SAFETY DATA SHEET

VINYL CHLORIDE (MONOMER)

North America EN
SDS No.: M9192

Rev. Date: 19-May-2026
Rev. Num. 11

SECTION 1. CHEMICAL PRODUCT / COMPANY IDENTIFICATION

Company Identification:	Oxy Vinyls, LP 14555 Dallas Parkway, Suite 400 Dallas, Texas 75254-4300
24-Hour Emergency Telephone Number:	1-800-733-3665 (USA); CANUTEC (Canada): 1-613-996-6666; CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Product Identifier:	VINYL CHLORIDE (MONOMER)
Synonyms:	VCM; Monochloroethylene; Chloroethene; Ethylene, chloro-; Vinyl chloride monomer
Product Use:	PVC Manufacturing
Uses Advised Against:	Aerosol propellant
Restrictions on Use (United States):.	FOR INDUSTRIAL USE ONLY
Restrictions on Use (EU):	In accordance with Article XVII of the Regulation (EC) No 1907/2006 (REACH), Vinyl Chloride should not be used as an aerosol propellant.
Other Global Restrictions on Use:	FOR USE IN INDUSTRIAL INSTALLATIONS ONLY Other restrictions on use based on local, regional, or national regulations may exist and must be determined on a case-by-case basis
Chemical Family:	Organochloride

SECTION 2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: Health hazard classifications were performed using OSHA Hazard Communication 2024 (1910.1200) Appendix A and/or UN GHS Rev. 8 (2019). This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
HEALTH CANADA HPR REGULATORY STATUS: This material is considered hazardous by the Health Canada Hazardous Products Act's Hazardous Products Regulations (HPR) (SOR/2015-17).
HAZARD CLASSIFICATION:

GHS: PHYSICAL HAZARDS:	Flammable Gas - Cat. 1A (Extremely flammable gas). Gas under Pressure - Low Pressure Liquified Gas (Contains gas under pressure; may explode if heated).
SPECIFIC TARGET ORGAN TOXICITY (STOT) - SINGLE EXPOSURE (SE):	Category 3 - May cause respiratory tract irritation. Category 3 - May cause drowsiness or dizziness.

SPECIFIC TARGET ORGAN TOXICITY (STOT) - REPEAT EXPOSURE (RE):	Category 1 - Causes damage to the hepatic system (liver), respiratory system, musculoskeletal system, nervous system, and lymphatic system through prolonged or repeated exposure.
GHS: CARCINOGENICITY:	Category 1A - May cause cancer.
GHS: GERM CELL MUTAGENICITY:	Category 2 - Suspected of causing genetic defects.

UNKNOWN ACUTE TOXICITY:
Unknown Acute Oral Toxicity: 100% of this product consists of ingredient(s) of known acute oral toxicity.
Unknown Acute Dermal Toxicity: There is no acute dermal toxicity data available for this material.
Unknown Acute Inhalation Toxicity: 100% of this product consists of ingredient(s) of known acute inhalation toxicity.

GHS SYMBOL: Flame. Gas cylinder. Exclamation mark. Health hazards.

GHS SIGNAL WORD: DANGER.
GHS HAZARD STATEMENTS:
GHS - Physical Hazard Statement(s) Extremely flammable gas. Contains gas under pressure; may explode if heated.
GHS - Health Hazard Statement(s) May cause respiratory irritation. May cause drowsiness or dizziness. Suspected of causing genetic defects. May cause cancer. Causes damage to the hepatic system (liver), respiratory system, musculoskeletal system, nervous system, and lymphatic system through prolonged or repeated exposure.
GHS - Precautionary Statement(s) - Prevention Obtain, read, and follow all safety instructions before use. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not breathe gas or vapors. Wash hands and exposed skin thoroughly after handling. Do not eat, drink, or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
GHS - Precautionary Statement(s) - Response IF exposed or concerned, get medical advice. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.
GHS - Precautionary Statement(s) - Storage Store in a well-ventilated place. Keep container tightly closed. Protect from sunlight. Store locked up.
GHS - Precautionary Statement(s) - Disposal Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.
Physical Hazards Not Otherwise Classified (HNOC) or Mentioned in GHS/CLP Classification: Polymerization can occur; however, Vinyl Chloride (VCM) will not spontaneously polymerize to Polyvinyl Chloride (PVC) without an initiator. See Section 10 for more information. May form explosive mixtures with air.
Health Hazards Not Otherwise Classified (HNOC) or Mentioned in GHS/CLP Classification Repeat occupational exposure to Vinyl Chloride have been associated with Raynaud syndrome and associated scleroderma-like skin changes on the hands. Direct contact with liquid or rapidly expanding gas may cause frostbite to contacted tissue (eyes, skin, etc.). May displace oxygen and cause rapid suffocation.
See Section 11: TOXICOLOGICAL INFORMATION

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Systematic Chemical Name	Common name	CAS Number	Percent [%]
Vinyl Chloride 75-01-4	Chloroethene (or Chloroethylene)	VCM	75-01-4	99 - 100

SECTION 4. FIRST AID MEASURES

General Advice: IF exposed or concerned, get medical advice. Refer to the Medical Management Guidelines for acute chemical exposures developed by the Agency for Toxic Substances and Disease Registry (ATSDR), U.S. Dept. of Health, for detailed medical guidelines.
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.
SKIN CONTACT: If frostbite or freezing occur, immediately flush with plenty of lukewarm water (100-105 °F, 38-41 °C). GET MEDICAL ATTENTION IMMEDIATELY.
INHALATION: IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF INHALED: Get medical help if you feel unwell.
INGESTION: Not a likely route of exposure in occupational environment.

MOST IMPORTANT SYMPTOMS/EFFECTS (ACUTE AND CHRONIC [DELAYED]):
Acute Symptoms/Effects: Listed below. Prolonged, high concentration exposures may cause unconsciousness or death.

Eye: Exposure to escaping compressed gas or liquid can cause frostbite injury with corneal and conjunctival irritation or burns. High concentrations of vapor can cause eye irritation. Direct ocular exposure to Vinyl Chloride vapor can cause localized burns or irritation of the conjunctiva and cornea.

Skin: Exposure to escaping compressed gas or liquid can cause frostbite injury with redness, blistering, and scaling. Contact dermatitis has also been reported.

Inhalation (Breathing): Inhalation is the primary route of exposure, and Vinyl Chloride is readily absorbed from the lungs. Its odor threshold is too high to provide an adequate warning of hazardous concentrations. The odor of Vinyl Chloride becomes detectable at around 3,000 ppm and the OSHA PEL is 1 ppm (8-hour TWA). Therefore, workers can be overexposed to Vinyl Chloride without being aware of its presence. A 5-minute exposure to airborne concentrations of 8,000 ppm can cause dizziness. As airborne levels increase to 20,000 ppm, effects can include drowsiness, loss of coordination, visual and auditory abnormalities, disorientation, nausea, headache, and burning or tingling of the extremities. Exposure to higher concentrations of vinyl chloride for longer durations can cause death, presumably due to central nervous system (CNS) and respiratory depression. The gas is heavier than air and can cause asphyxiation in poorly ventilated or enclosed spaces.

Ingestion (Swallowing): May be harmful is swallowed; however, ingestion of Vinyl Chloride is unlikely because it is a gas at room temperature. Small amounts can dissolve in other liquids, but in such small concentrations that acute toxicity is unlikely. No significant Vinyl Chloride exposure is expected from ingestion of drinking water.

