



SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

SECTION 1: Identification

1.1 GHS Product identifier

Product name 1,3-dichloropropene

1.2 Other means of identification

Product number -
Other names E/Z-1,3-Dichloropropene; 1,3-dichloropropane; 1,3-Dichloropropene

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.
Uses advised against no data available

1.4 Supplier's details

Company Shanghai Yien Chemical Technology Co., Ltd
Address Building 6, 28 Yingong Road, Fengxian District, Shanghai
Chemical Industry Zone, Shanghai, 201400, China
Telephone +86-400-133-2688

1.5 Emergency phone number

Emergency phone number +86-400-133-2688
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 3
Acute toxicity - Category 3, Oral
Acute toxicity - Category 3, Dermal
Skin irritation, Category 2
Eye irritation, Category 2
Skin sensitization, Category 1
Acute toxicity - Category 4, Inhalation
Aspiration hazard, Category 1
Specific target organ toxicity – single exposure, Category 3
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word	Danger
Hazard statement(s)	<p>H226 Flammable liquid and vapour H301 Toxic if swallowed H311 Toxic in contact with skin H315 Causes skin irritation H319 Causes serious eye irritation H317 May cause an allergic skin reaction H332 Harmful if inhaled H304 May be fatal if swallowed and enters airways H335 May cause respiratory irritation H410 Very toxic to aquatic life with long lasting effects</p>
Precautionary statement(s)	
Prevention	<p>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/... P264 Wash ... thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P272 Contaminated work clothing should not be allowed out of the workplace. P271 Use only outdoors or in a well-ventilated area. P273 Avoid release to the environment.</p>
Response	<p>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. P301+P316 IF SWALLOWED: Get emergency medical help immediately. P321 Specific treatment (see ... on this label). P330 Rinse mouth. P302+P352 IF ON SKIN: Wash with plenty of water/... P316 Get emergency medical help immediately. P361+P364 Take off immediately all contaminated clothing and wash it before reuse. P332+P317 If skin irritation occurs: Get medical help. P362+P364 Take off contaminated clothing and wash it before reuse. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P333+P317 If skin irritation or rash occurs: Get medical help. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P317 Get medical help. P331 Do NOT induce vomiting. P319 Get medical help if you feel unwell. P391 Collect spillage.</p>

Storage	P403+P235 Store in a well-ventilated place. Keep cool. P405 Store locked up. P403+P233 Store in a well-ventilated place. Keep container tightly closed.
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
1,3-dichloropropene	1,3-dichloropropene	542-75-6	208-826-5	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

Wear protective gloves when administering first aid. Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Give one or two glasses of water to drink. Do NOT induce vomiting. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include local irritation of the eyes skin and respiratory tract, dermatitis, gasping, coughing, substernal pain, extreme respiratory distress, lacrimation, central nervous system depression, acute gastrointestinal distress with pulmonary congestion and edema. It may also cause injury to the liver, kidneys and heart. **ACUTE/CHRONIC HAZARDS:** This compound is irritating to the skin, eyes and mucous membranes. It may also cause lacrimation. When heated to decomposition it emits toxic fumes. (NTP, 1992)
VAPOR: Irritating to eyes, nose and throat. **LIQUID:** Will burn skin and eyes. Harmful if swallowed. (USCG, 1999)

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

If this chemical gets into the eyes, remove any contact lenses at once and irrigate immediately for at least 15 min, occasionally lifting upper and lower lids. Seek medical attention immediately. If this chemical contacts the skin, remove contaminated clothing and wash immediately with soap and water. Seek medical attention immediately. If this chemical has been inhaled, remove from exposure, begin rescue breathing (using universal precautions, including resuscitation mask) if breathing has stopped and CPR if heart action has stopped. Transfer promptly to a medical facility. Dichloropropenes

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical

Flash point data for this chemical are not available, however literature indicates that this material is flammable. (NTP, 1992)

FLAMMABLE. POISONOUS GASES ARE PRODUCED IN FIRE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Toxic and irritating gases may be generated. (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

Ventilation. Remove all ignition sources. Personal protection: chemical protection suit including self-contained breathing apparatus. Collect leaking and spilled liquid in sealable plastic containers as far as possible. Do NOT let this chemical enter the environment.

6.2 Environmental precautions

Ventilation. Remove all ignition sources. Personal protection: chemical protection suit including self-contained breathing apparatus. Collect leaking and spilled liquid in sealable plastic containers as far as possible. Do NOT let this chemical enter the environment.

6.3 Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. Methods and materials for containment and cleaning up: Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames, NO sparks and NO smoking. Above 25°C use a closed system, ventilation and explosion-proof electrical equipment. 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

Fireproof. Separated from metals and oxidants. Well closed. Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Recommended storage temperature 2 - 8 deg C.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 1 ppm as TWA; (skin); A3 (confirmed animal carcinogen with unknown relevance to humans). MAK: skin absorption (H); sensitization of skin (SH); carcinogen category: 2

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 goggles or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

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	PHYSICAL DESCRIPTION: A clear colorless liquid with chloroform odor. Flash point 95° F. Density 1.225 g/cm ³ and insoluble in water. Hence sinks in water. A strong irritant. Used as a soil fumigant.
Colour	Colorless to straw-colored liquid
Odour	Pungent odor
Melting point/freezing point	-60°C
Boiling point or initial boiling point and boiling range	108°C
Flammability	Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 5.3% by volume; Upper flammable limit: 14.5% by volume
Flash point	27°C
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	less than 1 mg/mL at 68.9° F (NTP, 1992)
Partition coefficient n-octanol/water	log Kow = 2.06 (cis-isomer), 2.03 (trans-isomer) at 25 deg C
Vapour pressure	34 mm Hg at 77° F (NTP, 1992)
Density and/or relative density	1.22
Relative vapour density	3.83 (NTP, 1992) (Relative to Air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

NIOSH considers 1,3-dichloropropene to be a potential occupational carcinogen. Decomposes on burning. This produces toxic and corrosive fumes including hydrogen chloride. Reacts with oxidants and metals.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Flammable liquid. The vapour is heavier than air and may travel along the ground; distant ignition possible. As a result of flow, agitation, etc., electrostatic charges can be generated. TRANS-1,3-DICHLOROPROPENE reacts with aluminum, aluminum alloys, with other active metals and with some metal salts and halogens. Can react vigorously with oxidizing materials. (NTP, 1992).

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Incompatible materials: Metals, strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - Carbon oxides, hydrogen chloride gas

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 140 + or - 25 mg/kg
- Inhalation: LC50 F333 rat (female) inhalation 904 ppm (4104 mg/cu m)/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

NTP: Reasonably anticipated to be a human carcinogen

Reproductive toxicity

A study of male workers engaged in the manufacture of 1,3-dichloropropene indicated no significant effect on fertility at exposure levels occurring in the work environment. No evidence of developmental toxicity was observed in rats or rabbits exposed to 1,3-dichloropropene by inhalation, but significant maternal toxicity was seen in both species. In one study of rats exposed by inhalation, fewer fetuses per litter were reported at the highest exposure concentration but maternal toxicity was also observed. In other studies, no adverse reproductive effects were observed in rats and mice exposed by inhalation.

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the central nervous system.

