

SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.2
Creation Date: July 15, 2019
Revision Date: August 08, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name 1,1-Dichloroethene

1.2 Other means of identification

Product number CCEM500011

Other names 1,1-Dichloroethene; VINYLIDENE CHLORIDE; Ethene, 1,1-dichloro-

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.

Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.

Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou

Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175

Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Flammable liquids, Category 1

Acute toxicity - Category 4, Inhalation

Carcinogenicity, Category 2

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H224 Extremely flammable liquid and vapour

H332 Harmful if inhaled

H351 Suspected of causing cancer

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.

P240 Ground and bond container and receiving equipment.

P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.

P242 Use non-sparking tools.

P243 Take action to prevent static discharges.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P203 Obtain, read and follow all safety instructions before use.

Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. P370+P378 In case of fire: Use ... to extinguish. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P317 Get medical help. P318 IF exposed or concerned, get medical advice.
Storage	P403+P235 Store in a well-ventilated place. Keep cool. P405 Store locked up.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
1,1-Dichloroethene	1,1-dichloroethylene	75-35-4	200-864-0	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer immediately for medical attention.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible).

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

4.2 Most important symptoms/effects, acute and delayed

Vapor can cause dizziness and drunkenness; high levels cause anesthesia. Liquid irritates eyes and skin. (USCG, 1999)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Chlorinated fluorocarbons (CFCs) and related compounds

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Use dry chemical, foam, carbon dioxide, or water spray. Use water spray to keep fire-exposed containers cool. Use flooding quantities of water. Fight fire from protected location or maximum possible distance. Vinylidene chloride, inhibited

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic hydrogen chloride and phosgene are generated in fires. Behavior in Fire: May explode in fire due to polymerization. Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Remove all ignition sources. Consult an expert! Personal protection: filter respirator for organic vapours of low boiling point adapted to the airborne concentration of the substance. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Evacuate danger area! Remove all ignition sources. Consult an expert! Personal protection: filter respirator for organic vapours of low

boiling point adapted to the airborne concentration of the substance. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Land spill: Dig a pit, pond, lagoon, or holding area to contain liquid or solid material. /SRP: If time permits, pits, ponds, lagoons, soak holes, or holding areas should be sealed with an impermeable flexible membrane liner. / Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash, cement powder, sawdust, or commercial sorbents. Apply appropriate foam to diminish vapor and fire hazard. Vinylidene chloride, inhibited

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Use non-sparking handtools. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Store only if stabilized. Fireproof. Keep in the dark. Cool. Separated from incompatible materials. See Chemical Dangers. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing. PROTECT AGAINST PHYSICAL DAMAGE. OUTSIDE OR DETACHED STORAGE IS PREFERABLE. INSIDE STORAGE SHOULD BE IN STD FLAMMABLE LIQUIDS STORAGE ROOM OR CABINET. SEPARATE FROM OXIDIZING MATERIALS.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 5 ppm as TWA; A4 (not classifiable as a human carcinogen). MAK: 8.0 mg/m³, 2 ppm; peak limitation category: II(2); carcinogen category: 3B; pregnancy risk group: C. EU-OEL: 8 mg/m³, 2 ppm as TWA; 20 mg/m³, 5 ppm as STEL

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety spectacles or eye protection in combination with breathing protection.

Skin protection

Protective gloves.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid.
Colour	Colorless.
Odour	Mild, sweet odor resembling that of chloroform
Melting point/freezing point	-122.6 °C.
Boiling point or initial boiling point and boiling range	31.7 °C. Atm. press.: 760 mm Hg.
Flammability	Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 6.5% by volume; Upper flammable limit: 15.5% by volume
Flash point	-28 °C.
Auto-ignition temperature	570 °C. Remarks: Not measured/tested.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	dynamic viscosity (in mPa s) = 0.448. Temperature: -20.0°C.; dynamic viscosity (in mPa s) = 0.394. Temperature: 0.0°C.; dynamic viscosity (in mPa s) = 0.33. Temperature: 20°C.
Solubility	5 to 10 mg/mL at 70° F (NTP, 1992)
Partition coefficient n-octanol/water	log Pow = 2.12. Remarks: No temperature or pH provided.

Vapour pressure	102.7 hPa. Temperature:-20 °C.;286.6 hPa. Temperature:0 °C.;665 hPa. Temperature:20 °C.
Density and/or relative density	1.21 g/cm ³ . Temperature:20 °C.
Relative vapour density	3.46 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

NIOSH considers vinylidene chloride to be a potential occupational carcinogen.