Other Health Effects: Narcotic Effects (Central Nervous System Depression): Ataxia or dizziness, drowsiness or fatigue, loss of consciousness, headache, euphoria and irritability, visual or hearing disturbances, nausea, memory loss.

Chronic (Delayed) Symptoms/Effects: Prolonged absorption of Vinyl Chloride can induce hepatotoxicity and hepatic cancers, including angiosarcoma. Portal hypertension and cirrhosis can occur. Vinyl Chloride toxicity is thought to result from the binding of reactive epoxide metabolites to hepatic DNA. Other effects of chronic exposure include sensory-motor polyneuropathy; pyramidal, extrapyramidal, and cerebellar abnormalities; neuropsychiatric symptoms such as sleep disorders, loss of libido, headaches, and irritability; EEG alterations; and immunopathologic phenomena such as purpura and thrombocytopenia. Vinyl Chloride disease is a syndrome consisting of Raynaud's phenomenon, acroosteolysis (dissolution of the bones of the terminal phalanges and sacroiliac joints), and scleroderma-like skin changes. Carcinogenic Effects: The U.S. Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have classified Vinyl Chloride as a known human carcinogen. Vinyl Chloride has caused angiosarcoma of the liver in heavily exposed workers. It is also suspected to cause cancer of the brain, lungs, gastrointestinal tract, and lymphatic/hematopoietic system. Reproductive and Developmental Effects: Vinyl Chloride is included in Reproductive and Developmental Toxicants, a 1991 report published by the U.S. General Accounting Office (GAO) that lists 30 chemicals of concern because of widely acknowledged reproductive and developmental consequences. However, there is no conclusive evidence of reproductive or developmental effects in humans. A few case reports describe decreased libido or fertility in men with chronic occupational exposure, and some animal studies also support this finding. Some studies in experimental animals have reported developmental toxicity associated with high-dose exposures, but Vinyl Chloride is not considered a developmental toxicant. Special consideration regarding the exposure of pregnant women is warranted, since Vinyl Chloride has been shown to be a genotoxin; thus, medical counseling is recommended for the acutely exposed pregnant women.

Target Organ Effects: Hepatic System (Liver), Respiratory System, Musculoskeletal System, Nervous System,

and Lymphatic System

PROTECTION OF FIRST-AID RESPONDERS: Protect yourself by avoiding contact with this material. Direct contact with liquid may cause frostbite to exposed tissue (eyes, skin, etc.). Use personal protective equipment (PPE). Refer to Section 8 for specific PPE recommendations. At minimum, treating personnel should utilize PPE sufficient for prevention of bloodborne pathogen transmission.

NOTES TO PHYSICIAN: There is no specific antidote. Treat symptoms with supportive care. Cardiac stimulants such as epinephrine should be avoided in persons overexposed to chlorinated hydrocarbons.
Interaction with Other Chemicals Which Enhance Toxicity: Alcohol may enhance toxic effects.
Medical Conditions Aggravated by Exposure: Alcoholic Liver Disease. Infectious Hepatitis. Cirrhosis.

SECTION 5. FIRE FIGHTING MEASURES

Fire Hazard: Extremely flammable. Keep containers away from heat and ignition sources. Vapors may travel to source of ignition and flash back. Containers may rupture when heated. No smoking near containers. All metals parts of container and equipment must be grounded. Use only non-sparking tools around container and equipment.
Explosive properties: Will form explosive mixtures with air. Ensure adequate ventilation to prevent explosive mixtures.
Extinguishing Media: Stop flow of gas before extinguishing fire. Use carbon dioxide, regular dry chemical, or foam. Use water spray to keep containers cool.
Unsuitable Extinguishing Media: For fires involving Vinyl Chloride, the primary unsuitable extinguishing material is a high-pressure or heavy water stream. Water may be ineffective, but should be used to keep fire-exposed containers cool.
Specific Hazards: Extinguishing a Vinyl Chloride fire without stopping the gas flow is dangerous. Vinyl Chloride is heavier than air and highly flammable; if the flame is put out but the leak continues, the gas will accumulate in low areas (like sewers or basements) and may eventually reach a distant ignition source, causing a massive flashback explosion.
Unusual Hazards: Burning Vinyl Chloride produces highly toxic hydrogen chloride and phosgene gas, along with carbon monoxide, creating severe inhalation hazards.
Fire Fighting: If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this can't be done, then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode.
Hazardous Combustion Products: Combustion of Vinyl Chloride (VCM) produces irritant gases, such as hydrogen chloride (HCl), carbon dioxide and carbon monoxide.
Sensitivity to Mechanical Impact: Not sensitive.
Sensitivity to Static Discharge: Electrostatic charges may build up during handling and may form ignitable vapor-air mixtures in storage containers. Ground equipment in accordance with industry standards and best practices such as NFPA 77 [Recommended Practices on Static Electricity (2024)] and American Petroleum Institute (API) RP Recommended Practice 2003 [Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents (API RP 2003 (R2020)].
Lower Flammability Level (air): 3.6%.
Upper Flammability Level (air): 33.0%.
Flash point: -78 °C (-108.4 °F) (closed cup).
Auto-ignition Temperature: 472° C (882° F).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Gaseous Vinyl Chloride is approximately 2.15 times as heavy as air, it is slow to diffuse into the air, will spread along ground, and tends to accumulate in low or confined areas (sewers, basements, tanks).
Personal Precautions: Evacuate unprotected personnel upwind or crosswind for at least 100 feet (800 feet for large spills) out of danger area. Isolate hazard areas and deny entry. Keep unnecessary and unprotected personnel from entering the area. Eliminate all sources of heat and ignition. Vapors tend to accumulate in low areas. Ventilate closed spaces before entering. Wear appropriate personal protective equipment recommended immediately below and in Section 8, Exposure Controls / Personal Protection, of the SDS. Refer to Section 7, Handling and Storage, for additional precautionary measures.
Personal Protective Equipment: Exposure to Vinyl Chloride Monomer (VCM) may occur wherever VCM is handled or used. Therefore, self-contained positive pressure breathing apparatus, approved for emergency use, should be located strategically outside VCM work areas, near entrances and away from contamination. Such equipment shall have a rating of at least 30-minute use and be equipped with a low-pressure warning alarm. Any person entering a VCM emergency area must be protected by this respiratory protective equipment and trained to properly wear / use the equipment.
Emergency Procedures: Every site using Vinyl Chloride Monomer (VCM) should have an emergency response plan in place that protects both the employees and the community. The VCM Emergency Response Plan must establish guidelines for handling emergencies at the facility to ensure compliance with OSHA Process Safety Management (29 CFR 1910.119) and EPA's Risk Management Program (RMP) requirements. The RMP rule implements Section 112(r) of the 1990 Clean Air Act amendments to improve chemical accident prevention at facilities. The RMP rule requires facilities that use extremely hazardous substances to develop a written Risk Management Plan. All employees should receive training on the emergency response plan. See EPA guidance for developing written RMP at https://www.epa.gov/rmp. For VCM leaks, immediately implement pre-determined emergency response plan.
Environmental Precautions: Keep out of water supplies and sewers. Releases should be reported, if required, to appropriate agencies.
Methods and Materials for Containment, Confinement, and/or Abatement: Remove sources of ignition. Ventilate closed spaces before entering. Stop leak, if possible, without personal risk. Vapors or gases may ignite at distant ignition sources and flash back. See Section 13, Disposal considerations, for additional information.
Methods and Materials for Clean-up

Recovery: In case of spill or leak, stop the leak as soon as possible.
Neutralization: Not Available.
Final Disposal: Runoff may pollute waterways. Control pH at the discharge to sewer or the receiving water and comply with all federal, state, and local regulations regarding effluent discharge.

