

# SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

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## 1. Identification

### 1.1 GHS Product identifier

Product name                      benzyl chloride

### 1.2 Other means of identification

Product number                      -  
Other names                              Benzene, (chloromethyl)-

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses                              For industry use only. Benzyl chloride is used as a chemical intermediate in the manufacture of certain dyes and pharmaceutical, perfume and flavor products. It is also used as a photographic developer. Benzyl chloride can be used in the manufacture of synthetic tannins and as a gum inhibitor in petrol. Benzyl chloride has been used as an irritant gas in chemical warfare.

Uses advised against                      no data available

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## 2. Hazard identification

### 2.1 Classification of the substance or mixture

Acute toxicity - Oral, Category 4  
Skin irritation, Category 2  
Serious eye damage, Category 1  
Acute toxicity - Inhalation, Category 3  
Specific target organ toxicity – single exposure, Category 3  
Carcinogenicity, Category 1B  
Specific target organ toxicity – repeated exposure, Category 2

### 2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H302 Harmful if swallowed

H315 Causes skin irritation

H318 Causes serious eye damage

H331 Toxic if inhaled

H335 May cause respiratory irritation

H350 May cause cancer

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.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

Response

P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/...if you feel unwell.

P330 Rinse mouth.

P302+P352 IF ON SKIN: Wash with plenty of water/...

P321 Specific treatment (see ... on this label).

P332+P313 If skin irritation occurs: Get medical advice/attention.

P362+P364 Take off contaminated clothing and wash it before reuse.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor/...

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P311 Call a POISON CENTER/doctor/...

P312 Call a POISON CENTER/doctor/...if you feel unwell.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P314 Get medical advice/attention if you feel unwell.

Storage P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Disposal P501 Dispose of contents/container to ...

### 2.3 Other hazards which do not result in classification

none

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## 3. Composition/information on ingredients

### 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
benzyl chloride	benzyl chloride	100-44-7	none	100%

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## 4. First-aid measures

### 4.1 Description of necessary first-aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

#### If inhaled

Fresh air, rest. Half-upright position. Refer for medical attention.

#### In case of skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

#### In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

#### **If swallowed**

Rinse mouth. Refer for medical attention .

### **4.2 Most important symptoms/effects, acute and delayed**

Intensely irritating to skin, eyes, and mucous membranes. Highly toxic; may cause death or permanent injury after very short exposure to small quantities. Has been listed as a direct-acting or primary carcinogen. Large doses cause central nervous system depression. (EPA, 1998)

### **4.3 Indication of immediate medical attention and special treatment needed, if necessary**

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Aromatic hydrocarbons and related compounds/

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## **5. Fire-fighting measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Use water spray, dry chemical, foam, or carbon dioxide. Use water to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

### **5.2 Specific hazards arising from the chemical**

It burns but does not ignite readily. It may ignite combustibles. When heated to decomposition, it emits toxic and corrosive fumes. Some organic chlorides decompose to yield phosgene. Incompatible with active metals such as copper, aluminum, magnesium, iron, zinc, and tin and keep from strong oxidizing agents. Avoid contact with acids or acid fumes. Keep separate from oxidizing materials. May become unstable at elevated temperatures and pressures; may react with water resulting in some nonviolent release of energy. Polymerizes with evolution of heat and hydrogen chloride when in contact with all common metals except nickel and lead. (EPA, 1998)

### **5.3 Special protective actions for fire-fighters**

Wear self-contained breathing apparatus for firefighting if necessary.

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## **6.Accidental release measures**

### **6.1Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

### **6.2Environmental precautions**

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in covered non-metallic containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### **6.3Methods and materials for containment and cleaning up**

Environmental considerations: Air spill: Apply water spray or mist to knock down vapors. Vapor knockdown water is corrosive or toxic and should be diked for containment.

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## **7.Handling and storage**

### **7.1Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

### **7.2Conditions for safe storage, including any incompatibilities**

Separated from food and feedstuffs and incompatible materials. See Chemical Dangers. Dry. Ventilation along the floor. Store only if stabilized. Separated from food and feedstuffs and incompatible materials . Ventilation along the floor. Store only if stabilized.

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

### **8.1Control parameters**

#### **Occupational Exposure limit values**

Recommended Exposure Limit: 15 Minute Ceiling value: 1 ppm (5 mg/cu m).

#### **Biological limit values**

no data available

### **8.2Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 8.3 Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Respiratory protection

Wear dust mask when handling large quantities.