The substance can readily form explosive peroxides. The substance readily polymerizes due to heating or under the influence of oxygen, sunlight, copper or aluminium. This generates fire or explosion hazard. May explode on heating or on contact with flames. Decomposes on burning. This produces toxic and corrosive fumes of hydrogen chloride and phosgene. Reacts violently with oxidants.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

Flammable liquidThe vapour is heavier than air and may travel along the ground; distant ignition possible. Vapours are uninhibited and may polymerize, causing blockage of vents.Peroxidizable monomer, such as VINYLIDENE CHLORIDE, may initiate exothermic polymerization of the bulk material [Bretherick 1979, p. 160, 187]. Mixing vinylidene chloride in equal molar portions in a closed container with any of the following substances caused the temperature and pressure to increase: chlorosulfonic acid, nitric acid, or oleum [NFPA 1991]. Its reaction products with ozone are particularly dangerous [Dow Chemical, 1968]. This may extend to other powerful oxidants, as various peroxides are produced.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

At ambient temp, perchloryl fluoride is unreactive with 1,1-dichloroethylene, but reaction is explosive at 100-300 deg C, or if the mixture is ignited.

10.6 Hazardous decomposition products

When not stabilized, decomp in air into chlorine, hydrogen chloride, phosgene, & formaldehyde & white polymeric powder

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Mouse oral approx 200 mg/kg
- Inhalation: LC50 Rat (nonfasted) inhalation 10000-15000 ppm/4 hr
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Evaluation: There is inadequate evidence in humans for the carcinogenicity of vinylidene chloride. There is limited evidence in experimental animals for the carcinogenicity of vinylidene chloride. Overall evaluation: Vinylidene chloride is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

No studies were located regarding developmental or reproductive effects in humans. Birth defects were noted in the offspring of pregnant rats and mice that had been exposed to vinylidene chloride in air. In this study, maternal toxicity was observed at developmentally toxic concentrations.

STOT-single exposure

The substance is mildly irritating to the eyes and upper respiratory tract. Exposure far above the OEL could cause lowering of consciousness.

STOT-repeated exposure

The substance may have effects on the kidneys and liver. This may result in liver function impairment and kidney impairment. Tumours have been detected in experimental animals but may not be relevant to humans.

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC10 - Pimephales promelas - 92.6 mg/L - 3 d.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 37 mg/L - 48 h.
- Toxicity to algae: EC50 - Chlamydomonas reinhardtii - 9.12 mg/L - 72 h.
- Toxicity to microorganisms: EC10 - Pseudomonas putida - > 2 000 mg/L - 17 h.

12.2 Persistence and degradability

AEROBIC: 1,1-Dichloroethylene, present at 9.7 mg/L, reached 0% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 2 mg/L and the Closed Bottle Test(1). In another study, 45-78% of the chemical was lost in 7 days when incubated with a wastewater inoculum; however, a sizeable fraction of the loss was due to volatilization(2). 97% of 1,1-dichloroethylene was reported to be removed in a municipal wastewater plant(3). 1,1-Dichloroethylene at a concn of 160 ug/L was degraded using continuous mixed, batch-fed reactors at a 20-day operating solids retention time(4). 1,1-Dichloroethylene had a biodegradation half-life of 1.25 yrs in ground water from a former manufacturing facility in NJ(5).

12.3 Bioaccumulative potential

BCFs of 2.5 to 6.4 and <13 were measured for 1,1-dichloroethylene at concentrations of 0.5 and 0.05 mg/L, respectively(1). According to a classification scheme(2), these BCF values suggest bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

The Koc for 1,1-dichloroethylene has been measured as 64(1) and 65(2). According to a classification scheme(3), this Koc value suggests that 1,1-dichloroethylene is expected to have high mobility in soil. A Koc of 293 was measured in sewage solids(4).

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN1303 (For reference only, please check.) IMDG: UN1303 (For reference only, please check.) IATA: UN1303 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: VINYLIDENE CHLORIDE, STABILIZED (For reference only, please check.) IMDG: VINYLIDENE CHLORIDE, STABILIZED (For reference only, please check.) IATA: VINYLIDENE CHLORIDE, STABILIZED (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.) IMDG: 3 (For reference only, please check.) IATA: 3 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: I (For reference only, please check.) IMDG: I (For reference only, please check.) IATA: I (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No IMDG: No IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
1,1-dichloroethylene	1,1-dichloroethylene	75-35-4	200-864-0
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
Revision Date August 08, 2025

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Depending on the degree of exposure, periodic medical examination is suggested. An added stabilizer or inhibitor can influence the toxicological properties of this substance; consult an expert. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding.

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.