

## Chemical Safety Data Sheet MSDS / SDS

**1,4-Dichlorobenzene**Revision Date:2024-08-24 Revision Number:1

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

Product name : 1,4-Dichlorobenzene  
CBnumber : CB9329690  
CAS : 106-46-7  
EINECS Number : 203-400-5  
Synonyms : dichlorobenzene,1,4-dichlorobenzene

**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  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 400-158-6606

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**SECTION 2: Hazards identification****Classification of the substance or mixture**

Eye irritation, Category 2  
Carcinogenicity, Category 2  
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1  
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

**Label elements****Pictogram(s)**

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Signal word : Danger

**Hazard statement(s)**

H225 Highly Flammable liquid and vapour  
H302 Harmful if swallowed  
H319 Causes serious eye irritation  
H332 Harmful if inhaled  
H351 Suspected of causing cancer

H370 Causes damage to organs

H400 Very toxic to aquatic life

H410 Very toxic to aquatic life with long lasting effects

H412 Harmful to aquatic life with long lasting effects

#### **Precautionary statement(s)**

P201 Obtain special instructions before use.

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P281 Use personal protective equipment as required.

P311 Call a POISON CENTER or doctor/physician.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

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P405 Store locked up.

P501 Dispose of contents/container to.....

#### **Prevention**

P264 Wash ... thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P203 Obtain, read and follow all safety instructions before use.

P273 Avoid release to the environment.

#### **Response**

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P318 IF exposed or concerned, get medical advice.

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**

no data available

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## SECTION 3: Composition/information on ingredients

### **Substance**

Product name : 1,4-Dichlorobenzene

Synonyms : dichlorobenzene,1,4-dichlorobenzene

CAS	: 106-46-7
EC number	: 203-400-5
MF	: C6H4Cl2
MW	: 147

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## SECTION 4: First aid measures

### Description of first aid measures

#### If inhaled

Fresh air, rest. Refer for medical attention.

#### Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

#### 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

Give one or two glasses of water to drink. Refer for medical attention .

### Most important symptoms and effects, both acute and delayed

INHALATION: irritation of upper respiratory tract; over- exposure may cause depression and injury to liver and kidney. EYE CONTACT: pain and mild irritation. (USCG, 1999)

### Indication of any immediate medical attention and special treatment needed

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

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## SECTION 5: Firefighting measures

### 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. o-Dichlorobenzene

### Specific Hazards Arising from the Chemical

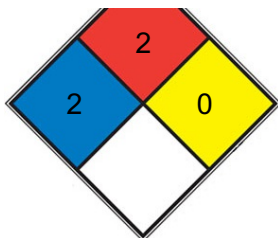
Special Hazards of Combustion Products: Vapors are irritating. Toxic chlorine, hydrogen chloride, and phosgene gases may be generated in fires. (USCG, 1999)

### Advice for firefighters

Use water spray, powder, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

### NFPA 704





- HEALTH 2 Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. [diethyl ether](#), ammonium phosphate, iodine)
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- FIRE 2 Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur and multiple finely divided suspended solids that do not require heating before ignition can occur. Flash point between 37.8 and 93.3 °C (100 and 200 °F). (e.g. diesel fuel, [sulfur](#))
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- REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, [N<sub>2</sub>](#))
- 
- SPEC.
- HAZ.
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## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and particulates adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. 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. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

### Methods and materials for containment and cleaning up

ENVIRONMENTAL HAZARDS: Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

## SECTION 7: Handling and storage

### Precautions for safe handling

NO open flames. Above 66°C use a closed system, ventilation and explosion-proof electrical equipment. Prevent deposition of dust. 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

Provision to contain effluent from fire extinguishing. Separated from strong oxidants and food and feedstuffs. Keep in a well-ventilated room. MATERIALS WHICH ARE TOXIC AS STORED OR WHICH CAN DECOMPOSE INTO TOXIC COMPONENTS ... SHOULD BE STORED IN A COOL WELL VENTILATED PLACE, OUT OF THE DIRECT RAYS OF THE SUN, AWAY FROM AREAS OF HIGH FIRE HAZARD, AND SHOULD BE PERIODICALLY INSPECTED. INCOMPATIBLE MATERIALS SHOULD BE ISOLATED ...

