

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
   	<p>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</p> <p>Environmental hazard.</p> <p>Irritating to skin, eyes, and the respiratory system.</p> <p>CARCINOGEN. MINIMIZE EXPOSURE.</p> <p>Light sensitive.</p> <p>Lachrymator.</p>	   

Section I. Chemical Product and Company Identification

Chemical Name	Bromoform (stabilized with Ethanol)		
Catalog Number	T0348	Supplier	TCI America 9211 N. Harbortgate St. Portland OR 1-800-423-8616
Synonym	Methyl Tribromide (Stabilized with Ethanol)		
Chemical Formula	CHBr ₃		
CAS Number	75-25-2	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
Bromoform (stabilized with Ethanol)	75-25-2	Min. 95.0 (GC)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 933 mg/kg Rat LD ₅₀ (intraperitoneal) 414 mg/kg Mouse LD ₅₀ (oral) 1072 mg/kg

Section III. Hazards Identification

Acute Health Effects	<p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death.</p> <p>Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria.</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : TUMORIGENIC EFFECTS</p> <p>Rat TDLo (Oral) 103000 mg/kg/103 Weeks Intermittent.</p> <p>Toxic Effects:</p> <p>Tumorigenic- Equivocal tumorigenic agent by RTECS criteria.</p> <p>Gastrointestinal- Tumors.</p> <p>Rat TDLo (Oral) 10400 mg/kg/2 Years Continuous.</p> <p>Toxic Effects:</p> <p>Tumorigenic- Carcinogenic by RTECS criteria.</p> <p>Gastrointestinal- Tumors.</p> <p>Mouse TDLo (Intraperitoneal) 1100 mg/kg/8 Weeks Intermittent</p> <p>Toxic Effects:</p> <p>Tumorigenic- Neoplastic by RTECS criteria.</p> <p>Lung, Thorax, or Respiration- Tumors.</p> <p>DEVELOPMENTAL TOXICITY: REPRODUCTIVE EFFECTS</p> <p>Mouse TDLo (Oral) 5.6 gm/kg Female 7 Days prior to mating and 21 Days of pregnancy.</p> <p>Toxic Effects:</p> <p>Maternal Effects- Postpartum.</p> <p>Mouse TDLo (Oral) 47 gm/kg Male 15 Weeks prior to mating and 4 Days after birth.</p> <p>Toxic Effects:</p> <p>Effects on Newborn- Viability index.</p> <p>Effects on Newborn- Growth statistics.</p> <p>Mouse TDLo (Oral) 200 mg/kg Female multigenerations.</p> <p>Toxic Effects:</p> <p>Specific Developmental Abnormalities- Hepatobiliary System.</p> <p>Specific Developmental Abnormalities- Urogenital System.</p> <p>Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. 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.

Section V. Fire and Explosion Data

Flammability	May be combustible at high temperature.	Auto-Ignition	Not available.
Flash Points	Not available.	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO ₂), halogenated compounds.		
Fire Hazards	Not available.		
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.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Toxic material. Irritating material. Environmentally hazardous material. Carcinogenic material. Light sensitive material. Lachrymator. Stop leak if without risk. DO NOT get water inside container. DO NOT touch spilled material. 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.
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Section VII. Handling and Storage

Handling and Storage Information	TOXIC. IRRITANT. ENVIRONMENTALLY HAZARDOUS. CARCINOGEN. LIGHT SENSITIVE. LACHRYMATORY. Keep locked up.. Keep away from heat. 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/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, metals, acids, alkalis (bases).
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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	Splash goggles. 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 carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Soluble in benzene, chloroform, naphtha, and 800 parts water. Miscible in acetone, alcohol, ether, petroleum ether, and oils.
Specific Gravity	2.62 (water=1)		
Molecular Weight	252.73	Partition Coefficient	Log P _{ow} 2.38
Boiling Point	149 °C (300.2 °F)	Vapor Pressure	0.7 kPa (@ 20 °C)
Melting Point	8 °C (46.4 °F)	Vapor Density	8.7(Air = 1)
Refractive Index	1.565-1.568	Volatility	Not available.
Critical Temperature	Not available.	Odor	Chloroform.
Viscosity	Not available.	Taste	Sweetish.