#### Thermal hazards

no data available

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### 9. Physical and chemical properties

Physical state	colorless liquid
Colour	Colorless to slightly yellow liquid
Odour	Rather unpleasant, irritating odor
Melting point/ freezing point	199°C(dec.)(lit.)
Boiling point or initial boiling point and boiling range	177-181°C(lit.)
Flammability	Class IIIA Combustible Liquid: Fl.P. at or above 60°C and below 93.33°C. Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit / flammability limit	Lower flammable limit: 1.1% by volume; Upper flammable limit: 7.1% by volume
Flash point	67°C
Auto-ignition temperature	585°C
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	In water: 0.3 g/L (20 °C)
Partition coefficient n-octanol/water (log value)	log Kow = 2.30

Vapour pressure	10.3 mm Hg ( 60 °C)
Density and/or relative density	1.1g/mL at 25°C(lit.)
Relative vapour density	4.36 (vs air)
Particle characteristics	no data available

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## **10. Stability and reactivity**

### **10.1 Reactivity**

no data available

### **10.2 Chemical stability**

Stability during transport: stable

### **10.3 Possibility of hazardous reactions**

Combustible. Gives off irritating or toxic fumes (or gases) in a fire. Halogenated aliphatic compounds, such as BENZYL CHLORIDE, are moderately or very reactive. Halogenated organics generally become less reactive as more of their hydrogen atoms are replaced with halogen atoms. Materials in this group are incompatible with strong oxidizing and reducing agents. Also, they are incompatible with many amines, nitrides, azo/diazo compounds, alkali metals, and epoxides.

### **10.4 Conditions to avoid**

no data available

### **10.5 Incompatible materials**

Will react with water or steam to produce toxic and corrosive fumes /HCl and chlorine gas/; can react vigorously with oxidizing materials.

### **10.6 Hazardous decomposition products**

When heated to decomposition it emits toxic fumes of /hydrogen chloride/.

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## **11. Toxicological information**

### **Acute toxicity**

- Oral: LD50 Mouse oral 1500 mg/kg
- Inhalation: LC50 Mouse inhalation 0.39 mg/L (80 ppm)/2 hr
- 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 limited evidence in humans for the carcinogenicity of alpha-chlorinated toluenes and benzoyl chloride. There is sufficient evidence in experimental animals for the carcinogenicity of benzyl chloride. ... Overall evaluation: Combined exposures to alpha-chlorinated toluenes and benzoyl chloride are probably carcinogenic to humans (Group 2A). /alpha-Chlorinated toluenes & benzoyl chloride/

### **Reproductive toxicity**

No studies were located regarding developmental or reproductive effects in humans from benzyl chloride exposure. (-) One animal study showed an increase in embryonal mortality, along with retarded development of the offspring in rats given benzyl chloride orally.

### **STOT-single exposure**

no data available

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

no data available

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## **12. Ecological information**

### **12.1 Toxicity**

- Toxicity to fish: LC50; Species: Pimephales promelas (fathead minnow); Conditions: /static/; Concentration: 11.6 mg/L for 24 hr
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea); Concentration: 4.2 mg/L for 24 hr; Effect: immobility /Conditions of bioassay not specified; from table
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

### **12.2 Persistence and degradability**

AEROBIC: Benzyl chloride, present at 100 mg/L, reached 70.9% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1). Benzyl chloride biodegraded readily with the formation of dechlorinated products during a 2-day incubation period using raw sewage and



raw sewage acclimated to non-chlorinated compounds(2). However, since benzyl chloride is subject to hydrolysis(3-5), it is probably the biodegradation of benzyl alcohol that is measured in these studies(SRC).

### **12.3 Bioaccumulative potential**

An estimated BCF of 20 was calculated in fish for benzyl chloride(SRC), using a log Kow of 2.30(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### **12.4 Mobility in soil**

The Koc of benzyl chloride is estimated as 100(SRC), using a log Kow of 2.30(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that benzyl chloride is expected to have high mobility in soil.

### **12.5 Other adverse effects**

no data available

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## **13. Disposal considerations**

### **13.1 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.

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## **14. Transport information**

### **14.1 UN Number**

ADR/RID: UN1738

IMDG: UN1738

IATA: UN1738

### **14.2 UN Proper Shipping Name**

ADR/RID: BENZYL CHLORIDE

IMDG: BENZYL CHLORIDE

IATA: BENZYL CHLORIDE

**14.3 Transport hazard class(es)**

ADR/RID: 8

IMDG: 8

IATA: 8

**14.4 Packing group, if applicable**

ADR/RID: II

IMDG: II

IATA: II

**14.5 Environmental hazards**

ADR/RID: no

IMDG: no

IATA: no

**14.6 Special precautions for user**

no data available

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

no data available

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**15. Regulatory information****15.1 Safety, health and environmental regulations specific for the product in question**

Chemical name	Common names and synonyms	CAS number	EC number
benzyl chloride	benzyl chloride	100-44-7	none
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.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.