

SAFETY DATA SHEETS

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

Version: 1.0

Creation Date: Aug 17, 2017

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1. Identification

1.1 GHS Product identifier

Product name 1,2-dichlorobenzene

1.2 Other means of identification

Product number -

Other names Chloroden

1.3 Recommended 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

2.1 Classification of the substance or mixture

Acute toxicity - Oral, Category 4

Skin irritation, Category 2

Eye irritation, Category 2

Specific target organ toxicity – single exposure, Category 3

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

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

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Warning

Hazard statement(s)

H302 Harmful if swallowed

H315 Causes skin irritation

H319 Causes serious eye irritation

H335 May cause respiratory 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.

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

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.

P391 Collect spillage.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Disposal

P501 Dispose of contents/container to ...

2.3 Other hazards which do not result in classification

none

3. Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
1,2-dichlorobenzene	1,2-dichlorobenzene	95-50-1	none	100%

4. First-aid measures

4.1 Description 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. Refer for medical attention.

In case of skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer 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. Give one or two glasses of water to drink. Do NOT induce vomiting. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Chronic inhalation of mist or vapors may result in damage to lungs, liver, and kidneys. Acute vapor exposure can cause symptoms ranging from coughing to central nervous system depression and transient anesthesia. Irritating to skin, eyes, and mucous membranes. May cause dermatitis. (USCG, 1999)

4.3 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. /Lindane and related compounds/

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Use water spray, dry chemical, foam, or carbon dioxide. Use water spray to keep fire-exposed containers cool. Extinguish fire using agent suitable for surrounding fire.

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Poisonous vapors including hydrogen chloride gas, chlorocarbons, chlorine (USCG, 1999)

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental release measures

6.1 Personal 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.

6.2 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 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.

6.3 Methods and materials for containment and cleaning up

Land spill: Dig a pit, pond, lagoon, or 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 concrete. Absorb bulk liquid with fly ash, or cement powder. Apply "universal" gelling agent to immobilize spill.

7. Handling and storage

7.1 Precautions 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.

7.2 Conditions for safe storage, including any incompatibilities

Separated from aluminium, oxidants and food and feedstuffs. Store in cool, dry, well-ventilated location. Separate from oxidizing materials.

8. Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

Recommended Exposure Limit: 15-Min Ceiling Value: 50 ppm (300 mg/cu m).

Biological limit values

no data available

8.2 Appropriate engineering controls

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

8.3 Individual 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	Colorless to yellowish liquid with Aromatic odor.
Colour	Colorless liquid
Odour	Pleasant odor
Melting point/ freezing point	-15°C
Boiling point or initial boiling point and boiling range	178-180°C(lit.)
Flammability	Class IIIA Combustible Liquid: Fl.P. at or above 60°C and below 93.33°C.Combustible.
Lower and upper explosion limit / flammability limit	2 TO 9% BY VOL IN AIR
Flash point	66°C
Auto-ignition temperature	647.78°C
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	1.324 mPa.s at 25°C
Solubility	In water:0.13 g/L (20 °C)
Partition coefficient n-octanol/water (log value)	log Kow = 3.43
Vapour pressure	1.2 mm Hg (20 °C)
Density and/or relative density	1.306g/mL at 25°C(lit.)
Relative vapour density	5.1 (vs air)
Particle characteristics	no data available

10. Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Combustible liquid. O-DICHLOROBENZENE is sensitive to prolonged exposure to light. This chemical can react vigorously with oxidizers. It is incompatible with aluminum and aluminum alloys. It attacks some forms of plastics, rubber and coatings. .

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Strong oxidizers, aluminum, chlorides, acids, acid fumes.

10.6 Hazardous decomposition products

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

11. Toxicological information

Acute toxicity

- Oral: LD50 Guinea pig oral 0.8-2.0 ug/kg.
- Inhalation: LC50 Mouse inhalation 6,825 mg/cu m/6 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

NTP: Reasonably anticipated to be a human carcinogen

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12. Ecological information

12.1 Toxicity

- Toxicity to fish: LC50; Species: Danio rerio (Zebra danio, age ~9 months, adult, weight 0.8 g, length 4.3 cm); Conditions: freshwater, static, 24°C, pH 7.8, hardness 350 mg/L CaCO₃; Concentration: 180 mg/L for 96 hr /99% purity
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea); Conditions: renewal, 25°C, pH >7; Concentration: 1700 ug/L for 24 hr; Effect: behavior, equilibrium
- Toxicity to algae: EC50; Species: Pseudokirchneriella subcapitata (Green algae, initial concentration 500,000 cells/L); Conditions: static, 20°C; Concentration: 2200 ug/L for 96 hr; Effect: general growth
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: 1,2-Dichlorobenzene at 100 mg/L achieved 0% of its theoretical BOD using an activated sludge inoculum at 30 mg/L over a 4 week incubation period in the Japanese MITI test(1). 1,2-Dichlorobenzene was resistant to biodegradation in another Japanese MITI test study(2). Dichlorobenzene isomers were slowly biodegraded (6.3% of theoretical CO₂ evolution in 10 weeks) in an alkaline soil sample(3). The rate constant for 1,2-dichlorobenzene in a heterogeneous aquifer at the Columbus Air Force Base, Mississippi was 0.0059 days⁻¹, corresponding to a biodegradation half-life of about 117 days(4). 1,2-Dichlorobenzene is resistant to biodegradation in soils, with half-lives

expected to be greater than 9 months(5).

12.3 Bioaccumulative potential

The sorption of 8 organic compounds by a representative green alga, *Selenastrum capricornutum*, was determined by GLC by a series of linear model experiments. The log₁₀ bioconcentration factors (BCF), defined as the ratio of the concentration on/in the algae to the concentration in the aqueous medium, were as follows: benzene 3.32, toluene 3.18, chlorobenzene 3.69, 1,2-dichlorobenzene 4.17. The relation of log₁₀ BCF correlation with log₁₀ octanol-water partition coefficient (P) was determined to be $\log_{10} \text{BCF} = 0.46 \log_{10} P + 2.36$.

12.4 Mobility in soil

Experimental Koc values of 280(1) and 320(2) were determined for 1,2-dichlorobenzene in silt loam soils. A log Koc value of 3.7 was reported for 1,2-dichlorobenzene in sediment obtained from the Ise Bay, Japan(3) and a log Koc value of 4.3 was measured from sediment of Lake Ketelmeer, Netherlands(4). According to a recommended classification scheme(5), these soil Koc values suggest that 1,2-dichlorobenzene has moderate mobility in soil(SRC).

12.5 Other adverse effects

no data available

13. Disposal considerations

13.1 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.

14. Transport information

14.1 UN Number

ADR/RID: UN1591

IMDG: UN1591

IATA: UN1591

14.2 UN Proper Shipping Name

ADR/RID: o-DICHLOROBENZENE

IMDG: o-DICHLOROBENZENE

IATA: o-DICHLOROBENZENE

14.3 Transport hazard class(es)

ADR/RID: 6.1

IMDG: 6.1

IATA: 6.1

14.4 Packing group, if applicable

ADR/RID: II

IMDG: II

IATA: II

14.5 Environmental hazards

ADR/RID: yes

IMDG: yes

IATA: yes

14.6 Special precautions for user

no data available

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

no data available

15. Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
1,2-dichlorobenzene	1,2-dichlorobenzene	95-50-1	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

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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/>

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