SAFETY DATA SHEET

Preparation Date: 05/19/2015  Revision Date: 05/08/2017  Revision Number: G2

1. IDENTIFICATION

Product identifier

Product code: B1105
Product Name: BISMUTH METAL, LUMP

Other means of identification

Synonyms: Bismuth-209
Bismuth, elemental
CAS #: 7440-69-9
RTECS #: EB2600000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: In safety devices in fire detection and extinguishing systems; Catalyst for making acrylic fibers; In production of malleable irons; carrier for radioactive uranium fuel in atomic reactor; In printing industry; alloying agent; chemical intermediate for pharmaceuticals and other chemicals; In cosmetics.

Uses advised against
No information available

Supplier: Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000.

Order Online At: https://www.spectrumchemical.com
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

Not classified

Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

May be harmful if swallowed

Product code: B1105  Product name: BISMUTH METAL, LUMP
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
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</thead>
<tbody>
<tr>
<td>Bismuth Metal</td>
<td>7440-69-9</td>
<td>100</td>
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</table>

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention if irritation develops. Consult a physician if necessary.

Eye Contact: Flush eyes with water for 15 minutes. Get medical attention if irritation occurs. If symptoms persist, call a physician.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed

Symptoms May cause skin irritation. May cause eye irritation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

 UNSuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: If it is involved in a fire the following can be released: bismuth oxides.

Specific hazards: No information available.

Special Protective Actions for Firefighters
Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Avoid dust formation. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions: Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials.

Safe Handling Advice Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe dust. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions: Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:
- Oxidizing agents
- Halogens
- Acids
- Aluminum
- Bromine trifluoride
- Nitrosyl fluoride
- Ammonium nitrate
- Chloric acid
- Iodine pentafluorine
- Nitric acid
- Perchloric acid

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

Product code: B1105 Product name: BISMUTH METAL, LUMP
United States

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<th>Components</th>
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Canada

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Australia and Mexico

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<th>Mexico</th>
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<td>Bismuth Metal</td>
<td>7440-69-9</td>
<td>None</td>
<td>None</td>
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</tbody>
</table>

Appropriate engineering controls

Engineering measures to reduce exposure:
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.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Safety glasses with side-shields

Skin and body protection:
- Long sleeved clothing
- Apron
- Gloves

Respiratory protection:
Effective dust mask. Use a dust respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentration of dust (dust clouds), inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures:
Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

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<thead>
<tr>
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<tbody>
<tr>
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<td>Taste</td>
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<td></td>
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</tr>
<tr>
<td>Molecular/Formulas:</td>
<td>Flammability: No information available</td>
<td>Flashpoint (°C/°F): No information available</td>
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<tr>
<td>Product code: B1105</td>
<td>Product name: BISMUTH METAL, LUMP</td>
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</table>
10. STABILITY AND REACTIVITY

Reactivity
Reactive with oxidizing agents
CAN REACT WITH ACID OR ACID FUMES TO EMIT TOXIC FUMES
Incompatible with aluminum; BrF3; acids; NOF; NH4NO3; HClO3; Cl2; IF5; HNO3; and HClO4.
Incompatible with aluminum and the following oxidants: ammonium nitrate, bromine pentafluoride, chloric acid, iodine pentafluoride, nitric acid, nitrosyl fluoride, and perchloric acid

Chemical stability
Stable under recommended storage conditions.
Possibility of Hazardous Reactions: Hazardous polymerization does not occur


Incompatible Materials:
Oxidizing agents
Halogens
Acids
Aluminum
Bromine trifluoride
Nitrosyl fluoride
Ammonium nitrate
Chloric acid
Iodine pentafluorine
Nitric acid
Perchloric acid

Hazardous decomposition products: No information available.

Other Information
Corrosivity: No information available

Special Remarks on Corrosivity: No information available

Product code: B1105 Product name: BISMUTH METAL, LUMP
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Inhalation. Ingestion.

Acute Toxicity

Component Information

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<tr>
<th>Component</th>
<th>CAS-No.</th>
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</thead>
<tbody>
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<td>Bismuth Metal</td>
<td>7440-69-9</td>
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<tr>
<td>LD50/oral/mouse =</td>
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<tr>
<td>LD50/dermal/rabbit =</td>
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<tr>
<td>LD50/dermal/rat =</td>
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<tr>
<td>LC50/inhalation/rat =</td>
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<td>LC50/inhalation/mouse=</td>
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Other LD50 or LC50 information = No information available

Product Information

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<th>Component Information</th>
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<td>VALUE - Acute Tox Oral=5000 mg/kg</td>
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<tr>
<td>LD50/dermal/rat =</td>
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<td>VALUE - Vapor =</td>
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<td>VALUE - Gas =</td>
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<td>VALUE - Dust/Mist =</td>
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<td>LC50/inhalation/mouse=</td>
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<td>VALUE - Vapor =</td>
</tr>
<tr>
<td>VALUE - Gas =</td>
</tr>
<tr>
<td>VALUE - Dust/Mist =</td>
</tr>
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</table>

Symptoms

Skin Contact: May cause skin irritation.

Eye Contact: May cause eye irritation.

Inhalation: May cause respiratory tract irritation.

Ingestion: Ingestion large doses of Bismuth may cause gingivitis, ulcerative stomatitis, nausea, vomiting, diarrhea, increased salivation. It may affect behavior/central nervous system (nervousness, muscle contraction or spasticity, etc.), kidneys, liver. Ingestion of high doses of bismuth may also cause Bismuth.