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## 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). MAK: 12 mg/m<sup>3</sup>, 2 ppm; peak limitation category: II(2); skin absorption (H); carcinogen category: 4; pregnancy risk group: C. EU-OEL: 12 mg/m<sup>3</sup>, 2 ppm as TWA; 60 mg/m<sup>3</sup>, 10 ppm as STEL; (skin)

#### Biological limit values

no data available

### Exposure 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

#### 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

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	Crystals
Colour	White
Odour	Distinctive aromatic odor becomes very strong at concn between 30 & 60 ppm
Melting point/freezing point	53.3 °C. Remarks: Sublimes at ordinary temperature.
Boiling point or initial boiling point and boiling range	174.12 °C. Atm. press.: 1 013 hPa.
Flammability	Combustible Solid, but may take some effort to ignite.
Lower and upper explosion limit/flammability limit	1.7-5.9%(V)
Flash point	66 °C. Atm. press.: 1 013 hPa.

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Auto-ignition temperature	> 500 °C. Remarks:No pressure reported.
Decomposition temperature	no data available
pH	7 (0.06g/l, H2O, 20°C)
Kinematic viscosity	0.839 mPa.s at 55 deg C; 0.668 mPa.s at 79 deg C
Solubility	0.08g/l
Partition coefficient n-octanol/water	log Pow = 3.37. Temperature:25 °C.
Vapour pressure	1.03 mm Hg ( 25 °C)
Density and/or relative density	1.2417
Relative vapour density	1.2417
Particle characteristics	no data available

## SECTION 10: Stability and reactivity

### Reactivity

150 ppm; NIOSH considers p-dichlorobenzene to be a potential occupational carcinogen.

On combustion, forms toxic and corrosive fumes including hydrogen chloride. Reacts with strong oxidants.

### Chemical stability

no data available

### Possibility of hazardous reactions

P-DICHLOROBENZENE is incompatible with oxidizing agents. It is also incompatible with aluminum and its alloys. It liquefies when mixed with camphor, phenol and salol. It will attack some forms of plastics, rubber and coatings. (NTP, 1992).

### Conditions to avoid

no data available

### Incompatible materials

Dangerous: when heated to decomposition or on contact with acids or acid fumes they evolve highly toxic /hydrogen chloride/ fumes. Can react vigorously with oxidizing materials.

### Hazardous decomposition products

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

## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 - rat (male/female) - > 2 000 mg/kg bw. Remarks:No animal died during the observation period and recovered from unspecific findings (piloerection, hunched posture) by day 3.
- Inhalation: LC50 - rat (male/female) - > 5.07 mg/L air.
- Dermal: LD50 - rat (male/female) - > 2 000 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**

NTP: Reasonably anticipated to be a human carcinogen

### **Reproductive toxicity**

No information is available on the reproductive or developmental effects of 1,4-dichlorobenzene in humans. In one animal study, exposure of pregnant rats to 1,4-dichlorobenzene via inhalation did not result in developmental effects in the offspring. In another study, an increase in the incidence of an extra rib was reported in the fetuses of pregnant rats administered 1,4-dichlorobenzene by gavage. A study reported decreased number of live births, pup survival, and pup weights, but no birth defects in the offspring of animals exposed to 1,4-dichlorobenzene via inhalation.

### **STOT-single exposure**

The substance is irritating to the eyes, respiratory tract and skin. The substance may cause effects on the blood. This may result in haemolytic anaemia. The substance may cause effects on the central nervous system.

