

Chemical Safety Data Sheet MSDS / SDS

1,2,4-trichlorobenzene 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: 1,2,4-trichlorobenzene

CAS: 120-82-1

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

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SECTION 2: Hazards identification**Classification of the substance or mixture**Acute toxicity - Category 4, Oral
Skin irritation, Category 2

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Warning

Hazard statement(s)

H302 Harmful if swallowed
H315 Causes skin irritation
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P273 Avoid release to the environment.

Response

P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P321 Specific treatment (see ... on this label).
P332+P317 If skin irritation occurs: Get medical help.
P362+P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Storage

none

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:	1,2,4-trichlorobenzene
Common names and synonyms:	1,2,4-trichlorobenzene
CAS number:	120-82-1
EC number:	204-428-0
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. Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Exposures to high concentrations via inhalation are potentially hazardous to the lungs, kidneys and liver. Prolonged or repeated exposures or short exposure to high concentrations via inhalation are potentially hazardous to the lungs, kidneys and liver.

Prolonged or repeated exposure to the eyes is likely to result in moderate pain and transient irritation. Prolonged or repeated contact with the skin may result in moderate irritation and possible systemic effects. Ingestion: May cause kidney and liver damage. (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. Aromatic hydrocarbons and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

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.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: May contain toxic hydrogen chloride and phosgene. Behavior in Fire: Decomposes to form hydrogen chloride and phosgene. (USCG, 1999)

Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide.

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. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. If solid: sweep spilled substance into sealable containers. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. If solid: sweep spilled substance into sealable containers. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a POTW is acceptable only after review by the governing authority. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must meet Hazardous Material Criteria for disposal.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. 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 strong oxidants, acids and food and feedstuffs. 1,2,4-Trichlorobenzenes are liquids at room temperature and are shipped in bulk in aluminum tank trucks and steel or stainless steel tank cars.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 5 ppm as STEL. MAK: skin absorption (H); carcinogen category: 3B. EU-OEL: 15.1 mg/m³, 2 ppm as TWA; 37.8 mg/m³, 5 ppm as STEL; (skin)

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 safety goggles 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:	Colourless.
Odour:	Aromatic odor
Melting point/freezing point:	17 °C. Remarks:Melting point.;17.2 °C. Remarks:Solidification point.
Boiling point or initial boiling point and boiling range:	213.5 °C. Atm. press.:101.3 kPa.
Flammability:	Class IIIB Combustible Liquid: Fl.P. at or above 200°F.Combustible Solid
Lower and upper explosion limit/flammability limit:	Lower Flammable Limit: 2.5% by vol at 302 deg F (150 deg C). Upper Flammable Limit: 6.6% by vol at 302 deg F (150 deg C)
Flash point:	110 °C. Atm. press.:1 013 hPa.

Auto-ignition temperature:	> 500 °C.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	dynamic viscosity (in mPa s) = 2.08. Temperature:20°C.;dynamic viscosity (in mPa s) = 0.74. Temperature:100.0°C.
Solubility:	Insoluble in water
Partition coefficient n-octanol/water:	log Pow = 4.05. Temperature:25 °C.
Vapour pressure:	0.26 hPa. Temperature:20 °C.
Density and/or relative density:	1.46 g/cm ³ . Temperature:20 °C.;1.36 g/cm ³ . Temperature:100 °C.
Relative vapour density:	>6 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic fumes including hydrogen chloride. Reacts violently with oxidants.

Chemical stability

Stable at room temperature

Possibility of hazardous reactions

Vapor explosion hazard indoors, outdoors, or in sewers. Runoff to sewer may create fire or explosion hazard. 1,2,4-TRICHLOROBENZENE can react vigorously with oxidizing materials (NTP, 1992). Yields hydrogen chloride and phosgene when heated to decomposition (USCG, 1999).

Conditions to avoid

no data available

Incompatible materials

On contact with acids or acid fumes they evolve highly toxic /hydrogen chloride/ fumes. chlorides

Hazardous decomposition products

When heated to decomp, it emits toxic fumes of /hydrogen chloride/.

SECTION 11: Toxicological information**Acute toxicity**

Oral: LD50 - rat (male/female) - 930 mg/kg bw. Remarks:Slope=9.11.

Inhalation: no data available

Dermal: LD50 - rat - 11 356.8 mg/kg bw.

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

Cancer Classification: Group D Not Classifiable as to Human Carcinogenicity

Reproductive toxicity

No information is available on the reproductive or developmental effects of 1,2,4-trichlorobenzene in humans. Several studies reported that 1,2,4-trichlorobenzene did not affect fertility or viability nor cause increased resorptions, embryoletality, or teratogenicity in orally exposed rats. One oral study in rats reported retarded growth in fetuses.

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract.

STOT-repeated exposure

The substance defats the skin, which may cause dryness or cracking. The substance may have effects on the liver.

Aspiration hazard

A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC0 - *Leuciscus idus* - 0.6 mg/L - 48 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - *Daphnia magna* - 1.4 mg/L - 48 h.