Product code: B1105  Product name: BISMUTH METAL, LUMP
encephalopathy which is characterized by mental confusion, ataxia (disordered gait), myoclonus (myoclonic jerks), and dysarthria. Bismuth encephalopathy is more typical of chronic bismuth poisoning.

Aspiration hazard
No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity
Chronic exposure to large amounts of Bismuth is associated with Bismuth lines (a blue-black lines) on the gums, foul breath (halitosis), gastric irritation, diarrhea, gingivitis, ulcerative stomatitis, nausea, decrease or loss of appetite and weight, headache, joint pains (rheumatic pain), diarrhea, and liver and kidney damage. The kidneys are the site of highest concentration with the liver being considerably lower. There may also be mental changes (memory loss, confusion, delirium, disorientation, delusions, psychosis, depression), insomnia, difficulty in concentration, tremor, abnormal coordination, nervousness), blood changes (lymphocytosis, agranulocytosis, aplastic anemia) and bone marrow depression following prolonged inhalation of Bismuth dust. It may also cause Bismuth encephalopathy which is characterized by mental confusion, ataxia (disordered gait), myoclonus (myoclonic jerks), and dysarthria.

Sensitization:
No information available.

Mutagenic Effects:
No information available

Carcinogenic effects: Not considered carcinogenic.

<table>
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<th>Components</th>
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<th>IARC</th>
<th>ACGIH - Carcinogens</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
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<td>Bismuth Metal</td>
<td>7440-69-9</td>
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<td>Not listed</td>
<td>Not listed</td>
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</tbody>
</table>

ACGIH (American Conference of Governmental Industrial Hygienists)
IARC (International Agency for Research on Cancer)
NTP (National Toxicology Program)
OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity
No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity
STOT - single exposure No information available.
STOT - repeated exposure No information available.
Target Organs: Central nervous system. Kidneys.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.
Persistence and degradability: No information available
Bioaccumulative potential: No information available.
Mobility: No information available.

### 13. DISPOSAL CONSIDERATIONS

**Disposal Methods**

**Waste from residues / unused products:**
Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:**
Empty containers should be taken for local recycling, recovery or waste disposal

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</thead>
<tbody>
<tr>
<td>Bismuth Metal</td>
<td>7440-69-9</td>
<td>None</td>
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</tbody>
</table>

### 14. TRANSPORT INFORMATION

**DOT**

- **UN-No:** Not Regulated
- **Proper Shipping Name:** No information available
- **Hazard Class:** No information available
- **Subsidiary Class** No information available
- **Packing group:** No information available
- **Emergency Response Guide Number** No information available
- **Marine Pollutant** No data available
- **DOT RQ (lbs):** No information available
- **Special Provisions** No Information available
- **Symbol(s):** No information available
- **Description:** No information available

**TDG (Canada)**

- **UN-No:** Not Regulated
- **Proper Shipping Name:** No information available
- **Hazard Class:** No information available
- **Subsidiary Risk:** No information available
- **Packing Group:** No information available
- **Marine Pollutant** No Information available
- **Description:** No information available

**ADR**

- **UN-No:** Not Regulated
- **Proper Shipping Name:** No information available
- **Hazard Class:** No information available
- **Packing Group:** No information available
- **Subsidiary Risk:** No information available

**IMO / IMDG**

- **UN-No:** Not Regulated
- **Proper Shipping Name:** No information available
- **Hazard Class:** No information available

**Product code:** B1105  **Product name:** BISMUTH METAL, LUMP
Subsidiary Risk: No information available
Packing Group: No information available
Marine Pollutant: No information available

RID
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

ICAO
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

IATA
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
ERG Code: No information available
Special Provisions: No information available

15. REGULATORY INFORMATION

International Inventories

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<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
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<td>Present</td>
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</table>

U.S. Regulations


Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
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CERCLA/SARA

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<th>CAS-No.</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
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<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
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Product code: B1105  Product name: BISMUTH METAL, LUMP
### U.S. TSCA

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
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### Canada

**WHIMIS 2015 - GHS Classifications**

**WHIMIS 2015 Hazard Classification Information:** Not a dangerous product according to HPR classification criteria.

**Component**

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<tr>
<th>Component</th>
<th>WHIMIS 2015 Hazard Classification</th>
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<tr>
<td>Bismuth Metal</td>
<td>Combustible Dust - Category 1: May form combustible dust concentrations in air (factors such as combustibility and explosiveness of dusts including composition and shape and size of particles could cause substance to belong to 'Combustible dust' hazard class)</td>
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</table>

**Canada Hazardous Products Regulation:** This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR.

**WHIMIS 1988 Hazard Class**

Non-controlled

**Components**

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**Canada Controlled Products Regulation:**

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

### Inventory

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**EU Classification**

**EU GHS - SV - CLP 172/2008**

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<td>Bismuth Metal</td>
<td>7440-69-9</td>
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</table>

**EU - CLP (1272/2008)**

**R-phrase(s)**

not determined (not applicable)

**S-phrase(s)**

none

**Product code:** B1105

**Product name:** BISMUTH METAL, LUMP
Components | CAS-No. | Classification | Concentration Limits: | Safety Phrases
--- | --- | --- | --- | ---
Bismuth Metal | 7440-69-9 | No information | | The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
None.

16. OTHER INFORMATION

Preparation Date: 05/19/2015
Revision Date: 05/08/2017
Prepared by: Sonia Owen

Disclaimer: All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet