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SAFETY DATA SHEET

Identity: Bismuth Sulfide Formula: Bi_2S_3

SECTION I - GENERAL INFORMATION

Manufacturer: Super Conductor Materials, Inc.

The information below is believed to be accurate and represents the best information available to Super Conductor Materials, Inc. However, SCM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Molecular weight: 514.15

CAS #	OSHA PEL	ACGIH TLV	%
1345-07-9	N/A	N/A	0.0-100.0%

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: N/A
Melting Point: 685.00°C
Evaporation Rate: N/A
Solubility in water: Insoluble, may form H2S on contact with water

Vapor Pressure (vs. air or mmHg): N/A
Specific Gravity(H_2O=1): 7.39 g/cm^3
Flash Point: N/A

Appearance and odor: Brown-black powder, no odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

Method Used: Unknown *Explosive Limits*: LEL: N/A UEL: N/A
Extinguishing Media: Use class D or other extinguishing agent for metal firs.

Special Fire Fighting Procedures: Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire and Explosion Hazards:
−Flammable when exposed to heat of flame.

−When heated to decomposition or on contact with acid or acid fumes, bismuth sulfide may emit highly toxic fumes of oxides of sulfur.
−Reacts with water or steam to produce toxic and flammable vapors.
−Moderately explosive by spontaneous reaction with chlorates, perchlorates, ClO and thallic oxide.
−Spontaneously flammable when exposed to heat or flame.

SECTION V - REACTIVITY DATA

Stability: Stable
Conditions to Avoid (stability): None
Incompatibility: Water, moisture, steam, acids, strong oxidizers, chlorates, perchlorates, ClO and thallic oxide.

Hazardous Decomposition or Byproducts: Oxides of sulfur
Hazardous Polymerization: Will not occur
Conditions to avoid (hazardous polymerization): None

SECTION VI - HEALTH HAZARD DATA

Route of entry: Inhalation? Yes Ingestion? Yes Eyes? Yes Skin? Yes Other? No

To the best of our knowledge the chemical, physical and toxicological properties of bismuth sulfide have not been thoroughly investigated and recorded.

Bismuth and its salt can cause kidney damage, although the degree of such damage is usually mild. Large doses can be fatal. Industrially it is considered one of the less toxic of the heavy metals. Serious and sometimes fatal poisoning may occur from the ingestion of large doses into closed cavities and from extensive application to burns. It is stated that the administration of bismuth should be stopped when gingivitis appears, for otherwise serious ulceration stomatitis is likely to result. Other toxic results may develop, such as a vague feeling of bodily discomfort, presence of albumin or other protein substance in the urine, diarrhea, skin reactions and sometimes serious exodermatitis. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Sulfides of the heavy metals are generally insoluble and hence have little toxic action except through the liberation of hydrogen sulfide. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Signs and Symptoms of Overexposure:
Inhalation: May cause throat dryness, coughing, burning sensation, foul breath and metallic taste.
Ingestion: May cause nausea, vomiting, diarrhea, bodily discomfort, albumin or other protein substances in the urine and skin disorders.
Skin: May cause redness, itching, inflammation and burning.
Eye: May cause redness, itching, inflammation, watering and burning.

Health Hazards (Acute and Chronic):
Inhalation:
Acute: May cause irritation to the nose, throat and mucous membranes, foul breath, metallic taste and gingivitis.
Chronic: Prolonged or repeated exposure may cause pneumoconiosis, coma and pulmonary edema. May affect the function of the liver and kidneys.

Ingestion:
Acute: May cause gastrointestinal irritation, malaise, albuminuria, diarrhea, skin reactions, stomatitis, headache, fever, rheumatic pain and a black line may form on gums in the mouth.
Chronic: May affect the function of the liver and kidneys. May cause anemia, black line may form on gums and ulcerative stomatitis.

Skin:
Acute: May cause severe irritation to moist skin due to the liberation of hydrogen sulfide.
Chronic: May cause dermatitis.

Eye:
Acute: May cause severe irritation.
Chronic: No chronic health effects recorded.

Target Organs: May affect the eyes, skin, liver, kidneys and respiratory system.
Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No
Medical Conditions Aggravated by Exposure: Pre-existing respiratory disorders

Emergency and First Aid Procedures:

Inhalation:	Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention
Ingestion:	Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person
Skin:	Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist
Eye:	Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled:

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust. Use non-sparking tools.

Waste disposal method:

Dispose of in accordance with state, local, and federal regulations.

Hazard Label Information:

Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):

NIOSH approved respirator, impervious gloves, safety glasses, clothes to prevent contact.

Ventilation:
Local Exhaust: Local exhaust ventilation may be necessary to control any air contaminants at low exposure levels during the use of this product.
Special: Handle in an enclosed, controlled environment
Mechanical (General): Not recommended
Other: Handle in an inert gas such as argon

Work/Hygienic/Maintenance Practices:
Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established