

1: Identification of substance / mixture

1. Product Identifier

Substance

Product Name **Chlorobenzene**
Product Code 044613
CAS Number 108-90-7
Other Names
IUPAC
MFCD Number MFCD00000530
EC/EINECS 203-628-5
REACH Number 01-2120752200-71-xxxx Index-No 602-033-00-1

2. Relevant identified uses of the substance or mixture and uses advised against

Research and Development

3. Details of the supplier of the safety data sheet

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Hadfield
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SK13 1QH
UK

Telephone: +44(0)1457 860111
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4. Emergency telephone number

+44(0)7855 268577 -

2. Hazards Identification

1. Classification of the substance or mixture

H226	Flam Liq. 3	
H315	Skin Irrit. 2	
H332	Acute Tox. 4	
H411	Aquatic Chronic 2	

2. Label elements

Signal Word **Warning**



Hazard Statements

H226	Flammable liquid and vapour.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Phrases

P210	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P273	Avoid release to the environment.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P370 + P378	In case of fire: Use CO2, foam or extinguishing powder for extinction.

3. Other Hazards

Additional precautionary phrases are located throughout the safety data sheet

3. Composition / Information on Ingredients

1. Substances

Product Name	Hazards	Concentration
Chlorobenzene		
CAS Number: 108-90-7 EC/EINECS: 203-628-5 : 01-2120752200-71-xxxx	H226, H315, H332, H411 Acute Tox. 4, Aquatic Chronic 2, Flam Liq. 3, Skin Irrit. 2	<=100%

4. First Aid Measures

1. Description of first aid measures

<i>Skin Contact</i>	P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash immediately with plenty of soap and water.
<i>Eye Contact</i>	Rinse opened eye for several minutes under running water.
<i>Ingestion</i>	Wash out mouth with water.
<i>Inhalation</i>	P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Remove casualty from exposure ensuring one's own safety whilst doing so.

2. Most important symptoms and effects

There may be irritation and redness.

3. Indication of any immediate medical attention

No additional measures required

5. Firefighting measures

1. Extinguishing Media

<i>Suitable</i>	P370 + P378: In case of fire: Use CO ₂ , foam or extinguishing powder for extinction.
<i>Unsuitable</i>	no data

2. Special Hazards arising from the substance or mixture

In combustion toxic fumes may form.

3. Advice for Fire Fighters

Wear self-contained breathing apparatus.
Wear protective clothing to prevent contact with skin and eyes.

6. Accidental Release Measures

1. Personal Precautions

Eliminate all sources of ignition.
Evacuate the area immediately.
Do not attempt to take action without suitable protective clothing – see section 8 of SDS.

2. Environmental Precautions

Do not discharge into drains or rivers.
Contain the spillage using bunding.

3. Methods & Materials

Mix with sand or vermiculite.
Do not use equipment in clean-up procedure which may produce sparks.
Transfer to a closable, labelled salvage container for disposal by an appropriate method.

4. Preventing the occurrence of secondary hazards.

No Special Measures Required

7. Handling and Storage

1. Personal Precautions

- Safe Handling* Ensure there is sufficient ventilation of the area.
P240: Ground/bond container and receiving equipment.
P264: Wash hands thoroughly after handling.
- Protection against explosions and fires* P241: Use explosion-proof electrical/ventilating/lighting/. equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.

2. Conditions for safe storage, including any incompatibilities

- Managing Storage Risks* Store in cool, well ventilated area.
Keep away from sources of ignition.
Keep container tightly closed.
- Storage Controls* P403 + P235: Store in a well-ventilated place. Keep cool.
- Maintaining Integrity* P210: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P233: Keep container tightly closed.
- Other advice* no further information available

3. Specific End Uses

The end use(s) have not been fully determined. The substance is supplied for Research and Development purposes by professionals only.

8. Exposure Controls/Personal Protection

1. Control Parameters

No Data Available

2. Exposure Controls

- General protective and hygiene measures* P280: Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands during breaks and at the end of handling the material
Immediately remove any contaminated clothing
- Engineering measures* P271: Use only outdoors or in a well-ventilated area.
Ensure lighting and electrical equipment are not a source of ignition.
- Eye / Face Protection* Safety Glasses with side-shields.
- Hand protection* Protective gloves.
- Respiratory protection* P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
Use breathing protection with high concentrations
- Skin protection* Handle with gloves.
Gloves must be inspected prior to use.
Use proper glove removal technique to avoid skin contact with this product.
Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practice.
Wash and dry hands.
Protective clothing.
- Other personal protection advice* no data

9. Physical and Chemical Properties

1. Physical and Chemical Properties

Appearance	Clear colorless to very pale yellow liquid
Odour	Characteristic
Odour threshold	No Data Available
PH	No Data Available
Melting point / Freezing point	-45°C

Initial boiling point and boiling range	132°C
Flash point	23°C
Evaporation rate	No Data Available
Flammability(solid,gas)	No Data Available
Upper/lower flammability or explosive limits	No Data Available
Vapour pressure	1.17kPa/20°C
Vapour density	3.88
Relative density	1.11
Solubility(ies):	Miscible with : Ethanol Ether Benzene Chloroform
Partition coefficient: n-octanol/water	No Data Available
Auto-ignition temperature	No Data Available
Decomposition temperature	No Data Available
Viscosity	No Data Available
Explosive properties	No Data Available
Oxidising properties	No Data Available

2. Other Information

Light-sensitive

10. Stability and Reactivity

1. Reactivity

no unusual reactivity

2. Stability

Stable under normal conditions.

