Chemical Safety Data Sheet MSDS / SDS

Chlorobenzene 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: Chlorobenzene

CAS: 108-90-7

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

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 3
Skin irritation, Category 2

Acute toxicity - Category 4, Inhalation
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Warning

Hazard statement(s)

H226 Flammable liquid and vapour
H315 Causes skin irritation
H332 Harmful if inhaled
H411 Toxic 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/...
P264 Wash ... thoroughly after handling.
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.
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.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P317 Get medical help.
P391 Collect spillage.

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:	Chlorobenzene
Common names and synonyms:	Chlorobenzene
CAS number:	108-90-7
EC number:	203-628-5
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

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

Irritating to skin, eyes and mucous membranes. Repeated exposure of skin may cause dermatitis due to defatting action. Chronic inhalation of vapors or mist may result in damage to lungs, liver, and kidneys. Acute vapor exposures can cause symptoms ranging from coughing to transient anesthesia and central nervous system depression. (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. Benzene and Related Compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

Wear self contained breathing apparatus for fire fighting if necessary.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Burning in open flame can form toxic phosgene and hydrogen chloride gases. Behavior in Fire: Heavy vapor can travel a considerable distance to a source of ignition and flash back. (USCG, 1999)

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

Personal precautions, protective equipment and emergency procedures

Remove all ignition sources. 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. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Remove all ignition sources. 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. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES. Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours 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

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Above 27°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.

Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants.Keep container tightly closed in a dry and well-ventilated place. Containers whigh are opened must be carefully resealed and kept upright to prevent leakage.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 10 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued.MAK: 23 mg/m3, 5 ppm;

peak limitation category: II(2); pregnancy risk group: C.EU-OEL: 23 mg/m3, 5 ppm as TWA; 70 mg/m3, 15 ppm as STEL

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:	Faint, not unpleasant odor
Melting point/freezing point:	Ca. -46 °C.
Boiling point or initial boiling point and boiling range:	>= 131 - <= 132 °C. Atm. press.:1 013.25 hPa.

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: 1.3%; Upper flammable limit: 9.6%
Flash point:	Ca. 28 °C.
Auto-ignition temperature:	Ca. 590 °C.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	dynamic viscosity (in mPa s) = Ca. 0.756. Remarks:No further data.
Solubility:	Insoluble in water
Partition coefficient n-octanol/water:	log Pow = Ca. 2.855.;log Pow = Ca. 2.81.;log Pow = Ca. 2.83.
Vapour pressure:	Ca. 11.73 hPa. Temperature:Ca. 20 °C.;Ca. 13.3 hPa. Temperature:Ca. 22.2 °C.;Ca. 15.81 hPa. Temperature:Ca. 25 °C.
Density and/or relative density:	Ca. 1.11 g/cm3. Temperature:20 °C.
Relative vapour density:	3.86 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating and on contact with hot surfaces and flames. This produces toxic and corrosive fumes. Reacts violently with strong oxidants. This generates fire and explosion hazard. Attacks rubber and some plastics.

Chemical stability

no data available

Possibility of hazardous reactions

Dangerous fire hazard when exposed to heat or flame.CHLOROBENZENE undergoes a sometimes explosive reaction with powdered sodium or phosphorus trichloride + sodium. May react violently with dimethyl sulfoxide. Reacts vigorously with oxidizing agents. Attacks some forms of plastic, rubber and coatings. Forms a shock sensitive solvated salt with silver perchlorate. (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

Contact with strong oxidizers may cause fires and explosions.

Hazardous decomposition products

Flammable liquid. Vapors are heavier than air and may travel to a source of ignition and flash back. Combustion by-products include phosgene and hydrogen chloride gases.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat oral 2.29 g/kg

Inhalation: LT0 - rat (male/female) - 66 mg/L air.

Dermal: LD50 - rabbit (female) - > 5 010 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 chlorobenzene in humans. Chronic inhalation exposure of rats to chlorobenzene did not adversely affect reproductive performance or fertility. However, a slight increase in the incidence of degenerative testicular changes was observed. Chlorobenzene does not appear to be a developmental toxicant and did not produce structural malformations in rats and rabbits acutely exposed via inhalation.

