

SAFETY DATA SHEET

Creation Date 02-Feb-2010

Revision Date 24-Dec-2021

Revision Number 9

1. Identification

Product Name Benzyl chloride, stabilized

Cat No. : AC180850000; AC180850010; AC180850025; AC180850100

CAS No 100-44-7

Synonyms alfa-Chlorotoluene

Recommended Use Laboratory chemicals.

Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99
CHEMTREC Tel. No.**US**:001-800-424-9300 / **Europe**:001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 4
Corrosive to metals	Category 1
Acute oral toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 3
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 1
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system, Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Liver.	

Label Elements**Signal Word**

Danger

Hazard Statements

Combustible liquid
May be corrosive to metals
Harmful if swallowed
Causes skin irritation
May cause an allergic skin reaction
Causes serious eye damage
Toxic if inhaled
May cause respiratory irritation
May cause drowsiness or dizziness
May cause genetic defects
May cause cancer
May cause damage to organs through prolonged or repeated exposure

**Precautionary Statements****Prevention**

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Do not breathe dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep only in original container
Keep cool

Response

IF exposed or concerned: Get medical attention/advice

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician

Skin

IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician

Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Fire

In case of fire: Use CO₂, dry chemical, or foam for extinction

Spills

Absorb spillage to prevent material damage

Storage

Store locked up
 Store in a well-ventilated place. Keep container tightly closed
 Store in corrosive resistant polypropylene container with a resistant inliner
 Store in a dry place

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

WARNING. Cancer - <https://www.p65warnings.ca.gov/>.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Benzyl chloride	100-44-7	>95
Propylene oxide	75-56-9	0.25

4. First-aid measures

General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	Causes severe eye damage. May cause allergic skin reaction. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Water spray, carbon dioxide (CO ₂), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media	No information available
Flash Point	67 °C / 152.6 °F
Method -	No information available
Autoignition Temperature	585 °C / 1085 °F
Explosion Limits	
Upper	14 vol %
Lower	1.1 vol %

Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical

Combustible material. Containers may explode when heated. Keep product and empty container away from heat and sources of ignition. Risk of ignition.

Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO₂). Hydrogen chloride gas.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health 3	Flammability 2	Instability 1	Physical hazards N/A
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6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges.

Environmental Precautions Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from open flames, hot surfaces and sources of ignition.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame. Incompatible Materials. Strong oxidizing agents. Bases. Metals.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Benzyl chloride	TWA: 1 ppm	(Vacated) TWA: 1 ppm (Vacated) TWA: 5 mg/m ³ TWA: 1 ppm TWA: 5 mg/m ³	IDLH: 10 ppm Ceiling: 1 ppm Ceiling: 5 mg/m ³	TWA: 1 ppm
Propylene oxide	TWA: 2 ppm	(Vacated) TWA: 20 ppm (Vacated) TWA: 50 mg/m ³ TWA: 100 ppm TWA: 240 mg/m ³	IDLH: 400 ppm	TWA: 2 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Tight sealing safety goggles. Face protection shield.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless - Amber
Odor	pungent
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-39 °C / -38.2 °F
Boiling Point/Range	179 °C / 354.2 °F @ 760 mmHg
Flash Point	67 °C / 152.6 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	14 vol %
Lower	1.1 vol %
Vapor Pressure	1.2 mbar @ 20 °C
Vapor Density	4.36 (Air = 1.0)
Specific Gravity	1.100
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	585 °C / 1085 °F
Decomposition Temperature	No information available
Viscosity	1.380 mPa.s @ 20°C
Molecular Formula	C7 H7 Cl
Molecular Weight	126.59

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	No information available.
Conditions to Avoid	Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents, Bases, Metals
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO ₂), Hydrogen chloride gas
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information**Acute Toxicity**

Product Information**Oral LD50**

Category 4. ATE = 300 - 2000 mg/kg.

Dermal LD50

Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Vapor LC50

Category 2. ATE = 0.5 - 2 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Benzyl chloride	LD50 = 625 mg/kg (Rat)	Not listed	LC50 = 0.74 mg/L (Rat) 2 h
Propylene oxide	LD50 = 520 mg/kg (Rat)	LD50 = 1244 mg/kg (Rabbit)	9.48 mg/L (Rat) 4 h

Toxicologically Synergistic Products

No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure**Irritation**

Causes burns by all exposure routes

Sensitization

May cause sensitization by skin contact

Carcinogenicity

Possible cancer hazard. May cause cancer based on animal data. The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Benzyl chloride	100-44-7	Group 2A	Not listed	A3	X	A3
Propylene oxide	75-56-9	Group 2B	Reasonably Anticipated	A3	X	A3

*IARC (International Agency for Research on Cancer)**IARC (International Agency for Research on Cancer)**Group 1 - Carcinogenic to Humans**Group 2A - Probably Carcinogenic to Humans**Group 2B - Possibly Carcinogenic to Humans**NTP: (National Toxicity Program)**NTP: (National Toxicity Program)**Known - Known Carcinogen**Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen**ACGIH: (American Conference of Governmental Industrial Hygienists)**A1 - Known Human Carcinogen**A2 - Suspected Human Carcinogen**A3 - Animal Carcinogen**Mexico - Occupational Exposure Limits - Carcinogens**ACGIH: (American Conference of Governmental Industrial Hygienists)**Mexico - Occupational Exposure Limits - Carcinogens**A1 - Confirmed Human Carcinogen**A2 - Suspected Human Carcinogen**A3 - Confirmed Animal Carcinogen**A4 - Not Classifiable as a Human Carcinogen**A5 - Not Suspected as a Human Carcinogen***Mutagenic Effects**

Animal experiments showed mutagenic and teratogenic effects

Reproductive Effects

No information available.

Developmental Effects

No information available.

Teratogenicity

No information available.

STOT - single exposure

Respiratory system Central nervous system (CNS)

STOT - repeated exposure

Liver

Aspiration hazard

No information available

Symptoms / effects, both acute and delayed

Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information

No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Do not flush into surface water or sanitary sewer system. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Benzyl chloride	Not listed	LC50: 4.4 - 5.6 mg/L, 96h static (Pimephales promelas) LC50: = 4 mg/L, 96h static (Brachydanio rerio)	EC50 = 1.92 mg/L 5 min EC50 = 2.25 mg/L 15 min EC50 = 2.97 mg/L 30 min	Not listed
Propylene oxide	EC50: = 240 mg/L, 96h (Pseudokirchneriella subcapitata)	LC50: = 215 mg/L, 96h static (Lepomis macrochirus)	EC50 = 3300 mg/L 160 min	EC50: = 350 mg/L, 48h (Daphnia magna)

Persistence and Degradability May persist based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benzyl chloride	2.3
Propylene oxide	0.08

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1738
 Proper Shipping Name Benzyl chloride
 Hazard Class 6.1
 Subsidiary Hazard Class 8
 Packing Group II

TDG

UN-No UN1738
 Proper Shipping Name BENZYL CHLORIDE
 Hazard Class 6.1
 Subsidiary Hazard Class 8
 Packing Group II

IATA

UN-No UN1738
 Proper Shipping Name BENZYL CHLORIDE
 Hazard Class 6.1
 Subsidiary Hazard Class 8
 Packing Group II

IMDG/IMO

UN-No UN1738
 Proper Shipping Name BENZYL CHLORIDE
 Hazard Class 6.1
 Subsidiary Hazard Class 8
 Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Benzyl chloride	100-44-7	X	ACTIVE	-
Propylene oxide	75-56-9	X	ACTIVE	-

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

- - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Benzyl chloride	100-44-7	X	-	202-853-6	X	X	X	X	X	KE-05729
Propylene oxide	75-56-9	X	-	200-879-2	X	X	X	X	X	KE-24565

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Benzyl chloride	100-44-7	>95	1.0
Propylene oxide	75-56-9	0.25	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benzyl chloride	X	100 lb	-	-
Propylene oxide	X	100 lb	-	-

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Benzyl chloride	X		-
Propylene oxide	X		-

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Benzyl chloride	100 lb	100 lb
Propylene oxide	100 lb	100 lb

California Proposition 65

This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Benzyl chloride	100-44-7	Carcinogen	4 µg/day	Carcinogen
Propylene oxide	75-56-9	Carcinogen	-	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benzyl chloride	X	X	X	X	X
Propylene oxide	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ):	Y
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security

This product contains the following DHS chemicals:

Legend - STQs = Screening Threshold Quantities, APA = A placarded amount

Component	DHS Chemical Facility Anti-Terrorism Standard
Propylene oxide	Release STQs - 10000lb

Other International Regulations

Mexico - Grade Moderate risk, Grade 2

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Benzyl chloride	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-
Propylene oxide	-	Use restricted. See item 28. (see link for restriction details) Use restricted. See item 29. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - Carcinogenic (Article 57a) SVHC Candidate list - Mutagenic (Article 57b)

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

<https://echa.europa.eu/authorisation-list>

<https://echa.europa.eu/substances-restricted-under-reach>

<https://echa.europa.eu/candidate-list-table>

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Benzyl chloride	100-44-7	Listed	Not applicable	Not applicable	Not applicable
Propylene oxide	75-56-9	Listed	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)

		Notification	Requirements		
Benzyl chloride	100-44-7	Not applicable	Not applicable	Not applicable	Not applicable
Propylene oxide	75-56-9	5 tonne	50 tonne	Not applicable	Not applicable

16. Other information

Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Creation Date	02-Feb-2010
Revision Date	24-Dec-2021
Print Date	24-Dec-2021
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS