



# SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 07/14/2014

Version 1.2

## SECTION 1. Identification

### Product identifier

Product number	814506
Product name	Chlorobenzene special quality for synthesis
CAS-No.	108-90-7

### Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Chemical for synthesis
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### Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation   290 Concord Road, Billerica, MA 01821, United States of America   General Inquiries: +1-978-715-4321   Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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## SECTION 2. Hazards identification

### GHS Classification

Flammable liquid, Category 3, H226  
Acute toxicity, Category 4, Inhalation, H332  
Chronic aquatic toxicity, Category 2, H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

#### Hazard pictograms



#### Signal Word

Warning

#### Hazard Statements

H226 Flammable liquid and vapor.  
H332 Harmful if inhaled.  
H411 Toxic to aquatic life with long lasting effects.

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### *Precautionary Statements*

P210 Keep away from heat.

P273 Avoid release to the environment.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

### **OSHA Hazards**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS and may deviate from the GHS information.

### **Other hazards**

None known.

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## **SECTION 3. Composition/information on ingredients**

Formula	C <sub>6</sub> H <sub>5</sub> Cl	C <sub>6</sub> H <sub>5</sub> Cl (Hill)
Molar mass	112.56 g/mol	

### **Hazardous ingredients**

*Chemical Name ( Concentration)*

CAS-No.

*chlorobenzene ( >= 90 % - <= 100 % )*

108-90-7

Exact percentages are being withheld as a trade secret.

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## **SECTION 4. First aid measures**

### **Description of first-aid measures**

#### *Inhalation*

After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration. Oxygen if necessary. Immediately call in physician.

#### *Skin contact*

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower.

#### *Eye contact*

After eye contact: rinse out with plenty of water.

#### *Ingestion*

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

Never give anything by mouth to an unconscious person.

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

Dermatitis, Pain, narcosis, agitation, spasms, Diarrhea, Vomiting, Headache, ataxia (impaired locomotor coordination), CNS disorders

Drying-out effect resulting in rough and chapped skin.

### **Indication of any immediate medical attention and special treatment needed**

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No information available.

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### SECTION 5. Fire-fighting measures

#### Extinguishing media

*Suitable extinguishing media*

Water, Carbon dioxide (CO<sub>2</sub>), Foam, Dry powder

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

#### Special hazards arising from the substance or mixture

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Pay attention to flashback.

Development of hazardous combustion gases or vapors possible in the event of fire.

Fire may cause evolution of:

Hydrogen chloride gas, Phosgene

#### Advice for firefighters

*Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system. Remove container from danger zone and cool with water.

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### SECTION 6. Accidental release measures

#### Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

#### Environmental precautions

Do not empty into drains. Risk of explosion.

#### Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

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### SECTION 7. Handling and storage

#### Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

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### *Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

### **Conditions for safe storage, including any incompatibilities**

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Store at +15°C to +25°C (+59°F to +77°F).

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## **SECTION 8. Exposure controls/personal protection**

### **Exposure limit(s)**

#### *Ingredients*

Basis	Value	Threshold limits	Remarks
<i>chlorobenzene</i>	<i>108-90-7</i>		
ACGIH	Time Weighted Average (TWA):	10 ppm	
OSHA_TRANS	PEL:	75 ppm 350 mg/m <sup>3</sup>	
Z1A	Time Weighted Average (TWA):	75 ppm 350 mg/m <sup>3</sup>	

### **Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

### **Individual protection measures**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

#### *Hygiene measures*

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

#### *Eye/face protection*

Safety glasses

#### *Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

#### *Other protective equipment:*

Flame retardant antistatic protective clothing

#### *Respiratory protection*

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

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**SECTION 9. Physical and chemical properties**

Physical state	liquid
Color	colorless
Odor	benzene-like
Odor Threshold	0.09 - 59.8 ppm
pH	at 68 °F ( 20 °C) neutral
Melting point	-45 °C
Boiling point/boiling range	270 °F ( 132 °C) at 1,013 hPa
Flash point	81 °F ( 27 °C) Method: DIN 51755 Part 1
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1.3 %(V)
Upper explosion limit	11 %(V)
Vapor pressure	12 hPa at 68 °F ( 20 °C)
Relative vapor density	3.9
Density	1.11 g/cm <sup>3</sup> at 68 °F ( 20 °C)
Relative density	No information available.
Water solubility	0.4 g/l at 68 °F ( 20 °C)
Partition coefficient: n-octanol/water	log Pow: 2.84 (experimental) (Lit.) Bioaccumulation is not expected.
Autoignition temperature	No information available.
Decomposition temperature	No information available.

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Viscosity, dynamic	0.8 mPa.s at 68 °F ( 20 °C)
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Ignition temperature	1094 °F ( 590 °C)

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### SECTION 10. Stability and reactivity

#### Reactivity

steam-volatile

Vapor/air-mixtures are explosive at intense warming.

#### Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

#### Possibility of hazardous reactions

Exothermic reaction with:

Alkali metals, Alkaline earth metals, Oxidizing agents, dimethyl sulfoxide, Nitric acid

Risk of explosion with:

sodium, in finely distributed form.

PHOSPHORUS TRICHLORIDE, with, sodium

#### Conditions to avoid

Heating.

#### Incompatible materials

rubber

#### Hazardous decomposition products

in the event of fire: See section 5.