STOT-repeated exposure

Repeated or prolonged contact may cause skin sensitization. This substance is possibly carcinogenic 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: LC50; Species: Pimephales promelas (Fathead minnow) weight 0.9 g; Conditions: static bioassay without aeration, 18 deg C, pH 7.2-7.5, water hardness 40-50 mg/L CaCO₃, alkalinity 30-35 mg/L; Concentration: 4100 ug/L for 96 hr (95% confidence limit: 3390-4970 ug/L) /Technical material, 100%
- Toxicity to daphnia and other aquatic invertebrates: LC50; Species: Daphnia magna (Water flea) 1st instar; Conditions: static bioassay without aeration, 21 deg C, pH 7.2-7.5, water hardness 40-50 mg/L CaCO₃, alkalinity 30-35 mg/L; Concentration: 90 ug/L for 48 hr (95% confidence limit: 63-129 ug/L) /Technical material, 100%
- Toxicity to algae: EC50; Species: Anabaena flosaquae (Blue-Green Algae); Conditions: freshwater, static; Concentration: 108000 ug/L for 120 hr (95% confidence interval: 50000-232000 ug/L); Effect: decreased population abundance /96% purity
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: 1,3-Dichloropropene, present at 100 mg/L, reached 3% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test which classified the compound as not readily biodegradable(1); additional degradation was observed yielding 3-chloro-2-propen-1-ol(1), possibly from hydrolysis and degradation of the hydrolysis products(SRC). A BOD dilution water study using settled domestic wastewater as the microbial inoculum found that 5-10 mg/L concentrations of 1,3-dichloropropene were degraded by 54-85% after 7 days of incubation with the faster rates achieved following weekly adaptations(1); however, the rate of biodegradation for 1,3-dichloropropene in natural waters cannot be inferred from this screening study data(3). Common soil bacteria were able to utilize 1,3-dichloropropene as a sole carbon source in pure culture studies(4). Twelve weeks after labeled cis- or trans-1,3-dichloropropene was added to soil and stored in sealed containers, 19% of the cis and 18% of the trans isomers remained in sandy loam and 10% of cis and 22% of trans isomer remained in medium loam(5). After 20 weeks, 5% and 4% of the cis and trans isomer, respectively, remained in sandy loam and 3% and 14%, respectively remained in the medium loam(5); the half-life of the applied dichloropropenes were 3-4 weeks; it was possible that some of the parent compound was lost by volatilization(5). 14C-1,3-Dichloropropene, added at 100 ug/g soil and incubated aerobically in the dark at 25 deg C, displayed half-lives of 1.8, 12.3, and 61 days using Wahiwawa silt clay, Catlin silt loam, and Fuquay loamy sand, respectively(6); degradation products were 3-chloroallyl alcohol, 3-chloroacrylic acid, numerous minor carboxylic acid metabolites, and carbon dioxide(6). Degradation of 1,3-dichloropropene was greatly enhanced in amended soils compared to the unamended soil, and the degree of acceleration varied with the type as well as the rate of amendment(7); compost manure was more effective in stimulating 1,3-dichloropropene degradation than a less decomposed biosolid-manure mix; the acceleration in compost manure-amended soils was a combined result of enhanced chemical and microbial degradation, since sterilization only partially reduced the enhanced degradation(7). Complete mineralization of 1,3-dichloropropene, based on chloride release, can be a matter of years(8). A 5 ug/mL test compound added to a sediment sample from a drainage ditch at an agricultural field station in Marcham, England was readily converted to 3-chloropropionic acid(9). 1,3-Dichloropropene is degraded more rapidly in soil that has a history of treatment with this pesticide than in previously untreated soil(3). While the degradation rates of the cis- and trans- isomers are similar in untreated soil, degradation in previously treated soil has been shown to be more rapid for trans-1,3-dichloropropene than for cis-1,3-dichloropropene(3).

12.3 Bioaccumulative potential

An estimated BCF of 10 was calculated in fish for 1,3-dichloropropene(SRC), using a log Kow of 2.04 (average for the cis- and trans-isomers)(1) and a regression-derived equation(2). According to a classification scheme(2), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

Measured Koc values of 23 and 26 for the cis- and trans- isomers of 1,3-dichloropropene, respectively, have been reported(1). The average Koc for 3 soils with organic carbon of

3.19%, 10.4%, and 55.1% was 27 and 28 for cis- and trans-1,3-dichloropropene, respectively(2). The average maximum Koc values were 20 for sand, 25 for loamy sand, and 41 and 42 for two clay soils(3). According to a classification scheme(4), these Koc values suggest that 1,3-dichloropropene is expected to have very high mobility in soil. The adsorption onto soil from the vapor is greater for the trans- than the cis- isomer(3). The adsorption isotherm for the vapor/soil system is linear(3). When 1,3-dichloropropene is used in farm fields, it is sprayed directly on the ground or injected into the soil(5). Once in the soil, it can exist as a gas or dissolved in water. 1,3-Dichloropropene can adsorb more strongly to soil when it is in the vapor phase than when it is dissolved in water(5). Vapor-phase adsorption can be approximately 3-times greater at 2 deg C than it is at 20 deg C, and adsorption isotherms measured for humus sand, peaty sand, and peat indicate vapor-phase Koc values ranging from 450 to 750(5). According to a classification scheme(4), these vapor-phase Koc values suggest that 1,3-dichloropropene may have moderate to low mobility in soil.

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: UN2047 (For reference only, please check.)

IMDG: UN2047 (For reference only, please check.)

IATA: UN2047 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: DICHLOROPROPENES (For reference only, please check.)

IMDG: DICHLOROPROPENES (For reference only, please check.)

IATA: DICHLOROPROPENES (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: II (For reference only, please check.)

IMDG: II (For reference only, please check.)

IATA: II (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

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
1,3-dichloropropene	1,3-dichloropropene	542-75-6	208-826-5
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 July 15, 2019

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

An added stabilizer or inhibitor can influence the toxicological properties of this substance; consult an expert. Do NOT take working clothes home.

Any questions regarding this SDS, Please send your inquiry to sds@xixisys.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.