

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>Irritating to skin, eyes, and the respiratory system.</p> <p>CARCINOGEN. MINIMIZE EXPOSURE.</p> <p>Environmental hazard.</p> <p>This material is very toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment.</p>	   

Section I. Chemical Product and Company Identification

Chemical Name	2-Mercaptobenzothiazole		
Catalog Number	M0055	Supplier	TCI America 9211 N. Harborside St. Portland OR 1-800-423-8616
Synonym	2-Benzothiazolyl Mercaptan		
Chemical Formula	C ₇ H ₅ NS ₂		
CAS Number	149-30-4	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
2-Mercaptobenzothiazole	149-30-4	Min. 97.0 (T)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 100 mg/kg Rat LC ₅₀ (inhalation) 1270 mg/m ³ Rabbit LD ₅₀ (dermal) >7940 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>Skin contact may result in sensitization. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material.</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 193125 mg/kg/103 weeks intermittent</p> <p>TOXIC Effects:</p> <p>Tumorigenic - Carcinogenic by RTECS criteria Blood - Leukemia</p> <p>Rat TDLo Oral 195 gm/kg/2 years intermittent</p> <p>TOXIC Effects:</p> <p>Tumorigenic - Carcinogenic by RTECS criteria Blood - Lukemia Gastrointestinal - Tumors</p> <p>Mouse TDLo Subcutaneous 215 mg/kg</p> <p>TOXIC Effects:</p> <p>Tumorigenic - Carcinogenic by RTECS criteria Blood - Tumors</p> <p>DEVELOPMENTAL TOXICITY : Reproductive Effects.</p> <p>Rat TDLo Parenteral 800 mg/kg, male 2 days prior to mating.</p> <p>TOXIC Effects:</p> <p>Effects on Fertility - Post implantation mortality Effects on Embryo or Fetus - Fetotoxicity Effects on Embryo or Fetus - Fetal Death</p> <p>Rat TDLo Parenteral 400 mg/kg, female 4-11 days of pregnancy</p> <p>TOXIC Effects:</p> <p>Effects on Embryo or Fetus - Fetotoxicity Effects on Embryo or Fetus - Fetal Death</p> <p>Mouse TDLo Subcutaneous 4176 mg/kg, female 6-14 days of pregnancy</p> <p>TOXIC Effects:</p> <p>Effects on Embryo or Fetus - Fetotoxicity Specific Developmental Abnormalities - Eye, ear Specific Developmental Abnormalities - Gastrointestinal system</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	490°C (914°F)
Flash Points	243°C (469.4°F).	Flammable Limits	LOWER: 15%
Combustion Products	These products are toxic carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂), sulfur oxides (SO ₂ , SO ₃ ...).		
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. 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. ENVIRONMENTAL HAZARD. CARCINOGEN. 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 dust. 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.
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Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Splash goggles. Lab coat. Dust 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	Solid. (White to Yellow, Powder.)	Solubility	Very Soluble in acetone, acetic acid. Soluble in alkali. Slightly soluble in alcohol, benzene, ether. Very slightly soluble in carbon tetrachloride. Insoluble in water, n-hexane.
Specific Gravity	1.42 (water=1)	Partition Coefficient	Log P _{ow} : 2.41
Molecular Weight	167.25	Vapor Pressure	Not applicable.
Boiling Point	Not available.	Vapor Density	Not available.
Melting Point	178 to 180°C (352.4 to 356°F)	Volatility	Not available.
Refractive Index	Not available.	Odor	Pungent.
Critical Temperature	Not available.	Taste	Not available.
Viscosity	Not available.		

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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	Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents.

Section XI. Toxicological Information

RTECS Number	DL6475000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 100 mg/kg Rat LC ₅₀ (inhalation) 1270 mg/m ³ Rabbit LD ₅₀ (dermal) >7940 mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic Effects. Rat TDLo Oral 193125 mg/kg/103 weeks intermittent TOXIC Effects: Tumorigenic – Carcinogenic by RTECS criteria Blood – Leukemia Rat TDLo Oral 195 gm/kg/2 years intermittent TOXIC Effects: Tumorigenic – Carcinogenic by RTECS criteria Blood – Lukemia Gastrointestinal – Tumors Mouse TDLo Subcutaneous 215 mg/kg TOXIC Effects: Tumorigenic – Carcinogenic by RTECS criteria Blood – Tumors DEVELOPMENTAL TOXICITY : Reproductive Effects. Rat TDLo Parenteral 800 mg/kg, male 2 days prior to mating. TOXIC Effects: Effects on Fertility – Post implantation mortality Effects on Embryo or Fetus – Fetotoxicity Effects on Embryo or Fetus – Fetal Death Rat TDLo Parenteral 400 mg/kg, female 4–11 days of pregnancy TOXIC Effects: Effects on Embryo or Fetus – Fetotoxicity Effects on Embryo or Fetus – Fetal Death Mouse TDLo Subcutaneous 4176 mg/kg, female 6–14 days of pregnancy TOXIC Effects: Effects on Embryo or Fetus – Fetotoxicity Specific Developmental Abnormalities – Eye, ear Specific Developmental Abnormalities – Gastrointestinal system
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. Skin contact may result in sensitization. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	2-Mercaptobenzothiazole may be released to the environment in wastewater during its production, transport, disposal, and use as a rubber vulcanization accelerator, fungicide and a chemical intermediate. 2-Mercaptobenzothiazole has a low to moderate mobility in soil, so if released on land it may leach, especially in alkaline soil. While 2-mercaptobenzothiazole is considered difficult to biodegrade, biodegradation may occur when low concns of the chemical are released in acclimated soil. Its half-lives in three standard soils ranged from 92 to 248 days. If released in water, 2-mercaptobenzothiazole would be partially dissociated and may partially absorb to sediment, especially in acidic water. It would rapidly photodegrade in surface water with a half-life of 0.05 days in summer and 0.21 days in winter. It may very slowly biodegrade in acclimated waters. It would not be expected to bioconcentrate in fish. If the atmosphere, 2-mercaptobenzothiazole will react with photochemically-produced hydroxyl radicals resulting in an estimated atmospheric half-life of 8.4 hr. Exposure to 2-mercaptobenzothiazole would be primarily occupational by dermal contact or inhalation of aerosols.

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	DOT Class 6.1: Toxic material
PIN Number	UN2811
Proper Shipping Name	Toxic solid, organic, n.o.s.
Packing Group (PG)	III
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). CLASS D-2B: Material causing other toxic effects (TOXIC). On DSL
EINECS Number (EEC)	205-736-8
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. R50- Very toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment.
Japanese Regulatory Data	ENCS No. 5-242 ; 5-243

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.