBUSTION PRODUCTS:

Thermal decomposition products or combustion: carbon monoxide, hydrogen chloride, phosgene

SECTION 6 ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Remove sources of ignition. Ventilate closed spaces before entering. Stop leak if possible without personal risk. Reduce vapors with water spray. Collect with appropriate absorbent and place into suitable container. Keep container tightly closed. Liquid material may be removed with a properly rated vacuum truck. Keep out of water supplies and sewers. Releases should be reported, if required, to appropriate agencies. Notify Local Emergency Planning Committee and 24 hrs chemical Accident Emergency consulting center in Taiwan (ERIC & CARE)

SECTION 7 HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Store in a cool, dry place. Store in a well-ventilated area. Do not enter confined spaces unless adequately ventilated. Avoid heat, flames, sparks and other sources of ignition. Subject to storage regulations: U.S.OSHA 29 CFR 1910. Keep separated from incompatible substances.

HANDLING: Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Keep away from heat, sparks and flame. Ground any equipment used in handling.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

VINYL CHLORIDE FINISHED GRADE:

WORKPLACE EXPOSURE LIMITS

OSHA: The legal airborne permissible exposure limit (PEL) is **1** ppm averaged over an 8-hour workshift and **2** ppm not to be exceeded during any 15 minute work period.

NIOSH: Recommends the lowest reliably detectable level.

ACGIH: The recommended airborne exposure limit is 1 ppm averaged over an 8-hour workshift.

- * Vinyl Chloride is a CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT.

However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The following recommendations are only guidelines and may not apply to every situation.

Eye Protection

- * Wear splash-proof chemical goggles and face shield when working with liquid, unless full facepiece respiratory protection is worn.
- * Wear gas-proof goggles and face shield, unless full facepiece respiratory protection is worn.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS.

Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

VENTILATION: Use explosion-proof equipment. Provide local exhaust ventilation where vapor may be generated. Ensure compliance with applicable exposure limits.

GLOVES: Wear appropriate chemical resistant gloves. Gloves should be selected based on permeation test data.

PROTECTIVE MATERIAL TYPES: neoprene, polyvinyl alcohol (PVA), Viton (R).

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Flammable Gas

APPEARANCE: clear

COLOR: colorless

ODOR: slightly sweet odor

MOLECULAR WEIGHT: 62.5

MOLECULAR FORMULA: C₂H₃CL

BOILING POINT: -13.4~13.9°C

FREEZING POINT: -154°C

VAPOR PRESSURE: 2524 mmHg at 68°F (20°C)

VAPOR DENSITY (air=1): 2.2

SPECIFIC GRAVITY (water=1): 0.97°C (-20°C)

WATER SOLUBILITY: (very slightly soluble) 0.003 g/100 ml (25°C)

PH: Not available

VOLATILITY: 100 %

ODOR THRESHOLD: 10-20 ppm

VOC: 100%

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Avoid contact with incompatible substances and conditions due to generation of phosgene and other toxic and irritating substances. Strong UV light such as welding arcs may generate phosgene. Solvent decomposition occurs when catalyzed by metal chlorides which can be produced by reaction of hydrochloric acid and metals.

INCOMPATIBILITIES: acids, bases, metals, alkali metals, oxidizing materials, high temperature sources, pure oxygen, strong UV light (welding arcs)

HAZARDOUS DECOMPOSITION:

Thermal decomposition products or combustion: oxides of carbon, hydrogen chloride, phosgene

POLYMERIZATION: In the heat will polymerize.

SECTION 11 TOXICOLOGICAL INFORMATION

VINYL CHLORIDE FINISHED GRADE:

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to

Vinyl Chloride:

- * Vinyl **Chloride** can severely irritate and burn the eyes and can reduce vision.
- * Exposure to **Vinyl Chloride** can irritate and burn the skin. Contact with the liquid or gas can cause frostbite.