STOT-single exposure

The substance is irritating to the eyes and skin. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system. This may result in lowering of consciousness.

STOT-repeated exposure

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

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 - Lepomis macrochirus - 4.5 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 0.59 mg/L - 48 h.

Toxicity to algae: ErC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - 11.4 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge - 140 mg/L - 30 min. Remarks:Respiration rate.

Persistence and degradability

Information ... concerning the biodegradation potential of chlorobenzene indicates that this compound will ... eventually degrade, but not at an environmentally important rate unless the microorganisms present are already growing on another hydrocarbon source.

Bioaccumulative potential

BCF values of 4.3 to 39.6 and 3.9 to 22.8 were measured for chlorobenzene in carp (Cyprinus carpio) at chemical concentrations of 0.15 and 0.015 mg/L, respectively(1). A log BCF of 2.65 has been reported for chlorobenzene in fathead minnows(2) that corresponds to a BCF of 450(SRC). A BCF of 41 was measured in bluegill fish (Lepomis macrochirus) over a 14-day exposure period(3). According to a classification scheme(4), these BCF values suggest the potential for bioconcentration in aquatic organisms ranges from low to high, provided the compound is not metabolized by the organism(SRC). Dissolved organic matter that is present in interstitial water may greatly reduce the amount of a chemical that is available for accumulation(5). In one set of experiments, midge larvae were found to accumulate higher tissue-to-sediment ratios of chlorobenzene from a low-organic content sediment than from a high-organic content sediment(5). BCFs of 0.25 (from sediment), 11 (from interstitial water), and 10 (overlying water) were measured for midge larvae exposed to chlorobenzene under equilibrium exposure conditions(5). BCFs of 0.15 (from sediment), 310 (from interstitial water), and 5 (from overlying water) were measured for midge larvae exposed to chlorobenzene sorbed to high-organic content sediment under nonequilibrium exposure conditions(5). BCFs of 0.72 (from sediment), 18 (from interstitial water), and 2,187 (from overlying water) were measured for midge larvae exposed to chlorobenzene sorbed to low-organic content sediment under nonequilibrium exposure conditions(5).

Mobility in soil

Koc values of 313.1 and 146.5 were measured on Captina silt loam (1.49% organic carbon) and McLaurin sandy loam, (0.66% organic carbon), respectively(1). Equilibrium sorption constant (Ks) values of 0.295 and 0.09 were determined in Eustis fine sand (13 g/kg clay, 32 g/kg silt, 955 g/kg sand, 3.9 g/kg organic carbon) and Tampa (6 g/kg clay, 23 g/kg silt, 971 g/kg sand, and 1.3 g/kg organic carbon) soils, respectively(2); corresponding Koc values are 76 and 69(SRC). Equilibrium sorption coefficients of 0.014 and 10.20 were measured on Borden (98% sand, 1% silt, 1% clay, 0.29% organic carbon) and Mt. Lemmon (60.3% sand, 24.0% silt, 15.7% clay, 12.6% organic carbon) soils, respectively(3); corresponding Koc values are 4.8 and 81(SRC). According to a classification scheme(4), these Koc values suggest that chlorobenzene is expected to have moderate to very high mobility in soil(SRC). The sorption isotherm for chlorobenzene onto muck soil (49.0% organic carbon) was linear(5). A Kd value of 166.34 was measured for chlorobenzene using dewatered activated sludge (18% solids) that had been dried and sieved; 3.28% of the chlorobenzene was desorbed during the desorption phase of the experiment(6). Partition coefficients of 0.35, 0.33, and 0.38 were measured for chlorobenzene on primary sludge, mixed liquor solids, and digested sludge, respectively(7). Sorption coefficients of 0.48 and 0.29 were measured on primary sludge and anaerobically digested sludge, respectively(8). Partition coefficients of 48 and 29 were measured in high organic carbon (14.5%) and low organic carbon (3.6%) Sherman Island sediments, respectively(9).

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: UN1134 (For reference only, please check.)
IMDG: UN1134 (For reference only, please check.)
IATA: UN1134 (For reference only, please check.)

UN Proper Shipping Name

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

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.)

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

Do NOT use in the vicinity of a fire or a hot surface, or during welding.