3. Possibility of Hazardous Reactions

no hazardous reactions known

4. Conditions to Avoid

Sources of Ignition.
 Direct Sunlight.
 Light.

5. Incompatible Materials

Oxidising agents.

6. Hazardous Decomposition Products

In combustion emits toxic fumes.
 In combustion emits toxic fumes of carbon dioxide / carbon monoxide.
 In combustion emits toxic fumes of hydrogen chloride / phosgene.

11. Toxicology information

1. Information

<i>Acute Toxicity</i>	ihl-rat LC50:2965 ppm ipr-rat LD50:1655 mg/kg orl-rat LD50:1110 mg/kg skn-rbt LD:>2200 mg/kg
<i>Skin corrosion/irritation</i>	irritant for skin and mucous membranes
<i>Serious eye Damage/irritation</i>	irritant effect
<i>Respiratory or skin sensitisation</i>	No sensitizing effect known
<i>Germ Cell mutagenicity</i>	mmo-mus-lym 70 mg/L (+S9) mrc-smc 1000 ppm
<i>Carcinogenicity</i>	orl-rat TDLo:61800mg/kg/103W-I

<i>Reproductive toxicity</i>	not known
<i>STOT-single exposure</i>	not known
<i>STOT-repeated exposure</i>	not known
<i>Aspiration hazard</i>	not known

2. Additional

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH

12. Ecological Information

1. Toxicity

Ecotoxicity:
Fish: 48h LC50: 17 ppm (*Oryzias latipes*)
LC100 - *Leuciscus idus* (Golden orfe) - 0.03 - 28mg/l - 48.0 h
LC50 - *Cyprinodon variegatus* (sheepshead minnow) - 10mg/l - 96.0 h
LC50 - *Lepomis macrochirus* (Bluegill) 4.5 - 7.4mg/l - 76.0 h
NOEC - *Cyprinodon variegatus* (sheepshead minnow) - 6.2mg/l - 96.0h
Toxicity to daphnia and other aquatic invertebrates:
NOEC - *Daphnia magna* (water flea) <1.4mg/l - 11d
LC50 - *Daphnia magna* (water flea) 10.7mg/l - 48h
Toxicity to algae:
EC50 - *Pseudokirchneriella subcapitata* (green algae) - 12.50mg/l - 96h

2. Persistence and degradability

0% (by BOD), 5% (by UV-VIS)

3. Bio-Accumulative Potential

4.3 - 39.6 (conc. 0.15 ppm), 3.9 - 22.8 (conc. 0.015 ppm)

4. Mobility and Soil

Mobility in soil
log Pow: 2.18 - 2.84
Soil adsorption (Koc): 313.1 and 146.5
Henry's Law constant (PaM3/mol):

5. Results of PBT & vPvB assessment

Class 2 - Water Polluting substance

6. Other adverse effects

Water hazard class 2 (self assessment); hazardous for water.

13. Disposal Considerations

1. Waste Treatment Methods

Disposal Operations

Disposal of Packaging Disposal must be made according to official regulations.

14. Transport Information

Air (ICAO)

1. **UN Number:** 1134
2. **Shipping Name:** Chlorobenzene
3. **Transport hazard class(es):** : 3 Sub Class :



4. **Packing group:** III

5. **Environmental hazards:**
6. **Special Precautions for user:**
7. **Transport in bulk:**

Road (ADR)

1. **UN Number:** 1134
2. **Shipping Name:** CHLOROBENZENE
3. **Transport hazard class(es) :** 3 Sub Class :



4. **Packing group:** III
5. **Environmental hazards:**
6. **Special Precautions for user:**
7. **Transport in bulk:**

Sea (IMDG)

1. **UN Number:** 1134
2. **Shipping Name:** Chlorobenzene
3. **Transport hazard class(es) :** 3 Sub Class :



4. **Packing group:** III
5. **Environmental hazards:**
6. **Special Precautions for user:**
7. **Transport in bulk:** IBCINS: IBC03
IBCPCOV: -
UNTANKINS: -
TANKPCOV: TP1

15. Safety, health, environmental and national regulations

1. Safety, health, environmental and national regulations:

product is not subject to any additional regulations or provisions

2. Safety Assessment

No Chemical Safety Assessment

16. Other Information

1. Other Information:

ADR: Accord Europeen sur le transport des marchandises Dangereuses par Route(European Agreement concerning the International Carriage of Dangerous Goods by road)
RID:Reglement International concernant le transport des marchandises dangereuses par chemin de fer (Regulations concerning the International transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the International Air Transport Association
ICAO:International Civil Aviation Organization
ICAO-TI: Technical Instructions by the ICAO
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
CAS:Chemical Abstracts Service

2. Associated risk phrases according to European directive 67/548/EEC

3. Disclaimer

The product listed is for research and development purposes only and not for human or animal use. As such, in most cases, the toxicological, ecological and physicochemical properties have not been fully determined and the product should be treated with respect and always handled under suitable conditions by appropriately qualified personnel. The responsible party shall use this datasheet only in conjunction with other sources of information gathered by them, and should make an independent judgement of suitability, to ensure proper use and protect the health and safety of employees. This information is furnished without warranty and any use of the product not in conformance with this material safety data sheet, or in combination with any other product or process, is the responsibility of the user.