



LTS Research Laboratories, Inc.  
Safety Data Sheet  
Bismuth Telluride

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1. Product and Company Identification

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Trade Name: Bismuth telluride  
Chemical Formula: Bi<sub>2</sub>Te<sub>3</sub>  
Recommended Use: Scientific research and development

Manufacturer/Supplier: LTS Research Laboratories, Inc.  
Street: 37 Ramland Road  
City: Orangeburg  
State: New York  
Zip Code: 10962  
Country: USA  
Tel #: 855-587-2436 / 855-lts-chem

24-Hour Emergency Contact: 800-424-9300 (US & Canada)  
+1-703-527-3887 (International)

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2. Hazards Identification

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Signal Word: Danger



Hazard Statements: H302+H312: Harmful if swallowed or in contact with skin  
H331: Toxic if inhaled  
H319: Causes serious eye irritation  
H335: May cause respiratory irritation

Precautionary Statements: P261 Avoid breathing dust/fume/vapor  
P280: Wear protective gloves/protective clothing/eye protection/face protection  
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing  
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P405: Store locked up  
P501: Dispose of contents/container in accordance with local/regional/national/international regulations

HMIS Health Ratings (0-4):  
Health: 2  
Flammability: 0  
Physical: 1

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### 3. Composition

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Chemical Family: Ceramic  
Additional Names: Bismuth(III) telluride

Bismuth telluride (Bi<sub>2</sub>Te<sub>3</sub>):  
Percentage: 100 wt%  
CAS #: 1304-82-1  
EC #: 215-135-2

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### 4. First Aid Procedures

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General Treatment: Seek medical attention if symptoms persist.  
Special Treatment: None  
Important Symptoms: None

Inhalation: Remove victim to fresh air. Supply oxygen if breathing is difficult.  
Seek immediate medical attention.

Ingestion: Seek immediate medical attention.

Skin: Wash affected area with mild soap and water. Seek immediate medical attention.

Eyes: Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.  
Seek immediate medical attention.

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### 5. Firefighting Measures

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Flammability: Flammable

Extinguishing Media: Do not use water—use CO<sub>2</sub>, sand, extinguishing powder.

Spec. Fire Fighting Procedure: Use full-face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

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### 6. Accidental Release Measures

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If Material Is Released/Spilled: Wear appropriate respiratory and protective equipment specified in special protection information. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for disposal. Take care not to raise dust.

Environmental Precautions: Isolate runoff to prevent environmental pollution.

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### 7. Handling and Storage

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Handling Conditions: Wash thoroughly after handling.

Storage Conditions: Store in a cool dry place in a tightly sealed container. Store apart from materials and conditions listed in section 10.

Work/Hygienic Maintenance: Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

Ventilation: Provide sufficient ventilation to maintain concentration at or below threshold limit.

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## 8. Exposure Controls and Personal Protection

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Permissible Exposure Limits:	15 mg/m <sup>3</sup> as Bi <sub>2</sub> Te <sub>3</sub> (undoped), long-term value, total dust 5 mg/m <sup>3</sup> as Bi <sub>2</sub> Te <sub>3</sub> (undoped), long-term value, respirable fraction
Threshold Limit Value:	10 mg/m <sup>3</sup> as Bi <sub>2</sub> Te <sub>3</sub> (undoped), long-term value
Special Equipment:	None
Respiratory Protection:	Dust Respirator
Protective Gloves:	Rubber gloves
Eye Protection:	Safety glasses or goggles
Body Protection:	Protective work clothing. Wear close-toed shoes and long sleeves/pants.

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## 9. Physical and Chemical Characteristics

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Color	Grey
Form:	Powder, Granules, Pellets, Sputtering target, Custom parts
Odor:	Odorless
Water Solubility:	Insoluble
Boiling Point:	N/A
Melting Point:	573 °C
Flash Point:	N/A
Autoignition Temperature:	N/A
Density:	7.642 g/cc
Molecular weight:	800.76 g/mol

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## 10. Reactivity

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Stability:	Stable under recommended storage conditions
Reacts With:	Oxidizing agents
Incompatible Conditions:	None
Hazardous Decomposition Products:	Metal oxide fume

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## 11. Toxicological Information

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Potential Health Effects:	
Eyes:	Causes serious damage
Skin:	Harmful
Ingestion:	Harmful
Inhalation:	Toxic
Chronic:	Bismuth and bismuth compounds are often poorly absorbed. Should absorption occur, however, exposure may cause loss of appetite, headache, skin rash, exodermatitis, kidney injury and jaundice. Repeated or prolonged exposure may cause a bismuth line or black spots on the gums, foul breath and salivation. Exposure to bismuth may cause injury to the mouth, esophagus and stomach. Symptoms may include loss of appetite, headache, skin rash, kidney damage and jaundice
Signs & Symptoms:	N/A
Aggravated Medical Conditions:	N/A
Median Lethal Dose:	N/A
Carcinogen:	N/A

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## 12. Ecological Information

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Aquatic Toxicity:	Low
Persistent Bioaccumulation Toxicity:	No
Very Persistent, Very Bioaccumulative:	No
Notes:	N/A

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## 13. Disposal Considerations

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Dispose of in accordance with local, state, national, and international regulations.

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## 14. Transportation Data

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Hazardous:	Hazardous as powder only
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Hazard Class:	6.1 Toxic substances.
Packing Group:	III
UN Number:	UN3284
Proper Shipping Name:	Tellurium compound, n.o.s. (Bismuth(III) telluride)

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## 15. Regulatory Information

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Sec 302 Extremely Hazardous:	No
Sec 304 Reportable Quantities:	N/A
Sec 313 Toxic Chemicals:	No

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## 16. Other Information

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This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.

Document Last Revised: 09/10/2020