Additional Disaster Prevention Measures: Vapors are heavier than air and will tend to collect in low areas. Reduce vapors with water spray. Evacuation of surrounding area may be necessary for large spills. Keep unnecessary people away, isolate hazard areas and deny entry.

SECTION 7. HANDLING AND STORAGE

Handling:

Precautions for Safe Handling: All energized electrical equipment must be designed in accordance with the electrical classification of the area. Keep operations away from heat, open flames, direct sunlight and other heat/ignition sources. There should be adequate ventilation in operation areas. Do not walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep out of low areas and stay upwind of spills. All equipment used when handling must be grounded and precautionary measures should be taken against static charge. Only non-sparking tools should be used. Employees must not be permitted to smoke in the area. VCM should not be stored with incompatible materials. Empty storage vessels may still contain residue material, so repair/disposal work (cutting, welding, puncturing, incinerating, etc.) should not be performed until after the container has been cleaned and purged of all residue and vapors.
Technical measures/precautions: Do not allow liquid Vinyl Chloride to be trapped between closed valves, resulting in extremely high pressure, which could result in a gasket or line leak.
Other precautions: Simple Asphyxiant - May displace oxygen and cause rapid suffocation.
Prevention of contact: Obtain, read, and follow all safety instructions before use. Do not breathe gas or vapors. Wash hands and exposed skin thoroughly after handling. Do not eat, drink, or smoke when using this product. Use only outdoors or in a

well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Storage:

Safe Storage Conditions: Keep storage containers away from heat, open flames, direct sunlight and other heat/ignition sources. Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Store in a cool, dry area. Store in a well-ventilated area. May be subject to storage regulations: e.g., U.S. OSHA 29 CFR 1910.106. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).
Technical measures: Store in pressure-rated containers or tanks designed for liquefied flammable gas service and constructed of compatible materials. Storage areas shall be cool, well-ventilated, and appropriately electrically classified, with ignition sources controlled. Equip storage systems with pressure relief devices vented to a safe location, as well as suitable leak detection and monitoring. Provide secondary containment where required by local regulations. Maintain separation from occupied buildings and incompatible materials. Clearly identify storage areas and protect containers from physical damage, excessive heat, and direct sunlight. Continuous or periodic monitoring for vinyl chloride vapors is recommended in storage areas. Provide emergency isolation and shutdown capability. Fire protection and emergency response systems suitable for flammable gas service should be available in accordance with applicable local regulations and standards.
Incompatible Materials: Ultraviolet (UV) radiation (i.e., sunlight), oxidizing agents (e.g., ozone, potassium permanganate, and chlorine), oxides of nitrogen, strong alkalis, strong acids, moisture, polymerization additives, organic peroxides, and metals including copper, aluminum, aluminum alloys.
Packaging or Materials of Construction: Containers of Vinyl Chloride shall be legibly labeled either: VINYL CHLORIDE: EXTREMELY FLAMMABLE GAS UNDER PRESSURE: CANCER SUSPECT AGENT or with the additional legend, CANCER-SUSPECT AGENT applied near the label or placard per 29 CFR 1910.1017. Procedures for the handling, use, and storage of cylinders should comply with OSHA 1910.101 and 1910.169, as with the recommendations of the Compressed Gas Association. A regulated, marked area should be established where this chemical is handled, used, or stored in compliance with OSHA Standard 1910.1045.

Additional Information:

Additional Information: Tanks and pipelines containing Vinyl Chloride should be completely emptied and checked for vapors before performing any maintenance activities. Do not enter a confined space (which includes tanks or pits) without following proper entry procedures such as 29 CFR 1910.14.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

REGULATORY EXPOSURE LIMIT(S):
See 29 CFR 1910.1017 (OSHA's regulatory standard for Vinyl Chloride) for additional requirements when 8-hour action level (0.5 ppm TWA) is exceeded. Listed below for the product components that have regulatory occupational exposure limits (OEL's).

Component	OSHA - Final PELs - Time Weighted Averages (TWAs)	OSHA - Final PELs - Short Term Exposure Limits	OSHA Final PEL Ceiling
Vinyl Chloride 75-01-4 (99 - 100 %)	1 ppm (TWA)	5 ppm (STEL) see 29 CFR 1910.1017	-----

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit

Component	Canada - TWAs	Canada - STELs	Canada - Ceilings
Vinyl Chloride 75-01-4 (99 - 100 %)	Ontario - 1 ppm (TWA) Alberta - 1 ppm (TWA) Alberta - 2.6 mg/m^3 (TWA) British Columbia - 1 ppm (TWA)	-----	-----

NON-REGULATORY EXPOSURE LIMIT(S):
Listed below are the product components that have advisory (non-regulatory) occupational exposure limits (OEL's) established.

Component	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	Skin Absorption - ACGIH	NIOSH RELs	AIHA WEELs	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Vinyl Chloride 75-01-4 (99 - 100 %)	1 ppm (TWA)	-----	-----	-----	-----	-----	-----	-----	-----

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

ENGINEERING CONTROLS: Use closed systems when possible; Provide local exhaust ventilation where vapor may be generated; Operation and storage areas should have adequate ventilation. Closed and/or confined spaces should be ventilated before entering and monitoring should be conducted to determine exposure levels prior to entry; In addition, the need for continuous monitoring must be evaluated based on the requirements of OSHA standard 1910.1017, which requires a continuous-monitoring and alarm system (a form of fixed detection) under specific conditions "when concentrations of Vinyl Chloride could reasonably exceed the allowable concentrations for the devices [e.g., respirators] in use. Such a system must be used to "alert employees when Vinyl Chloride concentrations exceed the allowable concentrations for the devices in use". This mandate ensures employee safety by providing immediate warning in areas where respiratory protection might be insufficient if ambient Vinyl Chloride levels rise unexpectedly; Ensure compliance with applicable exposure limits

PERSONAL PROTECTIVE EQUIPMENT:

Eye and Face Protection: Wear chemical splash goggles and face shield. An eyewash facility should be located in the immediate work area and tested on a regular basis.

Skin and Body Protection: Wear chemical resistant, impervious protective clothing and gloves during handling as required by risk assessment. Selection of specific items such as gloves, coats, pants, boots, aprons, or full-body suits will depend on operations to be performed.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types: Butyl rubber. Nitrile. Silver Shield®. Viton®.

Respiratory Protection: Refer to 29 CFR 1910.1017 for selection of respirators for Vinyl Chloride. As noted in 1910.1017, where air-purifying respirators (APRs) are allowed based upon the exposure / risk assessment; the following considerations must be made: 1) Cartridge Type: Must use organic vapor (OV) cartridges/canisters specifically approved for Vinyl Chloride 2) Concentration Limits: APRs are only for specific, known concentrations (e.g., up to 10 ppm or 25 ppm, depending on the device) and are not for Immediately Dangerous to Life or Health (IDLH) atmospheres or oxygen-deficient environments 3) Service Life: Cartridges have limited service lives (e.g., 1-4 hours) and must be replaced before they expire or the shift ends 4) Warning Properties: Vinyl Chloride has poor warning properties (odor/irritation); therefore, an End-of-Service-Life Indicator (ESLI) for the cartridge should be used and/or a higher level respirator (e.g., supplied-air) should be used. A respiratory protection program that meets applicable regulatory requirements must be followed whenever workplace conditions warrant use of a respirator.

