








Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	<p>Water-reactive. May ignite or generate flammable gas in the presence of moisture.</p> <p>Flammable material; avoid heat and sources of ignition.</p> <p>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</p> <p>Refrigerate. May develop pressure, vent slowly before opening.</p> <p>Stench -- do not inhale, use under a fume hood.</p> <p>Store under nitrogen.</p>	   

Section I. Chemical Product and Company Identification

Chemical Name	Dimethyl Sulfide Borane		
Catalog Number	D1843	Supplier	TCI America 9211 N. Harborside St. Portland OR 1-800-423-8616
Synonym	Borane - dimethyl sulfide complex		
Chemical Formula	(CH ₃) ₂ S•BH ₃		
CAS Number	13292-87-0	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
Dimethyl Sulfide Borane	13292-87-0	90.0 (T)	Not available.	Rabbit LDLo (dermal) 200mg/kg

Section III. Hazards Identification

Acute Health Effects	<p>Toxic if absorbed through skin, harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury 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>This material produces an irritating stench. Do not inhale and always use under a fume hood. Inhalation can result in inflammation of the respiratory system, headaches, nausea, and vomiting. 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> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Not available.</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : Not available.</p> <p>DEVELOPMENTAL TOXICITY: Not available.</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 20 minutes, be sure to hold the eyelids open and flush for the entire 20 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. Cover the irritated skin with an emollient. 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	Flammable.	Auto-Ignition	Not available.
Flash Points	-1 °C (30.2 °F)	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO ₂), sulfur oxides (SO ₂ , SO ₃ ...), Diborane, Borates, Dimethyl Sulfide.		
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	Water-reactive DO NOT use water or foam extinguishing agents. Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use DRY chemical or carbon dioxide. DO NOT use water or foam. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Section VI. Accidental Release Measures	
Spill Cleanup Instructions	Water-reactive material. Flammable Liquid. Harmful material. Irritating material. Stench. Keep away from heat. 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. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage	
Handling and Storage Information	WATER-REACTIVE. FLAMMABLE. TOXIC. IRRITANT. STENCH. REFRIGERATE. MAY DEVELOP PRESSURE. Keep locked up.. Keep under inert atmosphere. Keep container dry. Keep away from heat. Mechanical exhaust required. Keep away from direct sunlight or strong incandescent light. DO NOT ingest. Do not breathe gas/fumes/vapor/spray. Never add water to this product. Avoid shock and friction. 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, acids, moisture, acid chlorides, acid anhydrides, peroxides. Temperatures above 75 °C (167 °F) may liberate diborane, a toxic and flammable gas.

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	Not available.


Section IX. Physical and Chemical Properties			
Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Miscible with diethyl ether, methylene chloride, hexane, heptane, petroleum ether, tetrahydrofuran, diglyme, benzene, toluene, and xylene.
Specific Gravity	0.8 (water=1)		
Molecular Weight	75.97	Partition Coefficient	Not available.
Boiling Point	44 °C (111.2 °F)	Vapor Pressure	2.5KPa /22 °C
Melting Point	-40 °C (-40 °F)	Vapor Density	Not available.
Refractive Index	1.455-1.458	Volatility	Not available.
Critical Temperature	Not available.	Odor	STENCH
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	Incompatible with acid chlorides, acid anhydrides, and alcohols. Reacts violently with water.
Incompatibilities	Reactive with oxidizing agents, acids, moisture, peroxides.

Section XI. Toxicological Information	
RTECS Number	PV5080000
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rabbit LDLo (dermal) 200mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Not available. 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 absorbed through skin, harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury 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. This material produces an irritating stench. Do not inhale and always use under a fume hood. Inhalation can result in inflammation of the respiratory system, headaches, nausea, and vomiting. 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. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information	
Ecotoxicity	Not available.
Environmental Fate	Not available.

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.

Section XIV. Transport Information	
DOT Classification	CLASS 4.3: Dangerous when wet material. CLASS 3: Flammable liquid.
PIN Number	UN3399
Proper Shipping Name	Organometallic substance, liquid, water-reactive, flammable
Packing Group (PG)	I
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 B-2: Flammable liquid with a flash point lower than 37.8 °C (100°F). CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS F: Dangerously reactive material.
EINECS Number (EEC)	236-313-6
EEC Risk Statements	R11- Highly flammable. R14- Reacts violently with water. R15- Contact with water gives off highly flammable gases. R20/22- Harmful by inhalation and if swallowed. R24- Toxic in contact with skin. R36/37/38- Irritating to eyes, respiratory system and skin.
Japanese Regulatory Data	Not available.

Section XVI. Other Information**Version 1.0****Validated on 2/2/2006.****Printed 2/2/2006.****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.

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