Chlorobenzene

Safety Data Sheet

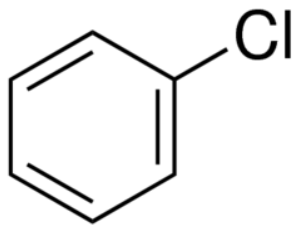
according to Regulation (EU) 2015/830

Date of issue: 01/06/2022 Version: 0.0

Doc. No: SDS-910.021/2

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

1.1. Product identifier

Product form	:	Substance
Substance name	:	Chlorobenzene
EC Index-No.	:	602-033-00-1
EC-No.	:	203-628-5
CAS-No.	:	108-90-7
Type of product	:	Pure substance
Formula	:	C_6H_5Cl
Chemical structure	:	
Synonyms	:	benzene chloride / benzene monochloride / benzene, chloro- / benzolchlorid / Caswell No 183A / chlorbenzene / Chlorobenzene / CP 27 / EPA Pesticide Chemical Code 056504 / IP Carrier T 40 / IPC Carrier T 40 / MCB / monochlorbenzene / monochlorobenzene / tetrosin SP

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

1.2.1. Relevant identified uses

Use of the substance/mixture : Solvent
Chemical intermediate
Laboratory chemical

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

ISOLAB Laborgeräte GmbH
Am Dillhof 2 - 63863 Eschau / GERMANY
Tel: + 49 93 74 / 978 55-0
Fax: +49 93 74 / 978 55-29
prodsafe@isolab.de

1.4. Emergency telephone number

Country	Organisation/Company	Address	Emergency number	Comment
Germany	Giftnotruf der Charité CBF, Haus VIII (Wirtschaftgebäude), UG	Hindenburgdamm 30 12203 Berlin	+49 30 19240	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

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

Full text of hazard classes and H-statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS02 GHS07 GHS09

Signal word (CLP) : Warning

Hazard statements (CLP) : H226 - Flammable liquid and vapour
H315 - Causes skin irritation.
H332 - Harmful if inhaled
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (CLP) : P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P273 - Avoid release to the environment
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%
Chlorobenzene	(CAS-No.) 108-90-7 (EC-No.) 203-628-5 (EC Index-No.) 602-033-00-1	100

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give alcohol to drink.

First-aid measures after inhalation : Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact : Wash immediately with lots of water. Soap may be used. Take victim to a doctor if irritation persists.

First-aid measures after eye contact : Rinse with water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

First-aid measures after ingestion : Rinse mouth with water. Give nothing to drink. Do not induce vomiting. Call Poison Information Centre (www.big.be/antigif.htm). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation : Dry/sore throat. Irritation of the nasal mucous membranes. Central nervous system depression. Headache. Dizziness. Nausea. Mental confusion. EXPOSURE TO HIGH CONCENTRATIONS: Disturbances of consciousness.

Symptoms/effects after skin contact : Red skin. Dry skin. Itching. ON CONTINUOUS EXPOSURE/CONTACT: Tingling/irritation of the skin.

Symptoms/effects after eye contact : Not irritating.

Symptoms/effects after ingestion : Nausea. Vomiting. Risk of aspiration pneumonia. AFTER ABSORPTION OF HIGH QUANTITIES: Diarrhoea. Blue/grey discolouration of the skin. Coordination disorders. Disturbed motor response. Disturbances of heart rate. Enlargement/affection of the liver. Symptoms similar to those listed under inhalation.

Chronic symptoms	:	ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Headache. Skin rash/inflammation. Gastrointestinal complaints. Loss of appetite. Feeling of weakness. Loss of weight. Irritation of the respiratory tract. Irritation of the eye tissue. Impairment of the nervous system. Excited/restless. Disturbed tactile sensibility. Paralysis. Lethargy. Possible inflammation of the respiratory tract. Risk of pneumonia. Affection of the renal tissue.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	Water spray. Alcohol-resistant foam. Polyvalent foam. Polymer foam. BC powder. Carbon dioxide.
Unsuitable extinguishing media	:	Solid water jet ineffective as extinguishing medium.