Other Protective Equipment: Provide an emergency eyewash fountain and quick drench shower in the immediate work area.

HYGIENE MEASURES: Obtain, read, and follow all safety instructions before use; Do not breathe gas or vapors; Wash hands and exposed skin thoroughly after handling; Do not eat, drink, or smoke when using this product; Use only outdoors or in a well-ventilated area

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Compressed, liquefied gas
Physical State:	Gas
Color:	Colorless
Odor:	Slightly sweet odor at high concentrations (3,000 ppm or greater)
Odor Threshold [ppm]:	Not reliable to prevent excessive exposure
Melting Point/Range:	-154° C (-245° F)
Freezing Point/Range:	No data available
Boiling Point °C	-13.4°C (7.9°F) @ 1 atm
Evaporation Rate (ether=1):	>15
Flammability (solid, gas):	No data available
Lower Flammability Level (air):	3.6%
Upper Flammability Level (air):	33.0%
Explosion limits:	Not determined
Flash point:	-78 °C (-108.4 °F) (closed cup)
Auto-ignition Temperature:	472° C (882° F)
Decomposition Temperature:	> 550° C (> 1,022° F)
pH:	Not applicable
Viscosity:	0.01072 cP at 101.325 kPa, 20 °C (gas) 0.280 cP at -20 °C (liquid)
Kinematic Viscosity:	No data available
Water Solubility:	0.276% (2,760 ppm) @ 25°C
Solubility in other solvents:	Hydrocarbons, oil, alcohol, chlorinated solvents, and most common organic liquids
Partition Coefficient (n-octanol/water):	Log Kow 1.23 – 1.58
Vapor Pressure:	44.67 psia @ 20°C
Density:	No data available
Relative Density/Specific Gravity (water=1):	0.91 @ 20°C
Vapor Density (air=1):	2.15 @ 20°C) (20°C air = 1)
Particle Size Distribution:	Not applicable

Other Information

Molecular Formula:	C_2H_3CL
Chemical Family:	Organochloride
Molecular Weight:	62.5
Explosive properties:	vapors may form explosive mixtures with air
Oxidizing properties:	does not meet the definition of an oxidizing gas
Bulk Density:	Not applicable
Crystallization Temperature:	Not applicable
VOC Content (%):	100%
Volatility:	100%
Surface Tension:	23.1 dyne/cm @ -20 °C
Hygroscopic:	Not applicable
Critical Temperature:	158.4 °C (431 K)

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability: Generally stable at normal temperatures and pressures; however, may violently polymerize or generate other hazardous reactions under certain processing conditions.
Reactivity: Vinyl Chloride is a reactive compound but is stable under conditions normal to storage, handling, and transportation.

There is a possibility of hazardous reactions when mixed with incompatible materials or stored/handled improperly. (See “Possibility of Hazardous Reactions” below). Polymerization is possible under certain conditions. (See “Hazardous Polymerization” below).
Possibility of Hazardous Reactions: Although Vinyl Chloride (VCM) is stable under normal conditions, certain conditions or mixtures with certain materials can cause VCM to react in a way that causes hazardous reactions. For example:.
- Polymerizes exothermically in the presence of certain catalysts. See specifics under “Hazardous Polymerization” below.
- Reacts with the following incompatible materials and creates an exothermic reaction: ultraviolet (UV) radiation (i.e., sunlight), oxidizing agents (e.g., ozone, potassium permanganate, and chlorine), oxides of nitrogen, strong alkalis, strong acids, moisture, polymerization additives, organic peroxides, and metals including copper, aluminum, aluminum alloys.
- If Vinyl Chloride (VCM) is exposed to sunlight and oxygen, for example in a large vapor release incident, the vapor will break down (i.e., decompose) within a few days and result in the formation of other chemicals, such as hydrochloric acid, formaldehyde, and carbon dioxide. However, the decomposition reaction of vinyl chloride vapor with the atmosphere would not result in solid VCM peroxide. In addition, VCM can also decompose if exposed to ultraviolet (UV) radiation or excessive heat (beginning at 450°C (842°F)).
- Liquid Vinyl Chloride (VCM) will not react with gaseous oxygen alone. However, organic impurities will react with oxygen, which in turn can initiate a reaction between the VCM and impure oxygen to form a 1:1 low molecular weight oligomer known as VCM peroxide. VCM peroxide cannot initiate polymerization of VCM to Polyvinyl Chloride (PVC). However, if the VCM peroxide is concentrated or dried, it is heat and shock sensitive, which could result in an explosion risk.
Conditions to Avoid (e.g., static discharge, shock, or vibration):
- Electrostatic charges may build up during handling and may form ignitable vapor-air mixtures in storage containers. Ground equipment in accordance with industry standards and best practices such as NFPA 77 [Recommended Practices on Static Electricity (2024)] and American Petroleum Institute (API) RP Recommended Practice 2003 [Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents (API RP 2003 (R2020)]. Avoid air and sunlight. Avoid heat, flames, sparks, and other sources of ignition. Containers may rupture or explode if exposed to heat.
- Trace concentrations of Hydrogen Chloride (HCl) may be found in Vinyl Chloride (VCM). If HCl and water are present, the combination of these materials in VCM can cause corrosion of metals, such as iron, steel, copper, or aluminum. Precautions should be taken to ensure minimal exposure of process, transfer, and storage equipment to water to reduce the likelihood of corrosive effects to the equipment.
Incompatible Materials: Ultraviolet (UV) radiation (i.e., sunlight), oxidizing agents (e.g., ozone, potassium permanganate, and chlorine), oxides of nitrogen, strong alkalis, strong acids, moisture, polymerization additives, organic peroxides, and metals including copper, aluminum, aluminum alloys.
Hazardous Decomposition Products: Depending upon conditions, decomposition products may include Carbon Monoxide, Carbon Dioxide, Hydrogen Chloride (HCl), Phosgene, and Formaldehyde. More specifically around 450°C (842°F), Vinyl Chloride (VCM) begins to form small amounts of Acetylene. However, Vinyl Chloride will not decompose below this temperature if it is dry and in contact with metals. Excessive heat (beginning at 550°C (1,022°F)) will cause the decomposition of VCM, which begins a free-radical chain process, and the decomposition rate increases with increasing temperature. Once decomposition begins, Acetylene, Hydrogen Chloride, Chloroprene, and Vinylacetylene are formed in about 35% yield around 680°C (1,256°F).
Hazardous Polymerization: Polymerization can occur. However, polymerization is an exothermic reaction that requires a free radical initiator (a chemical compound that generates free radicals upon decomposition, which in turn may initiate radical reactions), such as peroxyester or peroxydicarbonate, that can synthesize VCM into solid polyvinyl chloride (PVC). VCM will not spontaneously polymerize to PVC without an initiator. For example, absent an initiator, VCM will not polymerize under high heat conditions only. However, if thermal decomposition of VCM is occurring due to excessive heat, free radicals are formed which could contribute to the initiation of polymerization.

SECTION 11. TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE AND POTENTIAL HEALTH EFFECTS:

ACUTE TOXICITY:

Eye contact: Causes eye irritation. Rapid evaporation of the material may cause frostbite.
Skin contact: Causes skin irritation. Rapid evaporation of the material may cause frostbite.
Inhalation: May cause respiratory tract irritation. Several minutes of exposure to high, but attainable concentrations (over 1000 ppm) may cause difficulty breathing, central nervous system depression and symptoms such as: ataxia or dizziness, drowsiness or fatigue, loss of consciousness, headache, euphoria and irritability, visual and or hearing disturbances, nausea,

memory loss. Prolonged, high concentration exposures may cause unconsciousness or death. Cardiac: Acute intoxication may cause irregular heartbeats.

Ingestion: Not a likely route of exposure in occupational settings.

CHRONIC TOXICITY:

Chronic Effects: Chronic exposure to Vinyl Chloride Monomer (VCM) may cause damage to the nervous system, respiratory system, musculoskeletal system, and lymphatic system. Occupational overexposure has produced a specific cancer (angiosarcoma of the liver) and is associated with hepatocellular cancer. Repeated prolonged exposure may damage: skin (scleroderma), bones (acro-osteolysis), blood vessels in the hands (Raynaud's Syndrome). Suspected of causing genetic defects. Reproductive effects and testes damage occurred in rats exposed to Vinyl Chloride. These endpoints, however, were generally noted at concentrations greater than those necessary to cause liver damage.

SIGNS AND SYMPTOMS OF EXPOSURE:

Inhalation (Breathing): Inhalation is the primary route of exposure, and Vinyl Chloride is readily absorbed from the lungs. Its odor threshold is too high to provide an adequate warning of hazardous concentrations. The odor of Vinyl Chloride becomes detectable at around 3,000 ppm and the OSHA PEL is 1 ppm (8-hour TWA). Therefore, workers can be overexposed to Vinyl Chloride without being aware of its presence. A 5-minute exposure to airborne concentrations of 8,000 ppm can cause dizziness. As airborne levels increase to 20,000 ppm, effects can include drowsiness, loss of coordination, visual and auditory abnormalities, disorientation, nausea, headache, and burning or tingling of the extremities. Exposure to higher concentrations of vinyl chloride for longer durations can cause death, presumably due to central nervous system (CNS) and respiratory depression. The gas is heavier than air and can cause asphyxiation in poorly ventilated or enclosed spaces.

Skin: Exposure to escaping compressed gas or liquid can cause frostbite injury with redness, blistering, and scaling. Contact dermatitis has also been reported.

Eye: Exposure to escaping compressed gas or liquid can cause frostbite injury with corneal and conjunctival irritation or burns. High concentrations of vapor can cause eye irritation. Direct ocular exposure to Vinyl Chloride vapor can cause localized burns or irritation of the conjunctiva and cornea.

Ingestion (Swallowing): May be harmful is swallowed; however, ingestion of Vinyl Chloride is unlikely because it is a gas at room temperature. Small amounts can dissolve in other liquids, but in such small concentrations that acute toxicity is unlikely. No significant Vinyl Chloride exposure is expected from ingestion of drinking water.

Other Health Effects: Narcotic Effects (Central Nervous System Depression): Ataxia or dizziness, drowsiness or fatigue, loss of consciousness, headache, euphoria and irritability, visual or hearing disturbances, nausea, memory loss.

Interaction with Other Chemicals Which Enhance Toxicity: Alcohol may enhance toxic effects.

TOXICITY DATA:

PRODUCT TOXICITY DATA: Product level acute toxicity data for purposes of GHS classifications.

LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
> 4,000 mg/kg oral-rat LD50	-----	195 mg/L (4 hr - Rat)

COMPONENT TOXICITY DATA: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given

Component	Oral LD50	Dermal LD50	Inhalation LC50
Vinyl Chloride 75-01-4	500 mg/kg (Rat)	No data available	390 mg/L (2-hour Rat)

SKIN/EYE CORROSION: Liquid Vinyl Chloride may freeze tissue and produce a chemical burn as it evaporates, causing damage to the underlying tissue.

SKIN ABSORBENT/DERMAL ROUTE: NO.

As Vinyl Chloride is a gas, the dermal route of exposure is considered not to be relevant for human exposure and the performance of conventional studies via these routes is not necessary.

RESPIRATORY OR SKIN SENSITIZATION: Not classified as a skin or respiratory sensitizer per GHS criteria.

CARCINOGENICITY: Classified as Category 1A (May cause cancer) under GHS criteria. The development of cancer in humans as a result of Vinyl Chloride exposure has been demonstrated in a number of studies of workers in the Vinyl Chloride production industry. The strongest evidence is for liver angiosarcoma; however, other liver tumors, including hepatocellular carcinoma and cholangiocellular carcinoma, have also been associated with occupational exposure to Vinyl Chloride. Data from studies in rats, mice, and hamsters support the conclusion that Vinyl Chloride is carcinogenic. Several tumor types were observed in animal studies, including hemangiosarcoma in liver, skin, and spleen, stomach angiosarcoma, mammary gland carcinoma, Zymbal's gland carcinoma, and nephroblastoma.

Component	NTP:	IARC (GROUP 1):	IARC (GROUP 2):	OSHA:	ACGIH (American Conference of Governmental Industrial Hygienists)	NIOSH - Pocket Guide - Carcinogens
Vinyl Chloride	Yes (Known Human Carcinogen)	Group 1	Not listed	Listed	A1 - Known Human Carcinogen	Potential occupational carcinogen

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):
Category 3 - May cause drowsiness or dizziness: The main effect of acute exposure to vinyl chloride is on the central nervous system causing headache, vertigo, drowsiness, disorientation, nausea, burning of extremities, dizziness, ataxia and narcotic effects at higher concentrations. Category 3 - May cause respiratory irritation: Acute inhalation of vinyl chloride may cause respiratory tract irritation, wheezing, chemical bronchitis and respiratory depression. Such effects are usually transient and resolve when exposure is removed. Exposure to vinyl chloride may also lead to Reactive Airway Dysfunction Syndrome (RADS), a chemical-induced type of asthma.
SPECIFIC TARGET ORGAN TOXICITY (Repeated or Prolonged Exposure):
Category 1 - Causes damage to the hepatic system (liver), respiratory system, musculoskeletal system, nervous system, and lymphatic system through prolonged or repeated exposure by inhalation: Chronic or repeated inhalation of Vinyl Chloride in humans can cause a range of health effects. Key symptoms include scleroderma-like changes in the fingers, bone changes (such as acro-osteolysis), and Raynaud's phenomenon. Prolonged exposure is associated with liver toxicity (including hepatomegaly, fibrosis, and portal hypertension) and respiratory issues (such as emphysema, reduced lung volume, pulmonary fibrosis, and shortness of breath), though some studies suggest a lower mortality rate from respiratory diseases. Category 1 - Causes damage to the musculoskeletal system through prolonged or repeated exposure by dermal route: Workplace skin contact may occasionally result in scleroderma-like skin changes, particularly among those with Raynaud's phenomenon, along with increased collagen in the skin.
INHALATION HAZARD: Inhalation is identified as the primary exposure route for Vinyl Chloride. Acute studies in animals (rats, mice, rabbits, and guinea pigs) indicate an LC50 of 390,000 mg/m^3 for rats after up to 2 hours of exposure, with symptoms including excitement, convulsions, respiratory distress, and organ congestion. Using time extrapolation (modified Haber's law), the 4-hour LC50 for rats is recalculated as 195,000 mg/m^3 (195 mg/L or 195 ppm). Inhalation is identified as the primary exposure route for Vinyl Chloride. Acute studies in animals (rats, mice, rabbits, and guinea pigs) indicate an LC50 of 390,000 mg/m^3 for rats after up to 2 hours of exposure, with symptoms including excitement, convulsions, respiratory distress, and organ congestion. Using time extrapolation (modified Haber's law), the 4-hour LC50 for rats is recalculated as 195,000 mg/m^3 (195 mg/L or 195 ppm). The liver and immune system are the most sensitive targets of Vinyl Chloride acute inhalation exposure. The Lowest Observed Adverse Effect Level (LOAEL) for inhalation exposure for all health effects in animals are 500 ppm for developmental effects; 2,500 ppm for hepatic effects; and 25,000 ppm for neurological effects. The LOAEL for neurological effects in humans is 12,000 ppm.
INGESTION HAZARD: There is no available data on chronic health effects from ingestion in humans. As Vinyl Chloride is a gas, the oral route of exposure is not relevant for human exposure and the performance of conventional studies via this route is not necessary.
IN-VITRO / IN-VIVO GENOTOXICITY: Classified as Category 2 (Suspected of causing genetic defects) under GHS criteria. Vinyl Chloride is recognized as both mutagenic and clastogenic, with studies showing it can damage DNA and cause chromosomal changes in both in vitro and in vivo models. Its metabolites contribute to genotoxicity by forming DNA adducts and causing gene mutations, notably in ras and p53 genes. Human studies, especially in workers exposed to high levels, indicate increased rates of chromosomal aberrations and other genetic markers of damage, some of which may reverse when exposure ceases. Genetic susceptibility and specific gene polymorphisms can influence the extent of harm. Animal research suggests younger subjects are more vulnerable. Overall, Vinyl Chloride is a potent genotoxic substance, and its effects are influenced by both exposure levels and individual genetic factors.

REPRODUCTIVE TOXICITY: Not classified as a reproductive toxin per GHS criteria. Human studies have not demonstrated a clear association between Vinyl Chloride exposure and reproductive or developmental toxicity. Some occupational studies reported sexual performance issues among exposed workers, but these findings are limited by poor exposure quantification and lack of proper control groups. In animal studies, well-conducted two-generation rat studies showed no reproductive or developmental toxicity at exposure levels up to 1,100 ppm, with developmental effects only observed at concentrations causing maternal toxicity. Additional animal research found some testicular effects at certain exposure levels, but results were inconsistent and sometimes limited by methodological concerns. Overall, current evidence suggests that Vinyl Chloride does not cause reproductive toxicity in humans, and animal effects are generally seen only at high exposures that also affect maternal health.
DEVELOPMENTAL TOXICITY: Not classified as a developmental toxin per GHS criteria. A 2-generation reproduction and developmental toxicity study in rats found no maternal or developmental toxicity at a 10-ppm exposure to Vinyl Chloride (Huntington Life Sciences Chemical Manufacturing Association (CMA) sponsored 1998 study). At 100 ppm, the only observed maternal effect was increased kidney weight, and at 1,100 ppm, both kidney and liver weights increased. No developmental toxicity was detected at any exposure level. Other animal studies indicate developmental effects from acute inhalation exposures, with delayed ossification being the most sensitive endpoint in mice. Human data are limited and do not show a clear association between Vinyl Chloride exposure and developmental effects such as neural tube defects, oral clefts, or autism spectrum disorder. While some early ecological studies reported links to fetal loss and central nervous system defects, most later studies failed to confirm these associations. In animal research, high gestational exposures resulted in certain developmental changes, but no adverse effects were observed in rats exposed up to 1,100 ppm. Overall, animal studies suggest developmental effects only at exposures that also cause maternal toxicity, and human evidence remains inconclusive.
ASPIRATION HAZARD: Not classified as an aspiration hazard per GHS criteria.
TOXICOKINETICS: Human and animal studies indicate that Vinyl Chloride is rapidly absorbed through the lungs by inhalation and almost completely absorbed from the gastrointestinal tract after oral exposure, while dermal absorption is minimal. Quantitative toxicokinetic information for humans is limited, with most data coming from animal studies, especially rats and primates. Distribution in animals is widespread but not persistent due to rapid metabolism and excretion, with metabolites appearing in various tissues but not accumulating after repeated exposure. Vinyl Chloride can cross the placenta in rats. Metabolism in both humans and animals primarily involves oxidation by cytochrome P450 enzymes to form reactive intermediates, which are detoxified via glutathione conjugation and excreted in urine. Metabolism exhibits Michaelis-Menten kinetics, with enzyme saturation occurring at higher doses. At low exposures, metabolites are mainly eliminated in urine, but at higher exposures, unmetabolized Vinyl Chloride may be exhaled.
METABOLISM: Vinyl Chloride is metabolized in the liver, primarily by cytochrome P450 (CYP) enzymes, leading to the formation of reactive intermediates such as 2-chloroethylene oxide and 2-chloroacetaldehyde. These intermediates can either be detoxified through glutathione conjugation and excreted in urine as various metabolites or further processed by enzymes like epoxide hydrolase and mitochondrial aldehyde dehydrogenase (ALDH2). Animal studies, mainly in rats, show that metabolism is similar for both inhalation and oral exposures and follows Michaelis-Menten kinetics, with saturation occurring at higher exposure levels (near 100–250 ppm in rats, 200 ppm in monkeys). The main metabolic pathway involves oxidation by CYP2E1, and inhibition of these enzymes blocks metabolism. At low exposures, polar urinary metabolites predominate, while at high exposures, 2-chloroacetic acid is also detected. Metabolic saturation is observed at higher exposures, and kinetic values (Vmax and Km) have been quantified in both rats and monkeys, with monkey data considered more representative of human metabolism. Additionally, reactive intermediates can bind to liver macromolecules, including DNA, RNA, and proteins, with the extent of binding increasing with exposure and repeated dosing. This binding may contribute to the compound’s toxicity. Overall, the metabolic fate of vinyl chloride is characterized by rapid oxidation, detoxification through conjugation, and excretion in urine, with the potential for saturation and macromolecular binding at higher doses.
BIOLOGICAL DISTRIBUTION: See Toxicokinetics above.
PATHOGENICITY AND ACUTE INFECTIOUSNESS (ORAL, DERMAL, AND INHALATION): Not applicable.
ENDOCRINE DISRUPTOR: Studies of humans exposed to Vinyl Chloride, particularly workers in Polyvinyl Chloride (PVC) manufacturing, have found thyroid insufficiency among those presenting with scleroderma. In animal research, short-term, high-concentration Vinyl Chloride exposure did not result in noticeable adrenal damage in guinea pigs or changes in adrenal weights in immunized rabbits. However, long-term exposure in rats led to the development of colloid goiter and a significant increase in perifollicular cells, indicating possible thyroid effects. Vinyl Chloride is listed on The Endocrine Disruptors Exchange's (TEDX) List of Potential Endocrine Disruptors database of chemicals with the potential to affect the endocrine system. Every chemical on the TEDX List has one or more verified citations published, accessible, primary scientific research demonstrating effects on the endocrine system.
NEUROTOXICITY: Exposure to Vinyl Chloride through inhalation is linked to a range of neurological symptoms in humans, including dizziness, drowsiness, fatigue, headaches, euphoria, irritability, nervousness, sleep disturbances, nausea, and sensory disturbances. Severe exposure may result in loss of consciousness and, in some cases, pyramidal and cerebellar disturbances.

