

## Chemical Safety Data Sheet MSDS / SDS

## 1-chloro-4-nitrobenzene 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-chloro-4-nitrobenzene

CAS: 100-00-5

**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

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 3, Oral

Acute toxicity - Category 3, Dermal

Acute toxicity - Category 3, Inhalation  
Germ cell mutagenicity, Category 2  
Carcinogenicity, Category 2  
Specific target organ toxicity - repeated exposure, Category 2  
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

### GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

### Hazard statement(s)

H301 Toxic if swallowed  
H311 Toxic in contact with skin  
H331 Toxic if inhaled  
H341 Suspected of causing genetic defects  
H351 Suspected of causing cancer  
H373 May cause damage to organs through prolonged or repeated exposure  
H411 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.  
P271 Use only outdoors or in a well-ventilated area.  
P203 Obtain, read and follow all safety instructions before use.  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
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.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P318 IF exposed or concerned, get medical advice.  
P319 Get medical help if you feel unwell.  
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:	1-chloro-4-nitrobenzene
Common names and synonyms:	1-chloro-4-nitrobenzene
CAS number:	100-00-5
EC number:	202-809-6
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**

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. 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. Induce vomiting (ONLY IN CONSCIOUS PERSONS!).

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

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact Symptoms: Anoxia; unpleasant taste; anemia; methemoglobinemia Target Organs: Blood, liver, kidneys, cardiovascular system, spleen, bone marrow, reproductive system (NIOSH, 2016)

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

Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 mL/kg up to 200 mL of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Aromatic hydrocarbons and related compounds

## **SECTION 5: Firefighting measures**

### **Suitable extinguishing media**

Water may cause foaming or frothing. Use water spray, dry chemical, foam, or carbon dioxide.

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

This compound is combustible. (NTP, 1992)

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

Use water spray, powder, foam, carbon dioxide. Combat fire from a sheltered position.

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT absorb in saw-dust or other combustible absorbents. Do NOT let this chemical enter the environment. Personal protection: complete protective clothing including self-contained breathing apparatus.

### Environmental precautions

Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT absorb in saw-dust or other combustible absorbents. Do NOT let this chemical enter the environment. Personal protection: complete protective clothing including self-contained breathing apparatus.

### Methods and materials for containment and cleaning up

Evacuate persons not wearing protective equipment from area of spill or leak until clean-up is complete. Remove all ignition sources. Dampen spilled material with alcohol to avoid dust, then transfer material to a suitable container. Use HEPA vacuum or wet method to reduce dust during clean-up. Do not dry sweep. Collect powdered material in the most convenient and safe manner and deposit in sealed containers. Ventilate area after clean-up is complete. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.

## 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 combustible substances, reducing agents and food and feedstuffs. Keep in a well-ventilated room. Store in cool,

dry, well-ventilated location. Separate from alkalis and oxidizing materials.

## SECTION 8: Exposure controls/personal protection

### Control parameters

### Occupational Exposure limit values

TLV: 0.1 ppm as TWA; (skin); A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued.MAK: skin absorption (H); carcinogen category: 3B

### 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, face shield or eye protection in combination with breathing protection if powder.

#### 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: Light yellow crystalline solid. Density 1.520 g / cm<sup>3</sup>. Melting point 83°C. Sweet odor. Very toxic by inhalation, ingestion, and skin absorption.

Colour:	Monoclinic prisms
Odour:	Sweet odor
Melting point/freezing point:	82-84 °C
Boiling point or initial boiling point and boiling range:	242 °C
Flammability:	Solid that does not burn, or burns with difficulty.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	127 °C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	1.07X10 <sup>-3</sup> Pa-s at 356.65 deg K
Solubility:	Insoluble in water
Partition coefficient n-octanol/water:	log Kow = 2.39
Vapour pressure:	0.09 mm Hg ( 25 °C)
Density and/or relative density:	1.3
Relative vapour density:	5.4 (vs air)
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

### Reactivity

NIOSH considers p-nitrochlorobenzene to be a potential occupational carcinogen. Decomposes on heating. This produces toxic gases of nitrogen oxides, hydrogen chloride, phosgene and chlorine. The substance is a strong oxidant. It reacts violently with combustible and reducing materials.

### Chemical stability

no data available

### Possibility of hazardous reactions

FIRE HAZARD SLIGHT WHEN EXPOSED TO HEAT OR FLAME. P-NITROCHLOROGENZENE reacts with oxidizing agents. Reacts violently and finally explosively when added to a solution of sodium methoxide in methanol. (NTP, 1992). Unstable when heated.

### Conditions to avoid

no data available

### Incompatible materials

A strong oxidizer. Reacts violently with oxidizers, combustibles, alkalis, sodium methoxide, and reducing materials.

### Hazardous decomposition products

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

## SECTION 11: Toxicological information

### Acute toxicity

Oral: LD50 Rat oral 530 mg/kg

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**

Evaluation: There is inadequate evidence in humans for the carcinogenicity of chloronitrobenzenes. There is inadequate evidence in experimental animals for the carcinogenicity of chloronitrobenzenes. Overall evaluation: Chloronitrobenzenes are not classifiable as to their carcinogenicity to humans (Group 3).

#### **Reproductive toxicity**

no data available

#### **STOT-single exposure**

The substance may cause effects on the blood. This may result in the formation of methaemoglobin. See Notes.

#### **STOT-repeated exposure**

Repeated or prolonged contact may cause skin sensitization.

#### **Aspiration hazard**

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

## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: LC50 *Lepomis macrochirus* (bluegill sunfish) 70 ug/L for 96 hr, static

Toxicity to daphnia and other aquatic invertebrates: LC50; Species: *Daphnia magna* (Water flea, <24 hr old); Conditions: freshwater, static, 20 deg C, pH 8.2, hardness 250 mg/L CaCO<sub>3</sub>, dissolved oxygen >6.5 mg/L; Concentration: 6700 ug/L for 48 hr (95% confidence interval: 3200-10000 ug/L) />98% purity

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

### **Persistence and degradability**

AEROBIC: 10 ug/mL 1-chloro-4-nitrobenzene inoculated with a mixed culture of microorganisms in soil was observed to be resistant to biodegradation (significant ring cleavage, as measured by UV absorbance, was not detected after 64 days)(1). 1-Chloro-4-nitrobenzene, present at 100 mg/L, reached 0 percent of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L and the Japanese MTI test(2).

### **Bioaccumulative potential**

Carp exposed to solutions containing 0.15 ppm 1-chloro-4-nitrobenzene for 8 weeks had BCF values ranging from 5.8-20.9, and carp exposed to solutions containing 0.015 ppm 1-chloro-4-nitrobenzene had BCF values ranging from 7.5-18.1(1). According to a classification scheme(2), these BCF values suggest bioconcentration in aquatic organisms is low(SRC).

### **Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc of 1-chloro-4-nitrobenzene can be estimated to be 310(SRC). According to a classification scheme(2), this estimated Koc value suggests that 1-chloro-4-nitrobenzene is expected to have moderate mobility in soil(SRC).

### **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: UN1578 (For reference only, please check.)

IMDG: UN1578 (For reference only, please check.)

IATA: UN1578 (For reference only, please check.)

### **UN Proper Shipping Name**

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

IMDG: CHLORONITROBENZENES, SOLID (For reference only, please check.)

IATA: CHLORONITROBENZENES, SOLID (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: II (For reference only, please check.)

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

IATA: II (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 indicated.

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