

# Material Safety Data Sheet

## Benzoyl Chloride

ACC# 02770

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Benzoyl Chloride

**Catalog Numbers:** NC9741710, O1388 500, O1388-500, O1388500, S79918, XX01388SK1LI

**Synonyms:** Benzaldehyde, alpha-chloro-; Benzenecarbonyl chloride; Benzoic acid, chloride; Benzoyl chloride; alpha-Chlorobenzaldehyde

**Company Identification:**

Fisher Scientific

1 Reagent Lane

Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
98-88-4	Benzoyl chloride	ca. 100	202-710-8

**Hazard Symbols:** C

**Risk Phrases:** 34

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 72 deg C. **Danger!** Corrosive. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. **Combustible liquid and vapor.** Moisture sensitive. Lachrymator (substance which increases the flow of tears). Harmful if swallowed, inhaled, or absorbed through the skin. Water-reactive. Causes severe eye and skin irritation and burns. Possible risks of irreversible effects.

**Target Organs:** Lungs, eyes, skin.

#### Potential Health Effects

**Eye:** Lachrymator (substance which increases the flow of tears). Causes severe eye irritation and burns.

**Skin:** Harmful if absorbed through the skin. Causes severe skin irritation and burns.

**Ingestion:** Harmful if swallowed. May cause severe and permanent damage to the digestive tract.

**Inhalation:** Harmful if inhaled. Causes chemical burns to the respiratory tract. May cause pulmonary edema and severe respiratory disturbances. Vapors may cause lung injury.

**Chronic:** Laboratory experiments have resulted in mutagenic effects. Animal studies have reported the development of tumors by skin contact.

### Section 4 - First Aid Measures

**Eyes:** Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

**Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

**Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. Use water spray to keep fire-exposed containers cool. Will react with water to form toxic and corrosive fumes. Water Reactive. Combustible liquid. Containers may explode when heated.

**Extinguishing Media:** Use water spray to cool fire-exposed containers. DO NOT USE WATER! Do NOT get water inside containers. For small fires, use dry chemical or carbon dioxide. For large fires, flood fire area with large quantities of water, while knocking down vapors with water fog.

**Flash Point:** 72 deg C ( 161.60 deg F)

**Autoignition Temperature:** 568 deg C ( 1,054.40 deg F)

**Explosion Limits, Lower:** 1.2 vol %

**Upper:** 4.9 vol %

**NFPA Rating:** (estimated) Health: 3; Flammability: 2; Instability: 2; Special Hazard: -W-

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Scoop up with a nonsparking tool, then place into a suitable container for disposal. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. Use water spray to reduce vapors, do not put water directly on leak, spill area or inside container. Cover with dry earth, dry sand, or other non-combustible material followed with plastic sheet to minimize spreading and contact with water.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Use with adequate ventilation. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not get on skin or in eyes. Do not ingest or inhale. Use with adequate ventilation. Do not allow contact with water. Discard contaminated shoes. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Keep from contact with moist air and steam.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Do not store in direct sunlight. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from water. Corrosives area. Do not store near alkaline substances. Store protected from moisture. Separate from alcohols.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Benzoyl chloride	0.5 ppm Ceiling	none listed	none listed

**OSHA Vacated PELs:** Benzoyl chloride: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** 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.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to minimize contact with skin.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear, colorless

**Odor:** pungent odor

**pH:** Not available.

**Vapor Pressure:** 0.46 mm Hg @ 25 C

**Vapor Density:** 4.9 (air=1)

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** 198 deg C

**Freezing/Melting Point:** -1 deg C

**Decomposition Temperature:** Not available.

**Solubility:** decomposes

**Specific Gravity/Density:** 1.22

**Molecular Formula:** C<sub>7</sub>H<sub>5</sub>ClO

**Molecular Weight:** 140.4874

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures. May decompose on exposure to moist air or water.

**Conditions to Avoid:** Incompatible materials, ignition sources, moisture, contact with water, excess heat.

**Incompatibilities with Other Materials:** Moisture, strong bases, strong oxidizing agents, alcohols, dimethyl sulfoxide, aluminum chloride + naphthalene, steam, May form explosive/incompatible mixtures with a wide range of substances., sodium azide + potassium hydroxide, alkalis, amines, organic materials.

**Hazardous Decomposition Products:** Hydrogen chloride, phosgene, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, oxides of chlorine.