High concentrations can cause acute symptoms such as dizziness, nausea, and headaches. Peripheral effects include paresthesia, tingling, numbness, pain in the fingers, and reduced reflexes. Animal studies with acute inhalation exposures have shown effects such as ataxia, decreased coordination and reflexes, twitching, tremors, and unconsciousness.
IMMUNOTOXICITY: Immunological effects are a suspected health effect based on an increase in circulating immune complexes, immunoglobulins, complement factors, and levels of inflammatory cytokines in occupational worker studies. Limited evidence in animal studies includes increases in spleen weight and spontaneous and mitogen-stimulated lymphocyte proliferation.
Health Hazards Not Otherwise Classified (HNOC) or Mentioned in GHS/CLP Classification Repeat occupational exposure to Vinyl Chloride have been associated with Raynaud syndrome and associated scleroderma-like skin changes on the hands. Direct contact with liquid or rapidly expanding gas may cause frostbite to contacted tissue (eyes, skin, etc.). May displace oxygen and cause rapid suffocation.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY (EC, IC, and LC):

Aquatic Toxicity:
This material is believed to be practically non-toxic to fish on an acute basis (LC50>100 mg/L).

FATE AND TRANSPORT:

PERSISTENCE: Vinyl Chloride is considered to have limited persistence in the environment due to its physical and chemical properties, as well as its tendency to undergo various degradation and removal processes in air, water, soil, and sediment. Specifically, Vinyl Chloride is not highly persistent in the environment due to its rapid volatilization from air, water, and soil, and its susceptibility to degradation under both aerobic and certain anaerobic conditions. However, in situations where volatilization is hindered, such as in groundwater or in the presence of organic solvents, Vinyl Chloride may persist longer until conditions become favorable for biodegradation or physical removal. Tropospheric half-life is estimated to be 23 hours. If released to air, this material will remain in the gas phase. If released to soil, volatilization will occur, but material that does not volatilize may be highly mobile. If released to water, evaporation will occur.
BIODEGRADATION: Biodegradation plays a key role in transforming Vinyl Chloride in water and soil, occurring under both aerobic and anaerobic conditions with varying rates and mechanisms. In aquatic environments, Vinyl Chloride can degrade via anaerobic reductive dichlorination to ethene, anaerobic oxidation to CO_2, or aerobic transformation to CO_2. Aerobic degradation is typically faster, with certain bacteria such as Rhodococcus and Mycobacterium vaccae able to mineralize Vinyl Chloride efficiently. Anaerobic processes are slower unless enhanced by specific microbial communities like methanogenic or iron-reducing bacteria. In soils, both aerobic and anaerobic biodegradation occur, but effectiveness depends on factors including oxygen levels, organic solvents, and microbial populations. Overall, Vinyl Chloride degrades more rapidly under aerobic, methanotrophic, or iron-reducing conditions, while less favorable environments lead to slower breakdown.
BIOCONCENTRATION: Vinyl Chloride exhibits a low bioconcentration potential in aquatic organisms, as evidenced by its bioconcentration factor (BCF) values. The BCF quantifies the extent to which a substance accumulates in an organism relative to its environment. For Vinyl Chloride, the BCF is estimated to be less than 10 in fish, indicating minimal accumulation in these higher organisms. In algae, the BCF is moderately higher at 40, while activated sludge shows a much greater BCF of 1,100, suggesting that certain microorganisms may concentrate Vinyl Chloride more efficiently. However, the low BCF value in fish compared to algae and activated sludge implies that more developed organisms possess effective detoxification mechanisms, reducing the likelihood of significant accumulation. Overall, these BCF measurements demonstrate that Vinyl Chloride does not readily bioconcentrate in aquatic food chains, and its tendency to accumulate in living tissues is limited.
BIOACCUMULATIVE POTENTIAL: Vinyl Chloride has a low bioaccumulative potential in aquatic organisms and food chains. This is primarily due to its physical and chemical properties, notably its low octanol/water partition coefficient (log Kow of 1.23), which indicates a limited tendency to accumulate in living tissues. Experimental studies support this, with measured bioconcentration factors (BCFs) for Vinyl Chloride being very low in fish (BCF <10), moderate in algae (BCF = 40), and higher in activated sludge (BCF = 1,100). The relatively low BCF in fish, especially when compared to algae and activated sludge, suggests that more highly developed organisms may have efficient detoxification mechanisms to prevent accumulation of vinyl chloride. Additionally, the high volatility of Vinyl Chloride further limits its bioaccumulation, as the compound tends to volatilize from water before significant uptake can occur. Studies using a closed model aquatic ecosystem showed that Vinyl Chloride did not bioaccumulate in aquatic food chains, and tissue concentrations in fish remained low. Overall, the evidence indicates that Vinyl Chloride is not likely to bioaccumulate or bioaccumulate to a significant extent in aquatic environments or organisms.
MOBILITY IN SOIL: Vinyl Chloride moves easily through soil because it volatilizes quickly, dissolves in water, and has a low

tendency to bind with soil particles (Koc 240–890). This makes it likely to reach groundwater. Its mobility increases when organic solvents are present, as co-solvation reduces volatility and enhances migration, raising the risk of groundwater contamination.

ADDITIONAL ECOLOGICAL INFORMATION:

Persistent, Bioaccumulative, and Toxic (PBT) and Very Persistent and Very Bioaccumulative (vPvB) Assessment: Not applicable.

PBT and vPvB assessment: This substance does not meet the criteria to be considered PBT/vPvB.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from material:
Reuse or reprocess, if possible. May be subject to disposal regulations. Dispose in accordance with all applicable regulations. Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste number U043 and D043, must conform with EPA regulations in storage, transportation, treatment and disposal of waste. See 40 CFR 240-280, 300-306, 702-799. If the material is to be incinerated, the chemical incinerator must be equipped with an afterburner (to assure complete combustion to prevent the formation of phosgene) and an acid scrubber (to remove the halo acids produced).

Container Management:
Refer to manufacturer/supplier for information on recovery/recycling. Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

Contaminated Material:
Contaminated material must be disposed of in a permitted waste management facility.

SECTION 14. TRANSPORT INFORMATION

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:

UN NUMBER:	UN1086
PROPER SHIPPING NAME:	Vinyl chloride, stabilized
HAZARD CLASS/ DIVISION:	2.1
LABELING REQUIREMENTS:	2.1
RQ (Lbs.):	RQ 1 Lbs. (Vinyl chloride)
Special provisions for transport:	21, 387, B44, N86, T50
Packaging Exceptions	306
Non-bulk Packaging:	304
Bulk Packaging:	314, 315
*** NOTE:**	Stabilized Vinyl Chloride is not expected to polymerize (See Section 10)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

UN NUMBER:	UN1086
SHIPPING NAME:	Vinyl chloride, stabilized
CLASS OR DIVISION:	2.1
LABELING REQUIREMENTS:	2.1
RQ (Lbs.):	RQ 1 Lbs. (Vinyl chloride)

MARITIME TRANSPORT (IMO / IMDG)

UN NUMBER:	UN1086
PROPER SHIPPING NAME:	Vinyl chloride, stabilized

HAZARD CLASS / DIVISION: 2.1
LABELING REQUIREMENTS: 2.1

AIR TRANSPORT (ICAO / IATA)

Status - ICAO/IATA: Regulated
Special Instructions CAO: IATA Certificate for shipping personnel is required

SECTION 15. REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:
Health hazard classifications were performed using OSHA Hazard Communication 2024 (1910.1200) Appendix A and/or UN GHS Rev. 8 (2019). This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Component	U.S. DOT Hazardous Substances/ RQs	CERCLA Hazardous Substances / RQs	CERCLA Section 302 EHS EPCRA RQs	Section 302 Threshold Planning Quantity (TPQ)
Vinyl Chloride 75-01-4 (99 - 100 %)	1 lb. (RQ)	1 lb. (RQ)	Not listed	Not Listed

SARA EHS Chemical (40 CFR 355.30)
Not regulated.