5.2. Special hazards arising from the substance or mixture

Fire hazard	:	DIRECT FIRE HAZARD. Flammable. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard.
Explosion hazard	:	DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. may be ignited by sparks.

5.3. Advice for firefighters

Precautionary measures fire	:	Exposure to fire/heat: consider evacuation.
Firefighting instructions	:	Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of environmentally hazardous firefighting water. Use water moderately and if possible collect or contain it.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	:	Gloves. Protective clothing. See "Material-Handling" to select protective clothing.
Emergency procedures	:	Keep upwind. Mark the danger area. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Keep containers closed. Wash contaminated clothes. Large spills/in confined spaces: consider evacuation. In case of reactivity hazard: consider evacuation.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

For containment	:	Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute/disperse combustible gas/vapour with water curtain. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills.
Methods for cleaning up	:	Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite or kieselguhr, powdered limestone. Scoop absorbed substance into closing containers or synthetic bags. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe normal hygiene standards. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation.

7.2. Conditions for safe storage, including any incompatibilities

Storage temperature : 15 - 25 °C

Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Information on mixed storage : KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. (strong) acids. (strong) bases.

Storage area : Store in a dry area. Ventilation at floor level. Fireproof storeroom. Provide for a tub to collect spills. Provide the tank with earthing. Under a shelter/in the open. Aboveground. Store at room temperature. Meet the legal requirements.

Special rules on packaging : SPECIAL REQUIREMENTS: closing. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials : SUITABLE MATERIAL: steel. stainless steel. stoneware/porcelain. glass. tin. MATERIAL TO AVOID: aluminium. synthetic material.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Chlorobenzene (108-90-7)		
EU	Local name	Monochlorobenzene
EU	IOELV TWA (mg/m³)	23 mg/m³ (Monochlorobenzene; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)
EU	IOELV TWA (ppm)	5 ppm (Monochlorobenzene; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)
EU	IOELV STEL (mg/m³)	70 mg/m³ (Monochlorobenzene; EU; Short time value; Indicative occupational exposure limit value)
EU	IOELV STEL (ppm)	15 ppm (Monochlorobenzene; EU; Short time value; Indicative occupational exposure limit value)
Austria	Local name	Chlorbenzol
Austria	MAK (mg/m³)	23 mg/m³
Austria	MAK (ppm)	5 ppm
Austria	MAK Short time value (mg/m³)	70 mg/m³
Austria	MAK Short time value (ppm)	15 ppm
Belgium	Local name	Chlorobenzène # Chloorbenzeen
Belgium	Limit value (mg/m³)	23 mg/m³ (Chlorobenzène; Belgium; Time-weighted average exposure limit 8 h)
Belgium	Limit value (ppm)	5 ppm (Chlorobenzène; Belgium; Time-weighted average exposure limit 8 h)
Belgium	Short time value (mg/m³)	70 mg/m³ (Chlorobenzène; Belgium; Short time value)
Belgium	Short time value (ppm)	15 ppm (Chlorobenzène; Belgium; Short time value)
Bulgaria	Local name	Хлорбензен (Монохлорбензен)
Bulgaria	OEL TWA (mg/m³)	23 mg/m³
Bulgaria	OEL TWA (ppm)	5 ppm
Bulgaria	OEL STEL (mg/m³)	70 mg/m³
Bulgaria	OEL STEL (ppm)	15 ppm
Bulgaria	Notes	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
Croatia	Local name	Klorobenzen (monoklorobenzen)
Croatia	GVI (granična vrijednost izloženosti) (mg/m³)	23 mg/m³
Croatia	GVI (granična vrijednost izloženosti) (ppm)	5 ppm

Chlorobenzene (108-90-7)		
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (mg/m³)	70 mg/m³
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (ppm)	15 ppm
Croatia	Naznake (HR)	K (Skin): (naznaka da tvar može štetno djelovati kroz kožu); EU** (naznaka da se radi o tvarima za koje su utvrđene indikativne granične vrijednosti izloženosti prema Direktivi 2006/15/ EC (druga lista)); Xn (Štetno); N (opasno za okoliš)
Czech Republic	Local name	Chlorbenzen
Czech Republic	Expoziční limity (PEL) (mg/m³)	25 mg/m³
Czech Republic	Expoziční limity (PEL) (ppm)	5.43 ppm
Czech Republic	Expoziční limity (NPK-P) (mg/m³)	70 mg/m³
Czech Republic	Expoziční limity (NPK-P) (ppm)	15.2 ppm
Denmark	Local name	Chlorbenzen
Denmark	Grænseværdie (langvarig) (mg/m³)	23 mg/m³
Denmark	Grænseværdie (langvarig) (ppm)	5 ppm
Denmark	Anmærkninger (DK)	E (betyder, at stoffet har en EF-grænseværdi)
Estonia	Local name	Klorobenseen
Estonia	OEL TWA (mg/m³)	23 mg/m³
Estonia	OEL TWA (ppm)	5 ppm
Estonia	OEL STEL (mg/m³)	70 mg/m³
Estonia	OEL STEL (ppm)	15 ppm
Finland	Local name	Klooribentseeni
Finland	HTP-arvo (8h) (mg/m³)	23 mg/m³
Finland	HTP-arvo (8h) (ppm)	5 ppm
Finland	HTP-arvo (15 min)	70 mg/m³
Finland	HTP-arvo (15 min) (ppm)	15 ppm
Finland	Huomautus (FI)	iho
France	Local name	Chlorobenzène
France	VME (mg/m³)	23 mg/m³ (Chlorobenzène; France; Time-weighted average exposure limit 8 h; VRC: Valeur réglementaire contraignante)
France	VME (ppm)	5 ppm (Chlorobenzène; France; Time-weighted average exposure limit 8 h; VRC: Valeur réglementaire contraignante)
France	VLE (mg/m³)	70 mg/m³ (Chlorobenzène; France; Short time value; VRC: Valeur réglementaire contraignante)
France	VLE (ppm)	15 ppm (Chlorobenzène; France; Short time value; VRC: Valeur réglementaire contraignante)
France	Note (FR)	Valeurs règlementaires contraignantes
Germany	Local name	Chlorbenzol
Germany	TRGS 900 Occupational exposure limit value (mg/m³)	47 mg/m³
Germany	TRGS 900 Occupational exposure limit value (ppm)	10 ppm
Germany	Remark (TRGS 900)	DFG,EU,Y
Greece	OEL TWA (mg/m³)	23 mg/m³
Greece	OEL TWA (ppm)	5 ppm
Greece	OEL STEL (mg/m³)	70 mg/m³
Greece	OEL STEL (ppm)	15 ppm
Hungary	Local name	KLÓRBENZOL
Hungary	AK-érték	23 mg/m³
Hungary	CK-érték	70 mg/m³

Chlorobenzene (108-90-7)		
Hungary	Megjegyzések (HU)	II.1.
Ireland	Local name	Chlorobenzene (as monochlorobenzene)
Ireland	OEL (8 hours ref) (mg/m³)	23 mg/m³
Ireland	OEL (8 hours ref) (ppm)	5 ppm
Ireland	OEL (15 min ref) (mg/m3)	70 mg/m³
Ireland	OEL (15 min ref) (ppm)	15 ppm
Ireland	Notes (IE)	IOELV
Italy	Local name	Monoclorobenzene
Italy	OEL TWA (mg/m³)	23 mg/m³
Italy	OEL TWA (ppm)	5 ppm
Italy	OEL STEL (mg/m³)	70 mg/m³
Italy	OEL STEL (ppm)	15 ppm
Latvia	Local name	Hlorbenzols (monohlorbenzols)
Latvia	OEL TWA (mg/m³)	23 mg/m³
Latvia	OEL TWA (ppm)	5 ppm
Latvia	OEL STEL (mg/m³)	70 mg/m³
Latvia	OEL STEL (ppm)	15 ppm
Lithuania	Local name	Chlorbenzenas (monochlorbenzenas)
Lithuania	IPRV (mg/m³)	23 mg/m³
Lithuania	IPRV (ppm)	5 ppm
Lithuania	TPRV (mg/m³)	70 mg/m³
Lithuania	TPRV (ppm)	15 ppm
Malta	Local name	Monochlorobenzene
Malta	OEL TWA (mg/m³)	23 mg/m³
Malta	OEL TWA (ppm)	5 ppm
Malta	OEL STEL (mg/m³)	70 mg/m³
Malta	OEL STEL (ppm)	15 ppm
Netherlands	Local name	Chloorbenzeen
Netherlands	Grenswaarde TGG 8H (mg/m³)	23 mg/m³ (Chloorbenzeen; Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value)
Netherlands	Grenswaarde TGG 8H (ppm)	4.9 ppm (Chloorbenzeen; Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value)
Netherlands	Grenswaarde TGG 15MIN (mg/m³)	70 mg/m³ (Chloorbenzeen; Netherlands; Short time value; Public occupational exposure limit value)
Netherlands	Grenswaarde TGG 15MIN (ppm)	15 ppm (Chloorbenzeen; Netherlands; Short time value; Public occupational exposure limit value)
Poland	Local name	Chlorobenzen
Poland	NDS (mg/m³)	23 mg/m³
Poland	NDSCh (mg/m³)	70 mg/m³
Portugal	Local name	Clorobenzeno
Portugal	OEL TWA (ppm)	10 ppm
Romania	Local name	Clor-benzen (mono)
Romania	OEL TWA (mg/m³)	23 mg/m³
Romania	OEL TWA (ppm)	5 ppm
Romania	OEL STEL (mg/m³)	70 mg/m³
Romania	OEL STEL (ppm)	15 ppm
Slovakia	Local name	Chlórbenzén
Slovakia	NPHV (priemerná) (mg/m³)	23 mg/m³
Slovakia	NPHV (priemerná) (ppm)	5 ppm
Slovakia	OEL STEL (mg/m³)	70 mg/m³

Chlorobenzene (108-90-7)		
Slovakia	OEL STEL (ppm)	15 ppm
Slovenia	Local name	klorobenzen
Slovenia	OEL TWA (mg/m³)	23 mg/m³
Slovenia	OEL TWA (ppm)	5 ppm
Slovenia	OEL STEL (mg/m³)	69 mg/m³
Slovenia	OEL STEL (ppm)	15 ppm
Spain	Local name	Clorobenceno
Spain	VLA-ED (mg/m³)	23 mg/m³
Spain	VLA-ED (ppm)	5 ppm
Spain	VLA-EC (mg/m³)	70 mg/m³
Spain	VLA-EC (ppm)	15 ppm
Spain	Notes	VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país).
Sweden	Local name	Klorbensen
Sweden	nivågränsvärde (NVG) (mg/m³)	23 mg/m³
Sweden	nivågränsvärde (NVG) (ppm)	5 ppm
Sweden	kortidsvärde (KTV) (mg/m³)	70 mg/m³
Sweden	kortidsvärde (KTV) (ppm)	15 ppm
United Kingdom	Local name	Chlorobenzene
United Kingdom	WEL TWA (mg/m³)	4.7 mg/m³ Chlorobenzene; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
United Kingdom	WEL TWA (ppm)	1 ppm Chlorobenzene; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
United Kingdom	WEL STEL (mg/m³)	14 mg/m³ Chlorobenzene; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
United Kingdom	WEL STEL (ppm)	3 ppm Chlorobenzene; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
United Kingdom	Remark (WEL)	Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity)
Iceland	Local name	Klórbensen
Iceland	OEL (8 hours ref) (mg/m³)	23 mg/m³
Iceland	OEL (8 hours ref) (ppm)	5 ppm
Iceland	OEL (15 min ref) (mg/m3)	70 mg/m³
Iceland	OEL (15 min ref) (ppm)	15 ppm
Russian Federation	Local name	Хлорбензол+
Russian Federation	OEL Ceiling (mg/m³)	100 mg/m³
Russian Federation	OEL TWA (mg/m³)	50 mg/m³
Russian Federation	Remark (RU)	3 класс опасности - опасное; п (пары и/или газы); + (соединения, при работе с которыми требуется специальная защита кожи и глаз; символ проставлен вслед за наименованием вещества)
Norway	Local name	Klorbenzen
Norway	Grenseverdier (AN) (mg/m³)	23 mg/m³
Norway	Grenseverdier (AN) (ppm)	5 ppm

Chlorobenzene (108-90-7)		
Norway	Merknader (NO)	E (EU har en veiledende grenseverdi for stoffet)
Switzerland	Local name	Chlorbenzol
Switzerland	VME (mg/m³)	46 mg/m³
Switzerland	VME (ppm)	10 ppm
Switzerland	VLE (mg/m³)	92 mg/m³
Switzerland	VLE (ppm)	20 ppm
Switzerland	Remark (CH)	B SS_C - Niere, Leber$^{KT\ AN}$ - HSE, NIOSH
Turkey	Local name	Monoklorobenzen
Turkey	OEL TWA (mg/m³)	23 mg/m³
Turkey	OEL TWA (ppm)	5 ppm
Turkey	OEL STEL (mg/m³)	70 mg/m³
Turkey	OEL STEL (ppm)	15 ppm
Australia	Local name	Chlorobenzene
Australia	TWA (mg/m³)	46 mg/m³
Australia	TWA (ppm)	10 ppm
USA - ACGIH	Local name	Chlorobenzene
USA - ACGIH	ACGIH TWA (ppm)	10 ppm (Chlorobenzene; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
USA - ACGIH	Remark (ACGIH)	Liver dam
USA - OSHA	Local name	Chlorobenzene
USA - OSHA	OSHA PEL (TWA) (mg/m³)	350 mg/m³
USA - OSHA	OSHA PEL (TWA) (ppm)	75 ppm

8.2. Exposure controls

Materials for protective clothing:

GIVE EXCELLENT RESISTANCE: viton. GIVE GOOD RESISTANCE: tetrafluoroethylene. PVA. GIVE LESS RESISTANCE: butyl rubber. natural rubber. neoprene. nitrile rubber. PVC. GIVE POOR RESISTANCE: No data available

Hand protection:

Gloves

Eye protection:

Safety glasses

Skin and body protection:

Head/neck protection. Protective clothing

Respiratory protection:

Wear gas mask with filter type A if conc. in air > exposure limit

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Liquid.
Molecular mass	:	112.56 g/mol
Colour	:	Colourless.
Odour	:	Mild odour. Pleasant odour. Almond odour. Solvent-like odour.
Odour threshold	:	0.1 - 1.3 ppm 0.5 - 6 mg/m³
pH	:	Neutral at 20 °C
Relative evaporation rate (butylacetate=1)	:	1
Melting point	:	-45 °C
Freezing point	:	No data available
Boiling point	:	132 °C
Flash point	:	27 °C

Critical temperature	:	359 °C
Auto-ignition temperature	:	> 590 °C
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapour pressure	:	12 hPa (20 °C)
Vapour pressure at 50 °C	:	60 hPa (50 °C)
Critical pressure	:	45190 hPa
Relative vapour density at 20 °C	:	3.9
Relative density	:	1.1
Relative density of saturated gas/air mixture	:	1.03
Density	:	1.11 g/cm^3 (20 °C)
Solubility	:	Insoluble in water. Soluble in ethanol. Soluble in ether. Soluble in chloroform. Soluble in tetrachloromethane. Soluble in xylene. Soluble in carbondisulfide. Soluble in oils/fats. Water: 0.02 g/100ml
Log Pow	:	2.8 - 2.98
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	0.00081 Pa.s (25 °C)
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	1.3 - 11 vol % 60 - 520 g/m³