**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 98-88-4: DM6600000

**LD50/LC50:**

CAS# 98-88-4:

Inhalation, rat: LC50 = 1870 mg/m<sup>3</sup>/2H;

Oral, rat: LD50 = 1900 mg/kg;

**Carcinogenicity:**

CAS# 98-88-4:

**IARC:** Group 2A carcinogen**Epidemiology:** Administration onto the skin, mouse: TD = 17600 mg/kg/42W-I (Tumorigenic - equivocal tumorigenic agent by RTECS criteria - Skin and Appendages - tumors).; Administration onto the skin, mouse: 35200 mg/kg/42W-I (Tumorigenic - equivocal tumorigenic agent by RTECS criteria - Lungs, Th orax, or Respiration - tumors).**Teratogenicity:** No information available.**Reproductive Effects:** No information available.**Neurotoxicity:** No information available.**Mutagenicity:** Mutation in Microorganisms: Salmonella typhimurium = 1 umol/plate.; Mutation in Microorganisms: Salmonella typhimurium = 5 mg/plate.**Other Studies:** No data available.

## Section 12 - Ecological Information

**Ecotoxicity:** Fish: Fathead Minnow: LC50 = 35 mg/L; 96 Hr; Unspecified Bacteria: Phytobacterium phosphoreum: EC50 = 10.4-12.2 mg/L; 5,15,30 min; Microtox test at 15 CFish: Bluegill/Sunfish: 200 ppm; 7 Hr; Unspecified (Fresh water) No data concerning the hydrolysis of benzoyl chloride in soil is available. The hydrolysis half-life is so short that the predominant terrestrial fate of benzoyl chloride is expected to be hydrolysis. In the absence of water, however, benzoyl chloride could form a variety of esters upon reaction with common soil constituents. Benzoyl chloride per se is not expected to adsorb to soils, biodegrade, photolyze, volatilize or leach to groundwater. The rapid rate of hydrolysis suggests that hydrolysis is the major aquatic fate process for benzoyl chloride.**Environmental:** Volatilization, photolysis, photooxidation, bioconcentration, biodegradation and adsorption to sediments are not expected to be important processes in water. Benzoyl chloride may directly photolyze in the atmosphere. The estimated atmospheric half-life for the reaction of benzoyl chloride with photochemically produced hydroxyl radicals was estimated to be 2.01 days.**Physical:** The products of the hydrolysis reaction are benzoic acid and hydrochloric acid.**Other:** Harmful to aquatic life in very low concentrations.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
<b>Shipping Name:</b>	BENZOYL CHLORIDE				BENZOYL CHLORIDE
<b>Hazard Class:</b>	8				8
<b>UN Number:</b>	UN1736				UN1736
<b>Packing Group:</b>	II				II

## Section 15 - Regulatory Information

### US FEDERAL

**TSCA**

CAS# 98-88-4 is listed on the TSCA inventory.

**Health & Safety Reporting List**

None of the chemicals are on the Health &amp; Safety Reporting List.

**Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**

None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**SARA****CERCLA Hazardous Substances and corresponding RQs**

CAS# 98-88-4: 1000 lb final RQ; 454 kg final RQ

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 98-88-4: acute, chronic, flammable, reactive.

**Section 313**

This material contains Benzoyl chloride (CAS# 98-88-4, 100%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

**Clean Air Act:**

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

**Clean Water Act:**

CAS# 98-88-4 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 98-88-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts. California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations****European Labeling in Accordance with EC Directives****Hazard Symbols:**

C

**Risk Phrases:**

R 34 Causes burns.

**Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**WGK (Water Danger/Protection)**

CAS# 98-88-4: 2

**Canada - DSL/NDSL**

CAS# 98-88-4 is listed on Canada's DSL List.

**Canada - WHMIS**

This product does not have a WHMIS classification.

**Canadian Ingredient Disclosure List**

CAS# 98-88-4 is listed on the Canadian Ingredient Disclosure List.

**Exposure Limits**

CAS# 98-88-4: OEL-HUNGARY:TWA 5 mg/m<sup>3</sup>;STEL 10 mg/m<sup>3</sup> OEL-RUSSIA:STEL 5 mg/m<sup>3</sup>

**Section 16 - Additional Information**

**MSDS Creation Date:** 5/25/1999

**Revision #3 Date:** 3/18/2003

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*