Chemical Safety Data Sheet MSDS / SDS

cis-dichloroethylene SDS

Revision Date:2024-04-25 Revision Number:1

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: cis-dichloroethylene

CAS: 156-59-2

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Flammable liquids, Category 2
Acute toxicity - Category 4, Inhalation

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 3

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour
H332 Harmful if inhaled
H412 Harmful to aquatic life with long lasting effects

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.
P273 Avoid release to the environment.

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.

Storage

P403+P235 Store in a well-ventilated place. Keep cool.

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.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	cis-dichloroethylene
Common names and synonyms:	cis-dichloroethylene
CAS number:	156-59-2
EC number:	205-859-7
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower.

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. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 130P [Flammable Liquids (Water-Immiscible / Noxious)]: May cause toxic effects if inhaled or absorbed through skin. Inhalation or contact with material may irritate or burn skin and eyes. Fire will produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

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

If this chemical gets into the eyes, irrigate immediately. If this chemical contacts the skin, wash with soap promptly. If a person breathes in large amounts of this chemical, move the exposed person to fresh air at once and perform artificial respiration. ... 1,2-Dichloroethylene

SECTION 5: Firefighting measures

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. use water in flooding quantities as fog. Solid streams of water may spread fire. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, dry chemical, or carbon dioxide. 1,2-Dichloroethylene

Specific hazards arising from the chemical

Excerpt from ERG Guide 130P [Flammable Liquids (Water-Immiscible / Noxious)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016)

Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours.Avoid contacting with skin and eye. Use personal protective equipment.Wear chemical impermeable gloves. Ensure adequate ventilation.Remove all sources of ignition. Evacuate personnel to safe areas.Keep people away from and upwind of spill/leak.

Environmental precautions

Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Remove all ignition sources. Do NOT wash away into sewer. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in dry sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

1. remove all ignition sources. 2. ventilate area of spill or leak. 3. for small quantities, absorb on paper towels. evaporate in safe place (such as a fume hood). allow sufficient time for evaporating vapors to completely clear the hood ductwork. burn paper in suitable location ... /1,2-dichloroethylene/ 3. 1,2-dichloroethylene should not be allowed to enter confined space, such as sewer, because of possibility of explosion. sewers designed to preclude formation of explosive concn of 1,2-dichloroethylene vapors are permitted. 1,2-dichloroethylene

SECTION 7: Handling and storage

Precautions for safe handling

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.

Conditions for safe storage, including any incompatibilities

Fireproof. Well closed. See Chemical Dangers.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	cis-dichloroethylene			
CAS No.	156-59-2			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m^3	ppm	mg/m^3
Belgium	200	805	?	?
Canada - Ontario	200	790	?	?
Denmark	200	790	400	1580
Finland	200	800	250 (1)	1000 (1)
Germany (DFG)	200	800	400	1600

Switzerland	200	790	400	1580
USA - OSHA	200	790	?	?
	Remarks			
Finland	(1) 15 minutes average value			
Germany (DFG)	STV 15 minutes average value			

Biological limit values

no data available

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.

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

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	1,2-dichloroethylene, (cis isomers) is a clear colorless liquid with an ether-like odor. Flash point 36-39°F. Denser than water and insoluble in water. Vapors heavier than air. Used in the making of perfumes.
Colour:	Liquid
Odour:	Sweetish

Melting point/freezing point:	331°C(lit.)
Boiling point or initial boiling point and boiling range:	61°C
Flammability:	Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	4°C(lit.)
Auto-ignition temperature:	860° F (NTP, 1992)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.48 cp at 20 deg C (liquid)
Solubility:	1 to 5 mg/mL at 61° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 1.86
Vapour pressure:	200 mm Hg at 77° F ; 400 mm Hg at 106° F (NTP, 1992)
Density and/or relative density:	1.284 g/mL at 25°C(lit.)
Relative vapour density:	3.34 (NTP, 1992) (Relative to Air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

1000 ppm. 1,2-Dichloroethylene
Decomposes on heating and under the influence of air, light and moisture. This produces toxic and corrosive fumes including hydrogen chloride (see ICSC 0163). Reacts with strong oxidants. Reacts with copper, copper alloys and bases. This produces toxic chloroacetylene which is spontaneously flammable in contact with air. Attacks plastics.

Chemical stability

no data available

Possibility of hazardous reactions

Sometimes thought to be nonflammable, however, it is a dangerous fire hazard when exposed to heat or flame. Reaction with solid caustic alkalies or their concentrated solns produces chloracetylene gas, which ignites spontaneously in air.The vapour is heavier than air and may travel along the ground; distant ignition possible.1,2-DICHLOROETHYLENE and potassium hydroxide forms chloroacetylene, which is explosive and spontaneously flammable in air. It is highly toxic, Rutledge, p134(1968).

Conditions to avoid

no data available

Incompatible materials

May release explosive chloroacetylene by the contact with copper or copper alloys. 1,2-Dichloroethylene

Hazardous decomposition products

Decomposes slowly on exposure to air, light, and moisture. sym-Dichloroethylene

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: no data available

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

EPA: Not classifiable as to human carcinogenicity. IARC: Not evaluated. NTP: Not evaluated

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: Chlorinated ethenes generally resist biodegradation when incubated under aerobic conditions(1). cis-1,2-Dichloroethylene, present at 2.6 mg/L reached 0% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 1 drop/L and the Japanese MITI test(2). In an enrichment biodegradability screening test employing a wastewater inoculum, the average total loss for cis-1,2-dichloroethylene, present at 5 ppm, was 54% in 7 days; 34% loss due to volatilization occurred in 10 days(3). Using enriched methane-utilizing bacteria developed from a sediment mixed culture, CO2-labeled cis-1,2-dichloroethylene, present at 660 ppb was completely degraded within 50 hours; degradation products were not identified(4). Mineralization of C14-labeled 1,2-dichloroethylene (mixture of 20% trans and 71% cis isomers) was observed under aerobic conditions in streambed sediments characterized by a high content of natural organic matter (2.5% dry mass organic content) and saturated with humic acid-laden black water(5); 67% of C14-labeled CO2 was recovered in 50 days(5) which corresponds to a first-order degradation half-life of 31 days(SRC). Biotransformation of cis-1,2-dichloroethylene was increased with the addition of glucose in aerobic studies done with two aquifer subsoils and one river sediment(6). cis-1,2-Dichloroethylene, a degradation product of pollutants including tetrachloroethylene and trichloroethylene, was degraded by Dehalococcoides ethenogenes strain 195 under aerobic conditions(7). Aerobic cometabolism of cis-1,2-dichloroethylene in five laboratory and field studies had reported first order degradation rates of 0.081 to 1.96/day(8). cis-1,2-Dichloroethylene, present at 170 ug/L, was 90 and 50% biodegraded in 204 days using a chloroethene-contaminated sediment/groundwater (Copenhagen, Denmark, workshop for locomotive engines) inoculum amended with methane and oxygen, respectively. Using a chloroethene-contaminated sediment/groundwater (Frederikssund, Denmark, industrial area), the compound was 20-35% and 40% biodegraded in 97 and 274 days, respectively(9).

Bioaccumulative potential

An estimated BCF of 8 was calculated in fish for cis-1,2-dichloroethylene(SRC), using a log Kow of 1.86(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

The Koc of cis-1,2-dichloroethylene has been reported to be 49(1). According to a classification scheme(2), this Koc value suggests that cis-1,2-dichloroethylene is expected to have very high mobility in soil.

Other adverse effects

no data available

SECTION 13: Disposal considerations

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

UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

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

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

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Not Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

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/