9.2. Other information

Specific conductivity	:	7000 pS/m
Saturation concentration	:	54 g/m³
VOC content	:	100 %
Other properties	:	Gas/vapour heavier than air at 20°C. Clear. Volatile.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts on exposure to water and heat with (some) metals. Decomposes slowly on exposure to water (moisture): release of toxic and corrosive gases/vapours (hydrogen chloride). Decomposes slowly on exposure to temperature rise: release of toxic and corrosive gases/vapours e.g.: hydrogen chloride, phosgene. On burning: release of toxic and corrosive gases/vapours (phosgene, hydrogen chloride, dioxin, carbon monoxide - carbon dioxide). Violent to explosive reaction with many compounds e.g.: with (strong) oxidizers: (increased) risk of fire/explosion. Reacts violently with (some) metal powders.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Inhalation: Harmful if inhaled.

Chlorobenzene (108-90-7)	
LD50 oral rat	2000 - 4000 mg/kg (Rat)
LD50 dermal rat	> 2000 mg/kg (Rat; Literature study)
LD50 dermal rabbit	> 2200 mg/kg (Rabbit; Literature study)
LC50 inhalation rat (mg/l)	17 mg/l/4h (Rat)
LC50 inhalation rat (ppm)	3630 ppm/4h (Rat)

Skin corrosion/irritation : Not classified

Serious eye damage/irritation	:	Not classified
Respiratory or skin sensitisation	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
STOT-single exposure	:	Not classified
STOT-repeated exposure	:	Not classified
Aspiration hazard	:	Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	:	Dangerous for the environment.
Ecology - air	:	Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.5/I.
Ecology - water	:	Ground water pollutant. Toxic to fishes. Very toxic to invertebrates (Daphnia). Harmful to algae. Slightly harmful to aquatic plants. Inhibition of activated sludge.

Chlorobenzene (108-90-7)	
LC50 fish 2	4.7 mg/l (LC50; 96 h)
EC50 Daphnia 2	0.59 mg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)

12.2. Persistence and degradability

Chlorobenzene (108-90-7)	
Persistence and degradability	Not readily biodegradable in water. Non degradable in the soil. Low potential for adsorption in soil.
Biochemical oxygen demand (BOD)	0.03 g O_2/g substance
Chemical oxygen demand (COD)	0.41 g O_2/g substance
ThOD	2.06 g O_2/g substance
BOD (% of ThOD)	0.0145

12.3. Bioaccumulative potential

Chlorobenzene (108-90-7)	
BCF fish 1	447 (BCF)
BCF fish 2	3.9 - 40 (BCF)
Log Pow	2.8 - 2.98
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

Chlorobenzene (108-90-7)	
Surface tension	0.033 N/m (25 °C)
Log Koc	Koc,PCKOCWIN v1.66; 268; Calculated value; log Koc; PCKOCWIN v1.66; 2.42; Calculated value

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

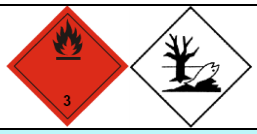
Product/Packaging disposal recommendations	:	Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. 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. Recycle by distillation. Incinerate under surveillance with energy recovery. Do not discharge into drains or the environment.

Additional information : LWCA (the Netherlands): KGA category 04. Hazardous waste according to Directive 2008/98/EC.

European List of Waste (LoW) code : 07 01 03* - organic halogenated solvents, washing liquids and mother liquors

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
1134	1134	1134	1134	1134
14.2. UN proper shipping name				
CHLOROBENZENE	CHLOROBENZENE	Chlorobenzene	CHLOROBENZENE	CHLOROBENZENE
Transport document description				
UN 1134 CHLOROBENZENE, 3, III, (D/E), ENVIRONMENTALLY HAZARDOUS	UN 1134 CHLOROBENZENE, 3, III, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS (29°C c.c.)	UN 1134 Chlorobenzene, 3, III, ENVIRONMENTALLY HAZARDOUS	UN 1134 CHLOROBENZENE, 3, III, ENVIRONMENTALLY HAZARDOUS	UN 1134 CHLOROBENZENE, 3, III, ENVIRONMENTALLY HAZARDOUS
14.3. Transport hazard class(es)				
3	3	3	3	3
				
