GPS Safety Summary

1-chloro-4-nitrobenzene

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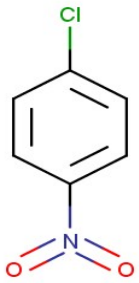
CL-4: PUBLIC

1. General Statement:

1-chloro-4-nitrobenzene is an organic compound. It is a pale yellow solid. This is a common intermediate in the production of a number of industrially useful compounds, including common antioxidants found in rubber. It is a combustible substance, poorly flammable.Very slightly soluble in water.Steam-distillable.Acute or chronic health hazards result from the substance.The substance is hazardous to the aquatic environment.

2. Chemical identity

Name : 1-chloro-4-nitrobenzene
CAS number(s) : 100-00-5
EC number : 202-809-6
Molecular formula : C6H4ClNO2
Structure



3. Uses and Benefits

1-chloro-4-nitrobenzene is an intermediate in the preparation of a variety of derivatives. Nitration gives 2,4-dinitrochlorobenzene, and 3,4-dichloronitrobenzene. Reduction with iron metal gives 4-chloroaniline. It is used in the manufacture of drugs, agricultural and rubber chemicals, oil additives, and other chemicals.

4. Physical / chemical properties

Property	Value
Physical state :	Solid
Colour :	Light yellow to yellow-green.
Odour :	Aromatic odour. Sweet odour.
pH :	7

Melting point	83 °C
Boiling point :	242 °C
Flash point :	127 °C (Closed cup, 1013 hPa)
Density :	1520 kg/m3 (22 °C)
Solubility in Water:	0.02 g/100ml (20 °C)
Viscosity, dynamic :	1.07 mPa·s (83.5 °C)

5. Health Effects

Effect Assessment	**Result**
Acute toxicity (Oral / inhalation / dermal)	Toxic if swallowed, in contact with skin or if inhaled.
Irritation / corrosion Skin / eye/ respiratory tract	No
Respiratory or skin sensitisation	No
Toxicity after repeated exposure Oral / inhalation / dermal	May cause damage to organs through prolonged or repeated exposure.
Genotoxicity / Mutagenicity	Suspected of causing genetic defects.
Carcinogenicity	Suspected of causing cancer.
Toxicity for reproduction	No

6. Environmental Effects

Effect Assessment	**Result**
Aquatic toxicity	Yes
Fate and behavior	**Result**
Persistence and degradability	Non degradable in the soil. No inhibition of biodegradation process in the soil. Not readily biodegradable in water.
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

7. Exposure

Human health

1-Chloro-4-nitrobenzene is rapidly absorbed via skin, gastrointestinal tract or respiratory tract and distributed in the tissue predominantly in fat, blood cells, skeletal muscles, liver and kidney. Most of the substance was excreted with the urine followed by excretion with feces. It suspected of causing genetic defects & cancer.

Skin rash/inflammation. Headache. Nausea. Paleness. Change in the hemogramme/blood composition. Enlargement/affection of the liver. Affection of the renal tissue are the Chronic symptoms.

The probability of exposure to workers is expected to be low because this product is manufactured in an enclosed controlled environment and is transported in well sealed containers. Workers may be exposed during (un)loading, mixing, sampling, analysis or maintenance operations and particularly in case of batch processes.The exposure must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

Careless handling or accidental spillage of the chemical could result in exposure to potentially hazardous levels of chemicals.

Industrial workers should ensure that they follow the advice found in the extended safety data sheet (SDS).

Environment

Care should be taken to avoid releases of these products to sewage, drainage systems and water bodies. Spillage shall be quickly collected in the event of an accidental release. More information about release measures and accidental release measures are available in the extended safety data sheet.

8. Risk Management Recommendations

Human health measures

Organizational	A basic standard of occupational hygiene is recommended. Ensure operatives are well informed of the hazards and trained to minimise exposures.Ensure regular inspection and maintenance of equipment and machines.Handle and store according to the indications of the Safety Data Sheet.	
Protection	Eye protection:	Safety glasses,Face shield (EN 166). In case of dust production: protective goggles (EN 166)
	Skin and body protection:	Wear suitable protective clothing,Protective clothing (EN 14605 or EN 13034). In case of dust production: head/neck protection. In case of dust production: dustproof clothing (EN13982)

	Respiratory protection:	Wear an appropriate mask. Self-contained breathing apparatus,Dust production: dust mask with filter type P3
Engineering controls	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.Ensure good ventilation of the work station.	
Environment protective measures		
Products must not be released into water without pre-treatment. Neutralize wastewater before release.		

9. First-aid measures

First-aid measures after inhalation : Remove the person to fresh air and keep them comfortable for breathing. Call adoctor.

First-aid measures after skin contact : Wash skin with plenty of water. Take off immediately all contaminated clothing.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

First-aid measures after ingestion : Rinse mouth. Call a physician immediately.

10. Fire-fighting measures

Extinguishing media:

Suitable extinguishing media : Water spray. Dry powder. Foam.

Unsuitable extinguishing media : Water (quick-acting extinguisher, reel); risk of puddle expansion. Water;risk of puddle expansion.

Hazardous decomposition products in case of fire : On burning: release of toxic and corrosive gases/vapours (chlorine,nitrous vapours, hydrogen chloride, phosgene, dioxin).

Advice for firefighters
Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

Firefighting instructions : Fight fire from safe distance and protected location. Do not enter a fire area without proper protective equipment, including respiratory protection.

11. Accidental release measures

Protective equipment : Gloves (EN 374). Face shield (EN 166). Protective clothing (EN 14605 orEN 13034). Dust cloud production: self-contained breathing apparatus(EN 136 + EN 137). Dust cloud production: dust-tight suit (EN 13982).

Emergency procedures : Ventilate spillage area. Do not breathe dust/fume/gas/mist/vapours/spray.Avoid contact with skin, eyes and clothing.

For containment : Collect spillage.

12. Disposal consideration

Regional legislation (waste) : Disposal must be done according to official regulations.

Waste treatment methods: Dispose of contents/container in accordance with licensed collector's sorting instructions.

Sewage disposal recommendations:Do not discharge into drains or the environment. Dispose of an authorized waste collection point. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals.

13. Handling and storage

Precautions for safe handling : Obtain special instructions before use. Do not handle it until all safety precautions have been read and understood. Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Use only outdoors or in a well-ventilated area.

Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

14. Classification and Labeling

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS06 GHS08 GHS09

Signal word (CLP) : Danger

Hazard statements (CLP) : H301+H311+H331 - Toxic if swallowed, in contact with skin or 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 statements (CLP) : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe dust.
P264 - Wash hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.

15. Conclusion

1-Chloro-4-nitrobenzene is a pale yellow solid, industrially important as an intermediate in the manufacture of dyes, pharmaceuticals, rubber chemicals, and agricultural products. Though it plays a critical role in various chemical syntheses, it poses notable health and environmental risks.From a health perspective, the compound is toxic if swallowed, inhaled, or absorbed through the skin. It is suspected of causing cancer and genetic defects, and may cause organ damage upon repeated exposure. Acute symptoms include headaches, nausea, skin inflammation, and effects on blood, liver, and kidneys. More information about release measures and accidental release measures are available in the extended safety data sheet.

16. Contact Information within company

Manufacturer

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This GPS safety summary is intended to give general information about the health, safety and environmental and not intended to provide in-depth details. To obtain the most accurate and current information, consult the appropriate Safety Data Sheet (SDS) prior to use of the material named herein.