SARA HAZARD CATEGORIES ALIGNED WITH GHS (2018):
Physical Hazard - Flammable (gases, aerosols, liquids, or solids). Physical Hazard - Gas Under Pressure. Health Hazard - Carcinogen. Health Hazard - Germ Cell Mutagenicity. Health Hazard - Specific Target Organ Toxicity (STOT) Single Exposure (SE). Health Hazard - Specific Target Organ Toxicity (STOT) Repeat Exposure (RE). Health Hazard - Simple Asphyxiant.

EPCRA SECTION 313 (40 CFR 372.65):
The following chemicals are listed in 40 CFR 372.65 and may be subject to Community Right-to Know Reporting requirements.

Component	SARA 313 - Emission Reporting	SARA 313 PBT
Vinyl Chloride 75-01-4 (99 - 100)	0.1% (de minimis concentration)	Not Listed

DEPARTMENT OF HOMELAND SECURITY (DHS)- Chemical Facility Anti-Terrorism Standards (6 CFR 27):
This product is regulated under the U.S. Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) as follows:. - DHS - Security Issue. - DHS - Release Screening Threshold Quantity. - DHS - Release Min. Concentration.

Component	DHS - Security Issues	DHS-Sabotage Screening Threshold Qnty.	DHS-Sabotage Min. Conc.	DHS-Theft Screening Threshold Qnty.	DHS-Theft Min. Conc.	DHS-Release Screening Threshold Qnty.	DHS-Release Min. Conc.	CWC Toxic Chemicals:
Vinyl Chloride 75-01-4 (99 - 100)	Release - Flammable	Not Listed	Not Listed	Not Listed	Not Listed	10000 lbs. STQ	1.0% Minimum Concentration	Not Listed

OSHA SPECIFICALLY REGULATED SUBSTANCES:
OSHA 29 CFR 1910.1017 (Vinyl chloride); The U.S. Department of Labor, Occupational Safety and Health Administration specifically regulates manufacturing, handling and processing of vinyl chloride. Such regulations have been published at 29 CFR 1910.1017.

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):
The PSM standard may apply to processes which involve a flammable liquid or gas in a quantity of 10,000 pounds (4535.9 kg) or more.

Component	EPA RMP Toxic or Flammable TPQ	PSM - Highly Hazardous Substances, Toxics and Reactives	Flash Point

Vinyl Chloride 75-01-4 (99 - 100)	Flammable (10000 lbs. threshold quantity)	Not Listed	78° C open cup

EPA'S CLEAN WATER AND CLEAN AIR ACTS:
Regulated as noted in table below.

Component	Clean Water Act - Priority Pollutants	CAA - ODS CLASS 1 AND CLASS 2	CAA - Volatile Organic Compounds (VOCs) in SOCMI	CAA - HON Rule - Organic HAPs	CAA - Hazard Air Pollutants	CAA - Urban HAPs List (Integrated Urban Strategy)	SNAP - Substitutes for ODS	EPA RMP Toxic or Flammable TPQ
Vinyl Chloride 75-01-4 (99 - 100 %)	Present	Not Listed	Present	Present	Present	Present	Not Listed	Flammable (10000 lb threshold quantity)

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA):

Component	TSCA Inventory	TSCA ACTIVE LIST	TSCA 12(b)	TSCA/Section 4	TSCA/Section 5	TSCA/Section 6	TSCA/Section 8
Vinyl Chloride 75-01-4 (99 - 100 %)	Listed	ACTIVE	Not Listed	Not listed	Not Listed	Chemical Subject to Risk Evaluation	Listed

Canadian Chemical Inventory:
All components of this product are listed on either the DSL or the NDSL.

Component	DSL	NDSL
Vinyl Chloride 75-01-4 (99 - 100)	Listed	Not Listed

STATE REGULATIONS

California Proposition 65:
This product contains a chemical known to the State of California to cause cancer, and/or birth defects, and/or other reproductive harm as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact OxyChem Technical Services. Proposition 65 regulations should be consulted regarding warning requirements, if any, for the final product and whether any exposures to listed chemicals would be within a safe level (i.e., a No Significant Risk Level or NSRL for carcinogens, and/or a Maximum Allowable Dose Level or MADL for reproductive toxins).

Component	U.S. - California - Proposition 65 - Carcinogens List	CA. Prop. 65 Teratogen	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	Rhode Island Right to Know Hazardous Substance List
Vinyl Chloride 75-01-4 (99 - 100 %)	Listed	Not listed	Not Listed	Not Listed	Listed	Not Listed

Component	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List
Vinyl Chloride	2001	Carcinogen; flammable - fourth degree; mutagen	Listed	Listed	Pennsylvania Right to Know Special Hazardous Substances	Environmental hazard

CANADIAN REGULATIONS

CANADIAN REGULATIONS

This product has been classified in accordance with the hazard criteria of the Workplace Hazardous Materials Information System (WHMIS 2015) which includes the amended Hazardous Products Act (HPA) and the Hazardous Product Regulations (HPR).

Canadian Federal Regulation Status:

The component(s) in this product formulation are listed on Canadian Domestic Substance List (either DSL/NDSL). The component(s) information is listed below:.

Component	Canada - CEPA - Schedule I - List of Toxic Substances	Canada - NPRI	Canada - CEPA - Greenhouse Gases (GHG) Subject to Mandatory Reporting	Canadian Chemical Inventory:	NDSL
Vinyl Chloride 75-01-4 (99 - 100)	Part 2 (2.007) Part 2 (2.060)	Part 1, Group A Substance (179)	Not Listed	Listed on inventory	Not Listed

SECTION 16. OTHER INFORMATION

Prepared by: Occidental Chemical Corporation - HES&S Product Stewardship Department
Rev. Date: 19-May-2026
Reason for Revision:
• Scheduled review
• Incorporated changes made to the Chlorine Institute Pamphlet 171 as it relates to OSHA covered operations
• SDS format adopts revisions to the Hazardous Products Regulations (HPR) to include revisions to “Section 9: Physical and chemical properties” and ensures classification with at a minimum the seventh revised edition of GHS and certain elements from the eighth revised edition (Revision 8)
• SDS format adopts revisions to the OSHA's 2024 Hazard Communication Rule 29CFR 1910.1200 and ensures classification with at a minimum the seventh revised edition of GHS and certain elements from the eighth revised edition (Revision 8)

IMPORTANT: Important: The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our current 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, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal, and other factors that may involve other or additional legal, environmental, safety or performance considerations, and Occidental Chemical Corporation assumes no liability whatsoever for the use of or reliance upon this information. Appropriate handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal, State, local or foreign laws

OSHA Statement OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees.

End of Safety Data Sheet