



Chemtrec: (800) 424-9300
Poison Center: (800) 562-8236
Revision Date: January 8th, 2019

SAFETY DATA SHEET

Identity: Bismuth Telluride

Formula: Bi₂Te₃

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: 800.76

CAS #	OSHA PEL	ACGIH TLV	%
1304-82-1	15mg/m ³	10mg/m ³	0.0-100.0%

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: N/A	Vapor Pressure (vs. air or mmHg): N/A
Melting Point: 573.00 °C	Specific Gravity(H ₂ O=1): 7.7 gm/cc at 20°C
Evaporation Rate: N/A	Flash Point: N/A
Solubility in water: Decomposes	

Appearance and odor: Grey powder and pieces, 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 fires.

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:

- When heated to decomposition, bismuth telluride may emit toxic fumes of tellurium.
- May react with water to evolve toxic gases.
- Moderate fire hazard by spontaneous chemical reaction with powerful oxidizing agents.
- Slight exposure hazard moisture.

SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (stability): None

Incompatibility: Strong acids, moisture, water and oxidizing agents

Hazardous Decomposition or Byproducts: Fumes of tellurium

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 telluride have not been thoroughly investigated and recorded.

Bismuth and its salts 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 injection 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)

Elemental tellurium has relatively low toxicity. It is converted in the body to dimethyl telluride which imparts a garlic-like odor to the breath and sweat. Heavy exposures may, in addition, result in headache, drowsiness, metallic taste, loss of appetite, nausea, tremors, convulsions, and respiratory arrest. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Signs and Symptoms of Overexposure:

Inhalation: May cause a red, dry throat, coughing, metallic taste, dry mouth, garlic-like odor to breath, sweat and urine, loss of appetite, sleepiness and nausea.

Ingestion: May cause a dry mouth, diarrhea, bodily discomfort, albumin or other protein substances in the urine, skin disorders, garlic-like odor to breath and urine, loss of appetite, sleepiness and nausea.

Skin: May cause redness, inflammation and itching.

Eye: May cause redness, itching, burning and watering.



Health Hazards (Acute and Chronic):

Inhalation:

Acute: May cause irritation to the respiratory system, a dry mouth, metallic taste, gingivitis, garlic odor to breath, sweat and urine.

Chronic: May cause anorexia, nausea, depression, somnolence and affect the function of the liver and kidneys.

Ingestion:

Acute: May cause a dry mouth, suppression of sweat, malaise, albuminuria, diarrhea, skin reactions, stomatitis, diarrhea, headache, fever, rheumatic pain, black line on gums, garlic odor to breath and urine.

Chronic: May cause anorexia, anemia, black line on gums, ulcerative stomatitis, nausea, depression and somnolence. May affect the function of the liver and kidneys.

Skin:

Acute: May cause irritation and itching.

Chronic: May cause dermatitis.

Eye:

Acute: May cause irritation.

Chronic: No chronic health effects recorded.

Target Organs: May affect the skin, liver, kidneys and central nervous 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.

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.

Precautions to be taken in handling:

Bismuth telluride may react with water. Handle and store in a controlled environment and inert gas such as argon.

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):

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

Ventilation:

Local Exhaust: To maintain concentration at low exposure levels.

Special: Handle in a 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