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### SECTION 11. Toxicological information

#### Information on toxicological effects

##### *Likely route of exposure*

Inhalation, Eye contact, Skin contact

##### *Target Organs*

Eyes

Skin

Respiratory system

Central nervous system

Liver

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### *Acute oral toxicity*

LD50 rat: 1,100 mg/kg (IUCLID)

Symptoms: Pain, Vomiting, Diarrhea, Risk of aspiration upon vomiting., Pulmonary failure possible after aspiration of vomit.

### *Acute inhalation toxicity*

LC50 rat: 13.9 mg/l; 6 h (IUCLID)

absorption

### *Acute dermal toxicity*

absorption

### *Skin irritation*

rabbit

Result: slight irritation

OECD Test Guideline 404

Dermatitis Drying-out effect resulting in rough and chapped skin.

### *Eye irritation*

rabbit

Result: No eye irritation

OECD Test Guideline 405

### *Sensitization*

Sensitization test: guinea pig

Result: negative

Method: OECD Test Guideline 406

### *Genotoxicity in vitro*

Ames test

Result: negative

Method: OECD Test Guideline 471

Mutagenicity (mammal cell test):

Result: negative

Method: OECD Test Guideline 476

### *Specific target organ systemic toxicity - single exposure*

The substance or mixture is not classified as specific target organ toxicant, single exposure.

### *Specific target organ systemic toxicity - repeated exposure*

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

### *Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

## **Carcinogenicity**

IARC

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

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NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.	
ACGIH	Confirmed animal carcinogen with unknown relevance to humans.	
	chlorobenzene	108-90-7

### Further information

Systemic effects:

CNS disorders, tachycardia, drop in blood pressure, agitation, spasms, ataxia (impaired locomotor coordination), narcosis, Headache

Damage to:

Liver, Kidney

Handle in accordance with good industrial hygiene and safety practice.

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## SECTION 12. Ecological information

### Ecotoxicity

*Toxicity to fish*

LC50 Salmo: 10.4 mg/l; 96 h

OECD Test Guideline 203

*Toxicity to daphnia and other aquatic invertebrates*

EC0 E.sulcatum: > 390 mg/l; 72 h (Lit.)

EC50 Daphnia magna (Water flea): 20 mg/l; 48 h

OECD Test Guideline 202

*Toxicity to algae*

IC50 Pseudokirchneriella subcapitata (green algae): 12.5 mg/l; 96 h (IUCLID)

*Toxicity to bacteria*

EC50 activated sludge: 140 mg/l; 30 min

OECD Test Guideline 209

### Persistence and degradability

*Biodegradability*

15 %; 28 d

OECD Test Guideline 301C

Not readily biodegradable.

*Theoretical oxygen demand (ThOD)*

2,060 mg/g

(Lit.)

*Ratio BOD/ThBOD*

BOD5 1.5 %

(Lit.)

*Ratio COD/ThBOD*

20 %

(Lit.)

### Bioaccumulative potential



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*Partition coefficient: n-octanol/water*

log Pow: 2.84

(experimental)

(Lit.) Bioaccumulation is not expected.

### Mobility in soil

*Distribution among environmental compartments*

Adsorption/Soil

log Koc: 2.35

(experimental)

Moderately mobile in soils

### Other adverse effects

*Henry constant*

315 Pa\*m<sup>3</sup>/mol

Method: (experimental)

(Lit.) Distribution preferentially in air.

*Additional ecological information*

Discharge into the environment must be avoided.

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## SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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## SECTION 14. Transport information

### Land transport (DOT)

UN number	UN 1134
Proper shipping name	CHLOROBENZENE
Class	3
Packing group	III
Environmentally hazardous	--

### Air transport (IATA)

UN number	UN 1134
Proper shipping name	CHLOROBENZENE
Class	3
Packing group	III
Environmentally hazardous	--
Special precautions for user	no

### Sea transport (IMDG)

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UN number UN 1134  
Proper shipping name CHLOROBENZENE  
Class 3  
Packing group III  
Environmentally hazardous --  
Special precautions for user yes  
EmS F-E S-D

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**SECTION 15. Regulatory information**

**United States of America**

**OSHA Hazards**

Flammable Liquid  
Harmful if swallowed.  
Target organ effects

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

**SARA 311/312 Hazards**

Fire Hazard  
Acute Health Hazard  
Chronic Health Hazard

**SARA 313**

The following components are subject to reporting levels established by SARA Title III, Section 313:

*Ingredients*

chlorobenzene	108-90-7	100 %
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**SARA 302**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**Clean Water Act**

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

*Ingredients*

chlorobenzene

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

*Ingredients*

chlorobenzene

**DEA List I**

Not listed

**DEA List II**

Not listed

**US State Regulations**

**Massachusetts Right To Know**

*Ingredients*

chlorobenzene

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### Pennsylvania Right To Know

#### *Ingredients*

chlorobenzene

### New Jersey Right To Know

#### *Ingredients*

chlorobenzene

### California Prop 65 Components

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

### Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL.

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## SECTION 16. Other information

### Training advice

Provide adequate information, instruction and training for operators.

### Full text of H-Statements referred to under sections 2 and 3.

H226 Flammable liquid and vapor.  
H332 Harmful if inhaled.  
H411 Toxic to aquatic life with long lasting effects.

### Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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