

## Chemical Safety Data Sheet MSDS / SDS

## Benzene-1,4-diamine dihydrochloride 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: Benzene-1,4-diamine dihydrochloride

CAS: 624-18-0

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses: For R&amp;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**

Acute toxicity - Category 3, Oral

Acute toxicity - Category 3, Dermal

Eye irritation, Category 2  
Skin sensitization, Category 1  
Acute toxicity - Category 3, Inhalation  
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

Danger

### Hazard statement(s)

H301 Toxic if swallowed  
H311 Toxic in contact with skin  
H319 Causes serious eye irritation  
H317 May cause an allergic skin reaction  
H331 Toxic if inhaled  
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/...  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P271 Use only outdoors or in a well-ventilated area.  
P273 Avoid release to the environment.

### Response

P301+P316 IF SWALLOWED: Get emergency medical help immediately.  
P321 Specific treatment (see ... on this label).  
P330 Rinse mouth.  
P302+P352 IF ON SKIN: Wash with plenty of water/...  
P316 Get emergency medical help immediately.  
P361+P364 Take off immediately all 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.  
P333+P317 If skin irritation or rash 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.  
P391 Collect spillage.

#### **Storage**

P405 Store locked up.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

#### **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:	Benzene-1,4-diamine dihydrochloride
Common names and synonyms:	Benzene-1,4-diamine dihydrochloride
CAS number:	624-18-0
EC number:	210-834-9
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. Refer for medical attention . Induce vomiting (ONLY IN CONSCIOUS PERSONS!).

### **Most important symptoms/effects, acute and delayed**

**SYMPTOMS:** Symptoms of exposure to this compound include irritation of the skin, eyes, mucous membranes and upper respiratory tract, and narcosis. Other symptoms include eczematoid contact dermatitis and bronchial asthma. It can cause hypersensitivity reactions (skin sensitization), skin allergies (such as disseminated neurodermatitis), arthritis, conjunctivitis, gastrointestinal disturbances, neurological symptoms, spleen enlargement, vertigo, gastritis, diplopia, asthenia, exfoliative dermatitis and, on chronic exposure, jaundice and liver atrophy. Eye contact can cause inflammation, damage of the periocular and ocular tissues, edema and hyperemia of the lids and conjunctiva with tearing and exophthalmos, pain and burning of the eyes, redness and swelling of the lids, erosion of the corneal epithelium, iritis, iridocyclitis and retrobulbar neuritis with central scotoma. There have been cases of limitation of eye movement with proptosis, involvement of the cornea with loss of epithelium and infiltration, optic neuritis with papilledema, and lost or permanently impaired vision due to severe corneal ulceration. **ACUTE/CHRONIC HAZARDS:** This compound is harmful by ingestion, inhalation and skin absorption. It is an irritant of the skin, eyes, mucous membranes and upper respiratory tract. When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide, nitrogen oxides and hydrogen chloride gas. (NTP, 1992)

### **Indication of immediate medical attention and special treatment needed, if necessary**

For immediate first aid: Ensure that adequate decontamination has been carried out. If victim is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask as trained. Perform CPR if 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 victim quiet and maintain normal body temperature. Obtain medical attention. Organic bases, amines, and related compounds

## **SECTION 5: Firefighting measures**

### **Suitable extinguishing media**

Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. (NTP, 1992)

### **Specific hazards arising from the chemical**

Flash point data for this chemical are not available; however, it is probably combustible. (NTP, 1992)

### **Special protective actions for fire-fighters**

Use water spray, foam, powder, carbon dioxide.

## **SECTION 6: Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Personal protection: chemical protection suit including self-contained breathing apparatus. Sweep spilled substance into covered containers. Carefully collect remainder. Then store and dispose of according to local regulations.

### **Environmental precautions**

Personal protection: chemical protection suit including self-contained breathing apparatus. Sweep spilled substance into covered containers. Carefully collect remainder. Then store and dispose of according to local regulations.

### **Methods and materials for containment and cleaning up**

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

## **SECTION 7: Handling and storage**

### **Precautions for safe handling**

NO open flames. Closed system, dust explosion-proof electrical equipment and lighting. 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**

Separated from food and feedstuffs.

## SECTION 8: Exposure controls/personal protection

### Control parameters

### Occupational Exposure limit values

TLV: 0.1 mg/m<sup>3</sup>, as TWA; A4 (not classifiable as a human carcinogen).MAK: (inhalable fraction): 0.1 mg/m<sup>3</sup>; carcinogen category: 3B; peak limitation category: II(2); pregnancy risk group: C; skin absorption (H); sensitization of skin (SH)

### 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. Protective clothing.

#### Respiratory protection

Use local exhaust or breathing protection.

#### Thermal hazards

no data available

## SECTION 9: Physical and chemical properties and safety characteristics

Physical state: PHYSICAL DESCRIPTION: White to slightly reddish crystals or gray powder. (NTP, 1992)

Colour: WHITE TO SLIGHTLY REDDISH CRYSTALS

Odour: no data available

Melting point/freezing point:	275 °C
Boiling point or initial boiling point and boiling range:	120°C/13mmHg(lit.)
Flammability:	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	63°C(lit.)
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	Miscible with water
Partition coefficient n-octanol/water:	no data available
Vapour pressure:	no data available
Density and/or relative density:	1.15 g/cm <sup>3</sup>
Relative vapour density:	(air = 1): 6.2
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

**Reactivity**

Decomposes on heating. This produces toxic and corrosive fumes of nitrogen oxides and hydrogen chloride.

**Chemical stability**

no data available

**Possibility of hazardous reactions**

Dust explosion possible if in powder or granular form, mixed with air. Acidic organic/inorganic salts, such as 1,4-PHENYLENEDIAMINE DIHYDROCHLORIDE, are generally soluble in water. The resulting solutions contain moderate to high concentrations of hydrogen ions and have pHs of less than 7.0. They react as acids to neutralize bases. These neutralizations generate heat, but less or far less than is generated by neutralization of inorganic acids, inorganic oxoacids, and carboxylic acid. They usually do not react as either oxidizing agents or reducing agents but such behavior is not impossible. Many of these compounds catalyze organic reactions.

**Conditions to avoid**

no data available

**Incompatible materials**

no data available

**Hazardous decomposition products**

When heated to decomposition it emits very toxic fumes of nitrogen oxides and HCl.

**SECTION 11: Toxicological information****Acute toxicity**

Oral: no data available

Inhalation: no data available

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**

no data available

**Reproductive toxicity**

no data available

**STOT-single exposure**

The substance is irritating to the eyes. The substance may cause effects on the blood and kidneys. This may result in the formation of methaemoglobin and kidney impairment. Medical observation is indicated. The effects may be delayed.

**STOT-repeated exposure**

Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation may cause asthma.

**Aspiration hazard**

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

**SECTION 12: Ecological information****Toxicity**

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

#### **Persistence and degradability**

3.8% biodegradation was observed when 1,4-diaminobenzene dihydrochloride (initial concentration unspecified) was incubated with an activated sludge inoculum obtained from a municipal sewage treatment facility over a 5 day incubation period(1).

#### **Bioaccumulative potential**

An experimental BCF value of 450 was measured for algae exposed to 1,4-diaminobenzene dihydrochloride for 24 hours(1). An experimental BCF value of 6 was measured for fish (golden ide) exposed to 1,4-diaminobenzene dihydrochloride for 3 days(1).

#### **Mobility in soil**

no data available

#### **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: UN2811 (For reference only, please check.)  
IMDG: UN2811 (For reference only, please check.)  
IATA: UN2811 (For reference only, please check.)

#### **UN Proper Shipping Name**

ADR/RID: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)  
IMDG: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)  
IATA: TOXIC SOLID, ORGANIC, N.O.S. (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: I (For reference only, please check.)  
IMDG: I (For reference only, please check.)  
IATA: I (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](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. The symptoms of asthma often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Anyone who has shown symptoms of asthma due to this substance should avoid all further contact. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. See ICSC 0805.

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