### **STOT-repeated exposure**

The substance may have effects on the liver, central nervous system, blood and lungs. This may result in liver function impairment, neuropathy and anaemia. This substance is possibly carcinogenic to humans.

### **Aspiration hazard**

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

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: LC50 - *Oncorhynchus mykiss* (previous name: *Salmo gairdneri*) - 1.12 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - *Daphnia magna* - 0.7 mg/L - 48 h.

Toxicity to algae: EC0 - *Pseudokirchneriella subcapitata* (previous names: *Raphidocelis subcapitata*, *Selenastrum capricornutum*) - 0.57 mg/L - 96 h.

Toxicity to microorganisms: IC50 - *Nitrosomonas* sp. - 86 mg/L - 24 h. Remarks: *Nitrosomonas*.

### **Persistence and degradability**

AEROBIC: An unspecified initial concentration of 1,4-dichlorobenzene was biodegraded between 25 and 90 percent in soil column experiments using sediment from the Rhine River over a 300 day incubation period(1). Dichlorobenzene isomers were slowly biodegraded (6.3% of

theoretical CO<sub>2</sub> evolution in 10 weeks) in an alkaline soil sample(2). The first-order biodegradation rate of 1,4-dichlorobenzene in a biofilm system was 5.0-20.0X10<sup>-4</sup> days<sup>-1</sup>, corresponding to half-lives on the order of a year or longer(3). 1,4-Dichlorobenzene was not biodegraded in aquifers from Vejen and Grindsted, Denmark during a 50 day incubation period(4). 1,4-Dichlorobenzene was found to be degradation-resistant using the Japanese MITI test(5,6); at 100 mg/L, 1,4-dichlorobenzene achieved 0% of its theoretical BOD using an activated sludge inoculum at 30 mg/L incubated over a 4 week period(6).

### **Bioaccumulative potential**

A mean BCF value of 78 was measured in mosquito fish exposed to 57-233 ug/L of 1,4-dichlorobenzene during 1 to 4 day incubation periods(1). Mean BCF values of 370 to 720 were experimentally determined for rainbow trout exposed to unspecified concns of 1,4-dichlorobenzene up to 119 days in laboratory aquariums(2). A whole body BCF of 60 was determined for bluegill sunfish exposed to 1,4-dichlorobenzene over a 28-day period in a continuous flow system(3). BCF values of 33 to 73 were measured in carp exposed to 2 ug/L of 1,4-dichlorobenzene during a 35 day incubation period and BCF values of 47 to 190 were measured in carp exposed to 0.2 ug/L of 1,4-dichlorobenzene during a 35 day incubation period(4). According to a classification scheme(5), these BCF values suggest that bioconcentration in aquatic organisms is moderate to high, provided the compound is not metabolized by the organism(SRC)..

### **Mobility in soil**

An experimental Koc value of 273(1) was determined for 1,4-dichlorobenzene in silt loam soil and a value of 390 was reported in Lincoln fine sand(2). According to a recommended classification scheme(3), these Koc values suggest that 1,4-dichlorobenzene has moderate mobility in soil(SRC). A log Koc value of 4.8 was measured for 1,4-dichlorobenzene from sediment of Lake Ketelmeer, Netherlands(4).

### **Other adverse effects**

no data available

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## 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.

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## SECTION 14: Transport information

### **UN Number**

ADR/RID: UN3077 (For reference only, please check.)

IMDG: UN3077 (For reference only, please check.)

IATA: UN3077 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)  
Chemical Book



IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

### **Transport hazard class(es)**

ADR/RID: 9 (For reference only, please check.)

IMDG: 9 (For reference only, please check.)

IATA: 9 (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

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## 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**

Not Listed.

#### **New Zealand Inventory of Chemicals (NZIoC)**

Listed.

#### **PICCS**

Listed.

#### **Vietnam National Chemical Inventory**

Listed.

#### **IECSC**

Listed.

## Korea Existing Chemicals List (KECL)

Listed.

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## 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](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

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home.

#### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.