- * **Vinyl Chloride** can cause headache, dizziness, fatigue, weakness, sleeping disturbances and loss of memory. Higher levels can cause you to feel lightheaded and to pass out.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Vinyl Chloride** and can last for months or years:

Cancer Hazard

- * **Vinyl Chloride** is a CARCINOGEN in humans. It has been shown to cause liver, brain and lung cancer.
- * Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- * **Vinyl Chloride** may damage the developing fetus. There is limited evidence that **Vinyl Chloride** is a teratogen in animals.
- * An excess of spontaneous absorptions has been reported among spouses of workers who had been exposed to **Vinyl Chloride**.
- * Increased rates of birth defects have been reported in areas where **Vinyl Chloride** processing plants are located. **Vinyl Chloride** role in this increased risk is unknown at this time.

Other Long-Term Effects

- * **Repeated** exposure can cause a disease called “scleroderma”. This causes the skin to become very smooth, tight and shiny. It causes the bones of the fingers to erode (“acro-osteolysis”), and damages the blood vessels in the hands (“Raynauds syndrome”). This causes the hands (or feet) to turn numb, pale or blue with even mild cold exposure.
- * **Vinyl Chloride** can damage the liver, nervous system and lungs.

MEDICAL

Medical Testing

For those with frequent or potentially high exposure (half the TLV or greater, or significant skin contact), the following are recommended before beginning work and at regular times after that:

- * Complete liver function tests.
- * Exam of the eyes and vision.
- * Exam of the skin and nervous system.
- * Chest x-ray and lung function tests.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OHSA 1910.20.

SECTION 12 ECOLOGICAL INFORMATION

Health Effects

Reviews of the health effects of VC include that of IARC, the Dutch criteria document (1), the clinically oriented review by Leibach & Marsteller (15) and a review of VC mortality by Nicholson et al.(16).

Effects on experimental animals and *in vitro* test systems

Toxicological effects

The acute toxicity of VC is low; at higher concentrations a narcotic effect occurs. Two-hour LC₅₀ values for different animal species vary from 300 to 600 g/m³ (1). In chronic exposure VC can induce a variety of toxic effects. These are mainly related to the liver, the central nervous system (CNS) and the cardiovascular system.

Teratology studies, after VC inhalation, have been carried out in mice, rats and rabbits. No significant effects on malformations or anomaly rates resulted from exposures to VC at 130-6470 mg/m³ (50-2500 ppm) for up to 24 hours per day for up to 12 days during different periods of pregnancy (17-19). Other experiments have suggested some signs of embryotoxicity of VC in rats (20) and in mice (19). Vinyl chloride has been shown to be a transplacental carcinogen in the rat at exposures of 15 000 or 26 000 mg/m³ for 4 hours per day on days 12-18 of pregnancy (21).

SECTION 13 DISPOSAL CONSIDERATIONS

Reuse or reprocess if possible. Dispose in accordance with all applicable regulations. Subject to disposal regulations: Incinerate at high temperatures; complete combustion necessary to avoid formation of phosgene; acid scrubber needed to remove halo acids formed.

SECTION 14 TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: VINYLE CHLORIDE

ID NUMBER: 1086

HAZARD CLASS OR DIVISION:3

PACKING GROUP: II

LABELING REQUIREMENTS:2.1

ADDITIONAL SHIPPING DESCRIPTION: Transport by vessel domestic requires flashpoint on shipping papers.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: VINYL CHLORIDE

UN NUMBER:1086

CLASS:2.1

PACKING GROUP/RISK GROUP: II

SECTION 15 REGULATORY INFORMATION

TAIWAN REGULATION:

Labor Safety and Health Law

- * Rules On Hazard Communication of Dangerous Materials and Toxic Materials Standards of Permissible Exposure Limits of Airborne Hazardous substances in workplace.
- * Toxic Chemical Substances Control Act.
- * Methods and facilities standards for the storage, clearance and Disposal of Industrial Waste.
- * Road Traffic safety Act.
- * Public Hazardous Materials and flammable pressurized Gases Establishment Standards and Safety Control Regulation.

SECTION 16 OTHER INFORMATION

IMPORTANT: The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. **NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, SUITABILITY, STABILTY OR OTHERWISE.** The information included herein is not intended to be all-inclusive as to the appropriate manner and/or conditions of use, handling and/or storage. Factors pertaining to certain conditions of storage, handling, or use of this product may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended to, and nothing herein shall be construed as a recommendation to, infringe any existing patents or violate any laws, rules, regulations or ordinances of any governmental entity.