14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : F1

Limited quantities (ADR) : 5l

Excepted quantities (ADR) : E1

Packing instructions (ADR) : P001, IBC03, LP01, R001

Mixed packing provisions (ADR) : MP19

Portable tank and bulk container instructions (ADR) : T2

Portable tank and bulk container special provisions (ADR) : TP1

Tank code (ADR) : LGBF

Vehicle for tank carriage : FL

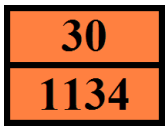
Transport category (ADR) : 3

Special provisions for carriage - Packages (ADR) : V12

Special provisions for carriage - Operation (ADR) : S2

Hazard identification number (Kemler No.) : 30

Orange plates :



Tunnel restriction code (ADR) : D/E

EAC code : 2Y

- Transport by sea

Transport regulations (IMDG)	:	Subject
Limited quantities (IMDG)	:	5 L
Excepted quantities (IMDG)	:	E1
Packing instructions (IMDG)	:	P001, LP01
IBC packing instructions (IMDG)	:	IBC03
Tank instructions (IMDG)	:	T2
Tank special provisions (IMDG)	:	TP1
EmS-No. (Fire)	:	F-E
EmS-No. (Spillage)	:	S-D
Stowage category (IMDG)	:	A
Flash point (IMDG)	:	29°C c.c.
Properties and observations (IMDG)	:	Colourless liquid with an almond-like odour. Flash point: 29°C c.c. Explosive limits: 1.3% to 11% Immiscible with water.
MFAG-No	:	130

- Air transport

Transport regulations (IATA)	:	Subject to the provisions
PCA Excepted quantities (IATA)	:	E1
PCA Limited quantities (IATA)	:	Y344
PCA limited quantity max net quantity (IATA)	:	10L
PCA packing instructions (IATA)	:	355
PCA max net quantity (IATA)	:	60L
CAO packing instructions (IATA)	:	366
CAO max net quantity (IATA)	:	220L
ERG code (IATA)	:	3L

- Inland waterway transport

Classification code (ADN)	:	F1
Limited quantities (ADN)	:	5 L
Excepted quantities (ADN)	:	E1
Carriage permitted (ADN)	:	T
Equipment required (ADN)	:	PP, EX, A
Ventilation (ADN)	:	VE01
Number of blue cones/lights (ADN)	:	0

- Rail transport

Transport regulations (RID)	:	Subject
Classification code (RID)	:	F1
Limited quantities (RID)	:	5L
Excepted quantities (RID)	:	E1
Packing instructions (RID)	:	P001, IBC03, LP01, R001
Mixed packing provisions (RID)	:	MP19
Portable tank and bulk container instructions (RID)	:	T2
Portable tank and bulk container special provisions (RID)	:	TP1
Tank codes for RID tanks (RID)	:	LGBF
Transport category (RID)	:	3
Special provisions for carriage – Packages (RID)	:	W12
Colis express (express parcels) (RID)	:	CE4
Hazard identification number (RID)	:	30

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Chlorobenzene is not on the REACH Candidate List

Chlorobenzene is not on the REACH Annex XIV List

VOC content : 100 %

15.1.2. National regulations

Germany

VwVwS Annex reference : Water hazard class (WGK) 2, hazard to waters (Classification according to VwVwS, Annex 1 or 2; ID No. 53)

WGK remark : Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

Waterbezwaarlijkheid : 1 - Black list substance

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

Denmark

Class for fire hazard : Class II-1

Store unit : 5 liter

Classification remarks : R10 <H226;H332;H411>; Emergency management guidelines for the storage of flammable liquids must be followed

Recommendations Danish Regulation : Young people below the age of 18 years are not allowed to use the product

Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
EC50	Median effective concentration
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
PBT	Persistent Bioaccumulative Toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail

SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Full text of H- and EUH-statements:	
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
H226	Flammable liquid and vapour
H332	Harmful if inhaled
H411	Toxic to aquatic life with long lasting effects
H315	Causes skin irritation

SDS ISOLAB

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product