SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

Creation Date: Aug 10, 2017

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1.Identification

1.1GHS Product identifier

Product name	1,2-dichloroethane

1.2Other means of identification

Product number	-
Other names	1,2-DICHLOROETHANE

1.3Recommended use of the chemical and restrictions on use

Identified uses	For industry use only. Volatile organic compounds

Uses advised against	no data available

2.Hazard identification

2.1Classification of the substance or mixture

Flammable liquids, Category 2

Acute toxicity - Oral, Category 4

Skin irritation, Category 2

Eye irritation, Category 2

Specific target organ toxicity – single exposure, Category 3

Carcinogenicity, Category 1B

2.2GHS label elements, including precautionary statements

Pictogram(s)	
Signal word	Danger

Hazard statement(s)	H225 Highly flammable liquid and vapour H302 Harmful if swallowed H315 Causes skin irritation H319 Causes serious eye irritation H335 May cause respiratory irritation H350 May cause 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. 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. P271 Use only outdoors or in a well-ventilated area. P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood.
Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. P370+P378 In case of fire: Use ... to extinguish. P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/…if you feel unwell. P330 Rinse mouth. P302+P352 IF ON SKIN: Wash with plenty of water/... P321 Specific treatment (see ... on this label). P332+P313 If skin irritation occurs: Get medical advice/attention. 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.

	P337+P313 If eye irritation persists: Get medical advice/attention. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P312 Call a POISON CENTER/doctor/…if you feel unwell. P308+P313 IF exposed or concerned: Get medical advice/ attention.
Storage	P403+P235 Store in a well-ventilated place. Keep cool. P403+P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up.
Disposal	P501 Dispose of contents/container to ...

2.3Other hazards which do not result in classification

none

3.Composition/information on ingredients

3.1Substances

Chemical name	Common names and	CAS	EC	Concentration

	synonyms	number	number	
1,2-dichloroethane	1,2-dichloroethane	107-06-2	none	100%

4.First-aid measures

4.1Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Fresh air, rest. Half-upright position. Administration of oxygen may be needed. Artificial respiration may be needed. Refer immediately for medical attention.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer immediately for medical attention.

In case of eye contact

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

If swallowed

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

4.2Most important symptoms/effects, acute and delayed

Inhalation of vapors causes nausea, drunkenness, depression. Contact of liquid with eyes may produce corneal injury. Prolonged contact with skin may cause a burn. (USCG, 1999)

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

Treatment: Stabilization: As with most chlorinated hydrocarbons, the immediate life-threatening complications are respiratory arrest and cardiac dysrhythmia. Hence, initially attention should be directed toward establishing an airway, providing ventilation, and improving circulation as dictated by the clinical situation. Decontamination: since ethylene dichloride is a potent hepatorenal toxin, all except minor exposures seen within 4 hours of ingestion should be given the usual methods of decontamination (ipecac or lavage/activated charcoal and cathartics). Contaminated clothes should be removed and the exposed skin washed with green soap and water. Supportive care: No methods to enhance removal and no antidotes have been proven effective. Severe cases require close monitoring of clotting times and serum glucose and calcium levels, as well as hepatic and renal function. Hemodialysis is reserved for renal failure.

5.Fire-fighting measures

5.1Extinguishing media

Suitable extinguishing media

Do not extinguish until release can be stopped. Cool fire-exposed containers with water staying clear of tank ends.

5.2Specific hazards arising from the chemical

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

5.3Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6.Accidental release measures

6.1Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Do NOT let this chemical enter the environment. Do NOT wash away into sewer. 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.

6.3Methods and materials for containment and cleaning up

Environmental considerations: land spill: Dig a pit, pond, lagoon, 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, or commercial sorbents. Apply "universal" gelling agent to immobilize spill. Apply appropriate foam to diminish vapor and fire hazard.

7.Handling and storage

7.1Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2Conditions for safe storage, including any incompatibilities

Fireproof. Separated from food and feedstuffs and incompatible materials. See Chemical Dangers. Cool. Dry. Well closed. Store in an area without drain or sewer access.Store in a clean, cool, well ventilated area away from heat, sparks, or flames. Outside or detached storage is preferred. Small quantities can be stored in brown bottles or opaque containers due to solvent's light sensitivity. Ground and bond metal containers for liquid transfers to prevent static sparks.

8.Exposure controls/personal protection

8.1Control parameters

Occupational Exposure limit values

NIOSH recommends that ethylene dichloride be regulated as a potential human carcinogen.

NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concn.

Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 1 ppm (4 mg/cu m).

Recommended Exposure Limit: 15 Min Short-Term Exposure Limit: 2 ppm (8 mg/cu m).

Biological limit values

no data available

8.2Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. 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

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9.Physical and chemical properties

Physical state	Clear liquid with a chloroform-like odor
Colour	CLEAR, COLORLESS, OILY LIQUID
Odour	Pleasant odor
Melting point/ freezing point	-2° C(lit.)
Boiling point or initial boiling point and boiling range	83° C(lit.)
Flammability	Class IB Flammable Liquid: Fl.P. below 22.78° C and BP at or above 37.78° C.Highly flammable. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit / flammability limit	Lower flammable limit: 6.2% by volume; Upper flammable limit: 16% by volume

Flash point	13° C
Auto-ignition temperature	412.78° C
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	0.84 cP @ 20° C
Solubility	In water:8.7 g/L (20 °C)
Partition coefficient n-octanol/water (log value)	no data available
Vapour pressure	87 mm Hg (25 ° C)

Density and/or relative density	1.256g/mLat 25° C(lit.)
Relative vapour density	3.4 (20 ° C, vs air)
Particle characteristics	no data available

10.Stability and reactivity

10.1Reactivity

no data available

10.2Chemical stability

STABLE IN PRESENCE OF ALKALI, ACIDS.

10.3Possibility 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.Liquid ammonia and ETHYLENE DICHLORIDE can cause an explosion when mixed, NFPA 491M, 1991. A tank of dimethyl amino propyl amine exploded violently when it reacted with wet ethylene dichloride which had been the tank's previous contents [Doyle 1973]. Halogenated aliphatic compounds, such as ethylene dichloride, are moderately or very reactive. Halogenated organics generally become less reactive as more of their hydrogen atoms are replaced with halogen atoms. Materials in this group are incompatible with strong oxidizing and reducing agents. Also, they are incompatible with many amines, nitrides, azo/diazo compounds, alkali metals, epoxides, aluminum

10.4Conditions to avoid

no data available

10.5Incompatible materials

Explosion can result when ethylene dichloride, is mixed with liquid ammonia, dimethylaminopropylamine, nitrogen tetroxide, metal powders, organic peroxides reducing agents, & alkali & alkali earth metals. Mixtures with nitric acid are easily detonated by heat, impact, or friction. Mixtures with mercaptans form thioethers & generate heat while mixtures with nitrides generate heat & ammonia forming toxic fumes.

10.6Hazardous decomposition products

Ethylene dichloride decomposes slowly becoming acidic and darkening in color.

11.Toxicological information

Acute toxicity

- Oral: LD50 Mouse oral 870-950 mg/kg
- Inhalation: LC50 Rat inhalation 12000 ppm/31.8 min, 3000 ppm/165 min, 1000 ppm/432 min
- Dermal: LD50 Rabbit percutaneous 3400-4460 mg/kg

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

No information is available on the reproductive or developmental effects of ethylene dichloride in humans. Decreased fertility and increased embryo mortality have been observed in inhalation studies of rats.

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12.Ecological information

12.1Toxicity

- Toxicity to fish: LC50 Pimephales promelas (fathead minnow) 136 mg/l/96 hr (95% confidence limit: 129-144 mg/l), temp 25°C, dissolved oxygen 7.8 mg/l, water hardness 44.8 mg/l calcium carbonate (CaCO3), alkalinity 41.4 mg/l CaCO3, pH 7.41, static bioassay. (Test 1)
- Toxicity to daphnia and other aquatic invertebrates: LC50 Daphnia magna (water flea) 218,000 ug/l 48 hr. /Conditions of bioassay not specified
- Toxicity to algae: Toxicity threshold (cell multiplication inhibition test): bacteria (Pseudomonas putida): 135 mg/l. Algae (Microcystis aeruginosa): 105 mg/l. Green algae (Scenedesmus quadricuda): 719 mg/l. Protozoa (Entosiphon sulcatum): 1127 mg/l.
- Toxicity to microorganisms: no data available

12.2Persistence and degradability

AEROBIC: Biodegradability tests with 1,2-dichloroethane resulted in little or no biodegradation in aerobic systems using sewage seed or activated sludge(1-5). The one river die-away test reported no degradation(1). The percent BOD produced in 5-10 days was 0-7%(2-4). Another investigator reported slow to moderate biodegradation activity(5). In a bioreactor study using microbial consortia enriched from subsurface sediments contaminated with chlororinated hydrocarbons, a mixed-organic waste containing 21 ug/l of 1,2-dichloroethane was degraded to <5 ug/l after a 21 day run(6).

12.3Bioaccumulative potential

A BCF of 2 was measured for 1,2-dichloroethane in bluegill sunfish, Lepomis macrochirus(1). According to a classification scheme(2), this BCF suggests bioconcentration in aquatic organisms is low(SRC).

12.4Mobility in soil

The Koc for 1,2-dichloroethane is 33(1). According to a classification scheme(2), this estimated Koc value suggests that 1,2-dichloroethane is expected to have very high mobility in soil(SRC). 1,2-Dichloroethane rapidly percolates through sandy soil(3).

12.5Other adverse effects

no data available

13.Disposal considerations

13.1Disposal 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.

14.Transport information

14.1UN Number

ADR/RID: UN1184	IMDG: UN1184	IATA: UN1184

14.2UN Proper Shipping Name

ADR/RID: ETHYLENE DICHLORIDE
IMDG: ETHYLENE DICHLORIDE
IATA: ETHYLENE DICHLORIDE

14.3Transport hazard class(es)

ADR/RID: 3	IMDG: 3	IATA: 3

14.4Packing group, if applicable

ADR/RID: II	IMDG: II	IATA: II

14.5Environmental hazards

ADR/RID: no	IMDG: no	IATA: no

14.6Special precautions for user

no data available

14.7Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

15.Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
1,2-dichloroethane	1,2-dichloroethane	107-06-2	none
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.

16.Other information

Information on revision

Creation Date	Aug 10, 2017
Revision Date	Aug 10, 2017

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/
