

Chemical Safety Data Sheet MSDS / SDS

1-chloro-2-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-2-nitrobenzene

CAS: 88-73-3

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

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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
Carcinogenicity, Category 1B
Specific target organ toxicity - repeated exposure, Category 1
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
H350 May cause cancer
H372 Causes 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-2-nitrobenzene

Common names and synonyms: 1-chloro-2-nitrobenzene

CAS number: 88-73-3

EC number: 201-854-9

Concentration: 100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. 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. 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. Give a slurry of activated charcoal in water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

INHALATION: Headache, languour, anemia. Irritation of nose and throat, cyanosis, shallow respiration, convulsions, and coma. EYES: Irritation. SKIN: Irritation. INGESTION: Forms methemoglobin giving rise to cyanosis and blood changes. (USCG, 1999)

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

Special Hazards of Combustion Products: Ignites at high temperatures with evolution of nitrogen oxide and chloride fumes. Behavior in Fire: Volatile solid which gives off flammable vapors when heated; may form explosive mixtures with air. (USCG, 1999)

Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into 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.

Environmental precautions

Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into 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.

Methods and materials for containment and cleaning up

Environmental considerations-land spill: Dig a pit, pond, lagoon, 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. / Cover solids with a plastic sheet to prevent dissolving in rain or fire fighting water. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash, cement powder, or commercial sorbents. Chloronitrobenzenes, ortho, liquid

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. NO contact with flammables. 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 combustible substances, reducing agents and food and feedstuffs. 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

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 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: Solid. Liquid (hot melt).

Colour: Pale green to yellow.

Odour: no data available

Melting point/freezing point: 32.5 °C.

Boiling point or initial boiling point and boiling range:	246 °C. Atm. press.:100 kPa.;119 °C. Atm. press.:1.1 kPa.
Flammability:	Combustible. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	123 °C. Atm. press.:1 013 hPa.
Auto-ignition temperature:	470 °C.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	dynamic viscosity (in mPa s) = 2.09. Temperature:44.5°C.
Solubility:	Insoluble in water
Partition coefficient n-octanol/water:	log Pow = 2.24.
Vapour pressure:	0.04 hPa. Temperature:20 °C. Remarks:Obtained by extrapolation with the regressed parameters of the Antoine-Equation.;0.07 hPa. Temperature:25 °C. Remarks:Obtained by extrapolation with the regressed parameters of the Antoine-Equation.;0.43 hPa. Temperature:50 °C. Remarks:Obtained by extrapolation with the regressed parameters of the Antoine-Equation.
Density and/or relative density:	1.37 g/cm ³ . Temperature:22 °C.
Relative vapour density:	5.4 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic and corrosive fumes of nitrogen oxides, chlorine (see ICSC 0126), hydrogen chloride (see ICSC 0163) and phosgene (see ICSC 0007). The substance is a strong oxidant. It reacts with combustible and reducing materials.

Chemical stability

no data available

Possibility of hazardous reactions

Dust explosion possible if in powder or granular form, mixed with air. O-NITROCHLOROBENZENE is incompatible with strong bases and strong oxidizing agents. It will react with ammonia. (NTP, 1992)

Conditions to avoid

no data available

Incompatible materials

Reacts with alkalis, oxidizing materials.

Hazardous decomposition products

no data available

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 - rat (male) - 219 mg/kg bw.

Inhalation: LC50 - rat (male) - ca. 3 200 mg/m³ air.

Dermal: LD50 - rat (male) - 655 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

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 is mildly irritating to the eyes. The substance may cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed. Medical observation is indicated. See Notes.

STOT-repeated exposure

The substance may have effects on the blood and liver. This may result in the formation of methaemoglobin, anaemia and liver impairment.

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information**Toxicity**

Toxicity to fish: LC50 - Danio rerio (previous name: Brachydanio rerio) - 34.8 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: IC50 - Daphnia carinata - 21.3 mg/L - 48 h.

Toxicity to algae: EC50 - algae: Scenedesmus obliquus - 18.1 mg/L - 96 h.

Toxicity to microorganisms: EC50 - Photobacterium phosphoreum - 4.54 mg/L - 15 min.

Persistence and degradability

AEROBIC: 21.1 ppm 1-Chloro-2-nitrobenzene in Ohio River water inoculated weekly with settled sewage underwent no degradation in 175 days(1). 1-Chloro-2-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 MITI test(2).

Bioaccumulative potential

Carp exposed to solutions containing 0.25 ppm 1-chloro-2-nitrobenzene for 8 weeks had BCF values ranging from 7.0-20.8, and carp exposed to solutions containing 0.025 ppm 1-chloro-2-nitrobenzene had BCF values ranging from 7.4-22.3(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-2-nitrobenzene can be estimated to be 316(SRC). According to a classification scheme(2), this estimated Koc value suggests that 1-chloro-2-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?pagelD=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

TLV (as para-nitrochlorobenzene): 0.1 ppm (skin) A3 (confirmed animal carcinogen with unknown relevance to humans) (ACGIH 2004). Depending on the degree of exposure, periodic medical examination is suggested. Specific treatment is necessary in case of

poisoning with this substance; the appropriate means with instructions must be available. Rinse contaminated clothing with plenty of water because of fire hazard.

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