Toxicity to algae: EC50 - *Pseudokirchneriella subcapitata* (previous names: *Raphidocelis subcapitata*, *Selenastrum capricornutum*) - 1.4 mg/L - 96 h.

Toxicity to microorganisms: IC50 - activated sludge of a predominantly domestic sewage - 35 mg/L - 12 h. Remarks: Respiration rate.

Persistence and degradability

AEROBIC: A 0% theoretical BOD in sludge over a 2 week incubation period was observed for 1,2,4-trichlorobenzene(1). The aerobic biodegradation half-life of 1,2,4-trichlorobenzene in natural waters has been reported as 28 days(2). An 8-day theoretical BOD of 1% in a benzene acclimated sludge was observed for 1,2,4-trichlorobenzene(3). A 20-day theoretical BOD of 0% in municipal wastewater was observed for 1,2,4-trichlorobenzene while 20-day theoretical BODs of 78, 100 and 55% were observed for industrial wastewater(4). 1,2,4-Trichlorobenzene was dechlorinated 0.3-50.1% after 7 days incubation in soil amended with up to 4 mM bromoethanesulfonate, 2 mM sulfate and 7.5 mM hydrogen(5). After 4 days of incubation 28 µM of 1,2,4-trichlorobenzene was

biodegraded to 1,4-dichlorobenzene and chlorobenzene(6). 1,2,4-Trichlorobenzene, under aerobic conditions, degraded 40% in dune sediment taken near Zandvoort, Netherlands after a 2 month lag time(7). 1,2,4-Trichlorobenzene was biodegraded 90% in groundwater samples under aerobic conditions(8). 1,2,4-Trichlorobenzene had influent concns of 90 and 8100 ug/L and effluent concns of <5.0 and <10 ug/L using an activated sludge with a daily mass loading of COD/bacterial mass ratios of 0.3 and 0.6(9).

Bioaccumulative potential

BCF values of 420 to 1,140 were measured in carp exposed to 50 ug/L of 1,2,4-trichlorobenzene during a 6 week incubation period and BCF values of 120 to 1,300 were measured in carp exposed to 5 ug/L of 1,2,4-trichlorobenzene during a 6 week incubation period(1). The BCF value of 1,2,4-trichlorobenzene in fish in a flowing water system was 490 while the BCF value for trout in a static water system was 2400(2). Log BCFs of 3.11, 3.51, 3.36 and 3.57 were measured in 4 rainbow trout samples on a whole body basis, and 4.20, 4.57, 4.54 and 4.71 using lipid basis(3). Log BCFs of 3.10, 2.60, 1.91, 3.19, 3.32 and 3.31 were measured in Atlantic croaker, blue crab, spotted sea trout, blue catfish, fathead minnow and flagfish, respectively, on a whole body basis, and at 4.20, 4.57, 4.76, 4.90, 3.54, 4.68, 3.45, 4.54, 4.71 and 4.25, respectively, using lipid basis(3). 1,2,4-Trichlorobenzene had a log BCF of 2.95 in guppy (*Poecilia reticulata*)(4). A BCF of 491 was given for 1,2,4-trichlorobenzene in fish(5). 1,2,4-Trichlorobenzene at concns of 3.2 and 53 ng/L, in a flow-through system showed BCFs of 1300 and 3200, respectively, in rainbow trout exposed over 119 days(6). Fish continuously exposed to a mean measured aqueous concn of 2.9 ug/L of 1,2,4-trichlorobenzene had a estimated equilibrium bioconcentration factor of 182(7). According to a classification scheme(8), these BCF values suggest that bioconcentration in aquatic organisms is high to very high. Daphnids continuously exposed to a mean measured aqueous concn of 3.1 ug/L of 1,2,4-trichlorobenzene had a estimated equilibrium bioconcentration factor of 142(7).

Mobility in soil

Measured log Kocs of 3.1(1), 3.30(2), 3.35(3), 3.96(4-5), 4.03(6) were reported for 1,2,4-trichlorobenzene in soil. Koc values for 1,2,4-trichlorobenzene were 864 and 440 in soil and peaty soil(7). Log Koc values for peat soil and Dover soil taken from Zhejiang Province, China were 3.06 and 3.58(8). According to a recommended classification scheme(9), these Koc values suggest that 1,2,4-trichlorobenzene has moderate to no 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: UN2321 (For reference only, please check.)

IMDG: UN2321 (For reference only, please check.)

IATA: UN2321 (For reference only, please check.)

UN Proper Shipping Name

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

IMDG: TRICHLOROBENZENES, LIQUID (For reference only, please check.)

IATA: TRICHLOROBENZENES, LIQUID (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: III (For reference only, please check.)

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

IATA: III (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)

Listed.

(PICCS)

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/>

Other Information

The occupational exposure limit value should not be exceeded during any part of the working exposure. See ICSCs 0344 and 1222.

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