Chemical Safety Data Sheet MSDS / SDS

1-chloro-3-nitrobenzene SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: 1-chloro-3-nitrobenzene

CAS: 121-73-3

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

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 4, Oral
Eye irritation, Category 2

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Warning

Hazard statement(s)

H302 Harmful if swallowed
H319 Causes serious eye irritation

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/...

Response

P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage

none

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-3-nitrobenzene
Common names and synonyms:	1-chloro-3-nitrobenzene
CAS number:	121-73-3
EC number:	204-496-1
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention. See Notes.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention .

Following eye contact

Rinse with plenty of water for several minutes (remove contact lenses if easily possible).

Following ingestion

Rinse mouth. Refer immediately for medical attention.

Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include cyanosis from methemoglobinemia; and blood changes. ACUTE/CHRONIC HAZARDS: When heated to decomposition this compound emits toxic fumes. (NTP, 1992)

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

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

Special protective actions for fire-fighters

Use water spray, foam, carbon dioxide.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

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.

Environmental precautions

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.

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, meta, solid

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. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing.Store in a cool, dry, well ventilated location. Separate from alkalies and oxidizing materials.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK skin absorption (H)

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.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use local exhaust. Use breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Solid. Crystals, orthorhombic prisms from alcohol.
Colour:	Pale-yellow.
Odour:	no data available
Melting point/freezing point:	46 °C.
Boiling point or initial boiling point and boiling range:	236 °C. Remarks:Other details not known.
Flammability:	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 1.4% by volume; Upper flammable limit: 8.7% by volume
Flash point:	103 °C.
Auto-ignition temperature:	500 deg F (260 deg C)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	Insoluble (NTP, 1992)
Partition coefficient n-octanol/water:	log Pow = 2.41. Remarks:No details available.

Vapour pressure:	0.097 mm Hg. Temperature:25 °C.
Density and/or relative density:	1.534 g/cm3. Temperature:20 °C.
Relative vapour density:	(air = 1): 5.44
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic and corrosive fumes including nitrogen oxides, chlorine (see ICSC 0126), hydrogen chloride (see ICSC 0163) and phosgene (see ICSC 0007). This generates fire and explosion hazard. 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.3-CHLORONITROBENZENE can react with oxidizing materials. (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

Reacts with alkalies, oxidizing materials.

Hazardous decomposition products

no data available

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 - rat - 400 mg/kg bw. Remarks:Mortalities were observed at 251, 316, 398 and 501 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 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. This may result in the formation of methaemoglobin.

Aspiration hazard

A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - Pimephales promelas - 18.8 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: LC50 - Daphnia magna - 20 mg/L - 48 h.

Toxicity to algae: EC50 - Scenedesmus pannonicus - 1.9 mg/L - 14 d.

Toxicity to microorganisms: EC50 - Photobacterium phosphoreum - 13.1 mg/L - 15 min.

Persistence and degradability

AEROBIC: 1-Chloro-3-nitrobenzene was tested for biodegradability using the OECD, river die-away, and Pitter tests; the half-life for 1-chloro-3-nitrobenzene was much greater than four weeks for these tests using both unadapted and adapted inoculum(1). A lack of significant ring cleavage by day 64, as measured by UV spectroscopy, showed that 1-chloro-3-nitrobenzene at 10 ug/mL did not degrade readily in aqueous suspensions of Niagara silt loam(2). This analytical method was not selective enough however, to determine whether biotransformations not involving aromatic ring cleavage may have taken place(2). Information from studies to determine the effectiveness of various drinking water purification methods in the Netherlands suggests that 1-chloro-3-nitrobenzene may be biodegraded in soil(3). The removal of 1-chloro-3-nitrobenzene from bank-filtered water that was observed in these studies, may have been due partly to biodegradation; however, the contribution of other processes such as adsorption was not determined. In an earlier study, 1-chloro-3-nitrobenzene was measured in bank-filtered Rhine River water retained for a time of >1 year(4). The biodegradation half-life of 1-chloro-3-nitrobenzene was >64 days in solutions using microorganisms derived from a soil inoculum(5).

Bioaccumulative potential

Rainbow trout (Salmo gairdneri) were fed a mixture of 14 different chloronitrobenzenes, including 1-chloro-3-nitrobenzene, and the amount of 1-chloro-3-nitrobenzene present in the fish was measured over 36 days(1). 1-Chloro-3-nitrobenzene was present in trace amounts 3 days following exposure and was not detectable (<5 ug/kg fish) after 8 days. Fish in water containing 800 ng/L of 1-chloro-3-nitrobenzene plus the same mixture of chloronitrobenzenes had BCF values for 1-chloro-3-nitrobenzene of 77 after 5 days to 91 after 36 days with a mean BCF of 78(1). According to a classification scheme(2), these BCF values suggest bioconcentration in aquatic organisms is moderate(SRC).

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of 1-chloro-3-nitrobenzene can be estimated to be 310(SRC). According to a classification scheme(2), this estimated Koc value suggests that 1-chloro-3-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: No
IMDG: No
IATA: No

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)

Not 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

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) BEI issued (ACGIH 2006). See ICSC 0028. 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.