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Emergency phone number (800) 424-9300

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Light sensitive. Avoid excessive heat.
Incompatibilities	Reactive with oxidizing agents, metals, acids, alkalis (bases), aluminum, magnesium, and their alloys.

Section XI. Toxicological Information

RTECS Number	PB5600000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 933 mg/kg Rat LD ₅₀ (intraperitoneal) 414 mg/kg Mouse LD ₅₀ (oral) 1072 mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : TUMORIGENIC EFFECTS Rat TDLo (Oral) 103000 mg/kg/103 Weeks Intermittent. Toxic Effects: Tumorigenic- Equivocal tumorigenic agent by RTECS criteria. Gastrointestinal- Tumors. Rat TDLo (Oral) 10400 mg/kg/2 Years Continuous. Toxic Effects: Tumorigenic- Carcinogenic by RTECS criteria. Gastrointestinal- Tumors. Mouse TDLo (Intraperitoneal) 1100 mg/kg/8 Weeks Intermittent Toxic Effects: Tumorigenic- Neoplastic by RTECS criteria. Lung, Thorax, or Respiration- Tumors. DEVELOPMENTAL TOXICITY: REPRODUCTIVE EFFECTS Mouse TDLo (Oral) 5.6 gm/kg Female 7 Days prior to mating and 21Days of pregnancy. Toxic Effects: Maternal Effects- Postpartum. Mouse TDLo (Oral) 47 gm/kg Male 15 Weeks prior to mating and 4 Days after birth. Toxic Effects: Effects on Newborn- Viability index. Effects on Newborn- Growth statistics. Mouse TDLo (Oral) 200 mg/kg Female multigenerations. Toxic Effects: Specific Developmental Abnormalities- Hepatobiliary System. Specific Developmental Abnormalities- Urogenital System. 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	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Tribromomethane's production and use in fire extinguishers, in the shipbuilding, aircraft and aerospace industries, in organic synthesis, as a solvent for waxes, greases and oils may result in its release to the environment through various waste streams. Tribromomethane is a byproduct of water chlorination. Marine algae produce significant quantities of tribromomethane. If released to air, an estimated vapor pressure of 5.4 mm Hg at 25 deg C indicates tribromomethane will exist solely as a vapor in the ambient atmosphere. Vapor-phase tribromomethane will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 330 days. If released to soil, tribromomethane is expected to have very high mobility based upon an estimated Koc of 35. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 5.4X10 ⁻⁴ atm-cu m/mole. Tribromomethane may volatilize from dry soil surfaces based upon its vapor pressure. In simulated anoxic groundwater environments, approximately 20% degradation of tribromomethane has been observed in approximately 6 hours; 99% degradation was observed after approximately 2.5 days. If released into water, tribromomethane is not expected to adsorb to suspended solids and sediment in water based upon the estimated Koc. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 7.3 hours and 7.1 days, respectively. In a couple of aqueous aerobic biodegradation tests, tribromomethane exhibited little biodegradation. An estimated BCF of 14 suggests the potential for bioconcentration in aquatic organisms is low. Based upon an estimated half-life of 602 years at pH 8, hydrolysis is not expected to be an important fate process. Occupational exposure to tribromomethane may occur through inhalation and dermal contact with this compound at workplaces where tribromomethane is produced or used. Due to the production of tribromomethane by marine algae, low concentrations of tribromomethane are typically detected in sea water and the surrounding air.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local 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 the substance.
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Section XIV. Transport Information

DOT Classification	CLASS 6.1: Toxic Material.
PIN Number	UN2515
Proper Shipping Name	Bromoform
Packing Group (PG)	III MARINE POLLUTANT.
DOT Pictograms	

**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)	CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). On DSL.
EINECS Number (EEC)	200-854-6
EEC Risk Statements	R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin. R45- May cause cancer. R46- May cause heritable genetic damage. R47- May cause birth defects. R50- Very toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment.
Japanese Regulatory Data	ENCS No. (2)-40

Section XVI. Other Information

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Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, 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.