Chemical Safety Data Sheet MSDS / SDS

Pentachloroethane SDS

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

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

Product identifier

Product name: Pentachloroethane

CAS: 76-01-7

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

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SECTION 2: Hazards identification

Classification of the substance or mixture

Carcinogenicity, Category 2
Specific target organ toxicity - repeated exposure, Category 1

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H351 Suspected of causing cancer
H372 Causes damage to organs through prolonged or repeated exposure
H411 Toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P203 Obtain, read and follow all safety instructions before use.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.

Response

P318 IF exposed or concerned, get medical advice.
P319 Get medical help if you feel unwell.
P391 Collect spillage.

Storage

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.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Pentachloroethane
Common names and synonyms:	Pentachloroethane
CAS number:	76-01-7
EC number:	200-925-1
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. 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. Do NOT induce vomiting. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Irritation of skin, lungs, eyes, and mucous membrane; depression of central nervous system; and toxicity similar to tetrachloroethanes. (USCG, 1999)

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. Halogenated aliphatic hydrocarbons and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

To fight fire use water, carbon dioxide, dry chemical.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Contain irritating and toxic chloride vapors. Behavior in Fire: Decomposes and produces toxic gases. (USCG, 1999)

Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. 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. Do NOT let this chemical enter the environment.

Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. 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. Do NOT let this chemical enter the environment.

Methods and materials for containment and cleaning up

Absorb the spills with paper towels or the like materials. Place in a hood to evaporate. Dispose by burning the towel.

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

Separated from food and feedstuffs, strong bases and powdered metals. Well closed. Keep in a well-ventilated room.Separated from food and feedstuffs, strong bases and powdered metals. Well closed. Keep in a well-ventilated room.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK: 42 mg/m3, 5 ppm; peak limitation category: II(2)

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 face shield 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:	Pentachloroethane is a colorless liquid with a chloroform-like odor. Insoluble in water and denser than water. Toxic by inhalation and ingestion. May irritate skin and eyes. Used as a solvent.
Colour:	COLORLESS LIQUID
Odour:	Chloroform-like
Melting point/freezing point:	-95°C(lit.)
Boiling point or initial boiling point and boiling range:	162°C
Flammability:	Combustible Liquid
Lower and upper explosion limit/flammability limit:	Not flammable by standard tests in air.
Flash point:	-22°C(lit.)
Auto-ignition temperature:	May self-ignite.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	2.49X10-3 Pa-sec at 20 deg C

Solubility:	less than 0.1 mg/mL at 70° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 3.22
Vapour pressure:	3.4 mm Hg at 68° F ; 6 mm Hg at 86° F (NTP, 1992)
Density and/or relative density:	1.68
Relative vapour density:	7.2 (NTP, 1992) (Relative to Air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating. This produces toxic and corrosive fumes including hydrogen chloride and phosgene. Reacts violently with strong bases, powdered metals and sodium-potassium alloy. This generates explosion and toxic hazard.

Chemical stability

no data available

Possibility of hazardous reactions

MODERATE, WHEN EXPOSED TO HEAT OR FLAME. The vapour is heavier than air. A mixture of PENTACHLOROETHANE with potassium may explode after a short delay. Reaction with alkalis or metals will produce a violent reaction. This compound also reacts violently with NaK alloy + bromoform. It is incompatible with strong oxidizing agents. (NTP, 1992)

Conditions to avoid

no data available

Incompatible materials

Mixtures of sodium-potassium alloy & ... pentachloroethane can explode on standing at room temperature. They are especially sensitive to impact.

Hazardous decomposition products

When heated to decomposition it emits highly toxic fumes of /hydrogen chloride/.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat oral 920 mg/kg

Inhalation: LC50 Rat inhalation 4238 ppm/2 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: No epidemiological data relevant to the carcinogenicity of pentachloroethane were found. There is limited evidence in experimental animals for the carcinogenicity of pentachloroethane. Overall evaluation: Pentachloroethane is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes and respiratory tract. The substance may cause effects on the central nervous system. This may result in depression.

STOT-repeated exposure

The substance defats the skin, which may cause dryness or cracking. The substance may have effects on the nervous system. This may result in impaired functions.

Aspiration hazard

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

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: Lepomis macrochirus (Bluegill, weight 0.32-1.2 g); Conditions: freshwater, static, 21-23 deg C, pH 6.5-7.9, hardness 32-48 mg/L CaCO3, alkalinity 28-34 mg/L CaCO3, conductivity 93-190 umhos/cm, dissolved oxygen 0.3-9.7 mg/L; Concentration: 8.2 mg/L for 24 hr />80% purity

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea, age <24 hr, first instar); Conditions: freshwater, static, 20 deg C, pH 7.1-7.7, hardness 44.7 mg/L CaCO3 (43.5-47.5 mg/L CaCO3); alkalinity 41.5 mg/L CaCO3 (37.0-45.5 mg/L CaCO3); Concentration: 4700 ug/L for 48 hr; Effect: intoxication, immobilization /95-99% purity

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

ANAEROBIC: The degradation of pentachloroethane in the environment is expected to be dominated by abiotic processes(1,2). Pentachloroethane at a concentration of approximately 0.9 umol/L in groundwater samples (pH 6.6-6.7, 25 deg C) was degraded by greater than 90% and approximately 100% after 30 days in an non-steriled and sterile (poisoned by addition of 10 mg/L deoxygenated mercuric chloride) sample, respectively(1). Pentachloroethane at a concentration of 5 umol/L in anoxic lake water containing high concentrations of the reductants hydrogen sulfide and polysulfide was degraded by 91 and 86% after 10 days in unaltered and filter sterilized systems, respectively (pH 6.8, 25 deg C)(2).

Bioaccumulative potential

A bioconcentration factor of 67 was measured for pentachloroethane in bluegill sunfish(1). According to a classification scheme(2),

this BCF suggests the potential for bioconcentration in aquatic organisms is moderate(SRC).

Mobility in soil

The Koc of pentachloroethane is estimated as 1340(SRC), using a log Kow of 3.22(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that pentachloroethane is expected to have low 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: UN1669 (For reference only, please check.)
IMDG: UN1669 (For reference only, please check.)
IATA: UN1669 (For reference only, please check.)

UN Proper Shipping Name

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

Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)
IMDG: 6.1 (For reference only, please check.)
IATA: 6.1 (For reference only, please check.)

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.)

Environmental hazards

ADR/RID: Yes
IMDG: Yes
IATA: Yes

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

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Not Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Not 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/

Other Information

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested.