

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	Corrosive to eyes and skin on contact. Toxic compound, do not ingest or inhale. Avoid all contact with this material. POSSIBLE CARCINOGEN. MINIMIZE EXPOSURE. POSSIBLE MUTAGEN. MINIMIZE EXPOSURE. Lachrymator. Moisture sensitive material.	

Section I. Chemical Product and Company Identification

Chemical Name	Benzotrichloride		
Catalog Number	T0399	Supplier	TCI America 9211 N. Harborsgate St. Portland OR 1-800-423-8616
Synonym	alpha,alpha,alpha-Trichlorotoluene		
Chemical Formula	C ₆ H ₅ CCl ₃		
CAS Number	98-07-7	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Benzotrichloride	98-07-7	Min. 99.0 (GC)	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen.	Rat LD ₅₀ (oral) 6000mg/kg Mouse LD ₅₀ (oral) 702mg/kg Frog (subcutaneous) 2150mg/kg

Section III. Hazards Identification

Acute Health Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Severely irritating to the lungs, mucous membranes, and respiratory tract. Always wear an OSHA/MSHA approved respirator when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic: mouse (inhalation)1620ppb/30m/22 weeks intermittent. Tumorigenic-Neoplastic by RTECS criteria. Tumorigenic: mouse (interperitoneal)1288mg/kg/8 weeks intermittent. Tumorigenic-Equivocal tumorigenic agent by RTECS criteria. DEVELOPMENTAL TOXICITY Not available. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. DO NOT use an eye ointment. Flush eyes with running water for a minimum of 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention. Treat symptomatically and supportively.
Skin Contact	If the chemical gets spilled on a clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical touches the victim's exposed skin, such as the hands: Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Seek medical attention. Treat symptomatically and supportively. Wash any contaminated clothing before reusing.
Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform artificial respiration. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.

Continued on Next Page

Emergency phone number (800) 424-9300

Ingestion

DO NOT induce vomiting. Loosen tight clothing such as a collar, tie, belt, or waistband. If the victim is not breathing, administer artificial respiration. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively.

Section V. Fire and Explosion Data

Flammability	Combustible.	Auto-Ignition	Not available.
Flash Points	97°C (206.6°F).	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO ₂), halogenated compounds. WARNING: Highly toxic HCl gas is produced during combustion.		
Fire Hazards	No specific information is available regarding the flammability of this compound in the presence of various materials.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. No additional information is available regarding the risks of explosion.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, CO ₂ , water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.		

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Corrosive liquid. Toxic liquid. Lachrymator. Keep away from heat and sources of ignition. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Consult federal, state, and/or local authorities for assistance on disposal.
----------------------------	--

Section VII. Handling and Storage

Handling and Storage Information	CORROSIVE. TOXIC. CANCER SUSPECT. CARCINOGEN AND MUTAGEN. LACHRYMATOR. MOISTURE SENSITIVE. Handle with caution and minimize exposure. Keep container dry. Keep away from heat and sources of ignition. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas, fumes, vapor or spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Avoid contact with skin and eyes. Always store away from incompatible compounds such as oxidizing agents.
----------------------------------	--

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Face shield. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. 
Exposure Limits	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Semi-viscous colorless liquid.	Solubility	Soluble in diethyl ether, alcohol, benzene. Water solubility= 53mg/L @ 5°C
Specific Gravity	1.38		
Molecular Weight	195.47	Partition Coefficient	Not available.
Boiling Point	219 to 223°C (426.2 to 433.4°F)	Vapor Pressure	0.2mm of Hg @ 20°
Melting Point	-7°C (19.4°F)	Vapor Density	6.77
Refractive Index	1.56 @ 20°C	Volatility	Not available.
Critical Temperature	Not available.	Odor	Penetrating odor.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	May decompose on exposure to moist air or water. Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents.

Section XI. Toxicological Information

RTECS Number	XT9275000
Routes of Exposure	Eye contact. Inhalation. Ingestion. Skin contact.
Toxicity Data	Rat LD ₅₀ (oral) 6000mg/kg Mouse LD ₅₀ (oral) 702mg/kg Frog (subcutaneous) 2150mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic: mouse (inhalation)1620ppb/30m/22 weeks intermittent. Tumorigenic-Neoplastic by RTECS criteria. Tumorigenic: mouse (interperitoneal)1288mg/kg/8 weeks intermittent. Tumorigenic-Equivocal tumorigenic agent by RTECS criteria. DEVELOPMENTAL TOXICITY Not available. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Severely irritating to the lungs, mucous membranes, and respiratory tract. Always wear an OSHA/MSHA approved respirator when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Fugitive emissions from the industrial manufacture and use of benzotrichloride may be a potential source of exposure of the chemical to the environment. Still bottoms from the distillation of benzyl chloride contain benzotrichloride, but are disposed of in hazardous waste land disposal sites. Benzotrichloride's production and use in organic synthesis as the source of the benzenyl group, to make benzotrifluoride, hydroxybenzophone, pharmaceuticals, antimicrobial agents, chlorinated toluenes, dyes, and pesticides may also result in its release to the environment through various waste streams. If released to soil, direct photolysis is not expected to occur. Benzotrichloride hydrolyzes quickly in the presence of moisture forming benzoic acid and hydrochloric acid with half-lives of 11 sec at pH of 7 and 3 minutes at 5.1°C. Therefore, leaching, volatilization from moist soil, and biodegradation are not expected to be important fate processes. If released to water, volatilization, bioconcentration, adsorption to sediment, and photolysis are not expected to be important fate processes due to the rapid hydrolysis rate. Limited biodegradation data are available to determine the rate or importance of biodegradation of benzotrichloride in water; however, using a modified OECD-Screening-Test, DOC removal with benzotrichloride was 95-97% after 3 days. However, because of the rapid hydrolysis rate, this biodegradation study is probably for benzoic acid, the hydrolysis product of benzotrichloride. If released to the atmosphere, benzotrichloride will exist in the vapor phase. Vapor-phase benzotrichloride is degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals with an estimated half-life of about 45 days. Particulate-phase benzotrichloride may be physically removed from the air by wet deposition. Direct photolysis is not expected to occur in the troposphere. Due to the rapid hydrolysis of benzotrichloride in water, it may hydrolyze in the atmosphere when contacted with moisture. Occupational exposure probably occurs during manufacture and use. (SRC)

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local or regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state, and local regulations when disposing of this substance.
----------------	--

Section XIV. Transport Information

DOT Classification	DOT CLASS 8: Corrosive liquid.
PIN Number	UN2226
Proper Shipping Name	Benzotrichloride.
Packing Group (PG)	II
DOT Pictograms	

Continued on Next Page

Emergency phone number (800) 424-9300

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	WHMIS CLASS D-2A: Material causing other toxic effects (VERY TOXIC). WHMIS CLASS E: Corrosive liquid.
EINECS Number (EEC)	202-634-5
EEC Risk Statements	R35- Causes severe burns. R41- Risk of serious damage to eyes.
Japanese Regulatory Data	Not available.

Section XVI. Other Information

Version 1.0
Validated on 5/6/1998.
Printed 3/11/2005.

Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, household, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.