Material Safety Data Sheet
Bismuth subnitrate

Section 1 - Chemical Product and Company Identification

**MSDS Name:** Bismuth subnitrate  
**Synonyms:** Bismuth hydroxide nitrate oxide; Basic bismuth nitrate.

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1304-85-4</td>
<td>Bismuth subnitrate</td>
<td>90</td>
<td>215-136-8</td>
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</tbody>
</table>

Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

Appearance: white powder.  
**Danger!** Strong oxidizer. Contact with other material may cause a fire. Causes eye, skin, and respiratory tract irritation. May cause methemoglobinemia.  
**Target Organs:** Blood, respiratory system, eyes, skin.

**Potential Health Effects**  
**Eye:** Causes eye irritation.  
**Skin:** Causes skin irritation.  
**Ingestion:** Methemoglobinemia is characterized by dizziness, drowsiness, headache, shortness of breath, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown colored blood. Ingestion of nitrate containing compounds can lead to methemoglobinemia. May cause visual changes with blurred vision. Opacities may form in the cornea.  
**Inhalation:** May cause effects similar to those described for ingestion.  
**Chronic:** May cause methemoglobinemia, which is characterized by chocolate-brown colored blood, headache, weakness, dizziness, breath shortness, cyanosis (bluish skin due to deficient oxygenation of blood), rapid heart rate, unconsciousness and possible death.

Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.  
**Skin:** Get medical aid if irritation develops or persists. Flush skin with plenty of soap and water.  
**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.  
**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
**Notes to Physician:** Treat symptomatically and supportively.
Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with other material may cause fire.

**Extinguishing Media:** Use water spray to cool fire-exposed containers. Use flooding quantities of water as spray.

**Flash Point:** Not available.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 0; Instability: 1; Special Hazard: OX

Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Provide ventilation. Keep combustibles (wood, paper, oil, etc.,) away from spilled material.

Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Avoid contact with clothing and other combustible materials. Avoid breathing dust. Inform laundry personnel of contaminant’s hazards.

**Storage:** Do not store near combustible materials. Store in a cool, dry place. Store protected from light.

Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bismuth subnitrate</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

**OSHA Vacated PELs:** Bismuth subnitrate: No OSHA Vacated PELs are listed for this chemical.

**Personal Protective Equipment**

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Powder
Appearance: white
Odor: odorless
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: 260 deg C (dec)
Decomposition Temperature: 260 deg C
Solubility: Insoluble.
Specific Gravity/Density: 4.93 g/cm3
Molecular Formula: Bi5O(OH)9(NO3)4
Molecular Weight: 1462.03

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: Light, dust generation, excess heat.
Incompatibilities with Other Materials: Strong reducing agents, sulfur, iodides, bicarbonates, calomel, tannin, organic materials, gallic acid, salicylic acid, combustible materials.
Hazardous Decomposition Products: Nitrogen oxides, bismuth oxide.
Hazardous Polymerization: Has not been reported

Section 11 - Toxicological Information

RTECS#: CAS# 1304-85-4: EB2977000
LD50/LC50:
Not available.
Infant TDLo oral; Dose: 259 mg/kg. Toxic effects: Blood - methemoglobinemia - carboxyhemoglobin.
Carcinogenicity: CAS# 1304-85-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
**Mutagenicity:** No data available.
**Neurotoxicity:** No data available.
**Other Studies:**

### Section 12 - Ecological Information

No information available.

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.
**RCRA U-Series:** None listed.

### Section 14 - Transport Information

<table>
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<th>NITRATES, INORGANIC, N.O.S.</th>
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<tr>
<td>Hazard Class:</td>
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<tr>
<td>UN Number:</td>
<td>UN1477</td>
<td>UN1477</td>
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<tr>
<td>Packing Group:</td>
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<td>II</td>
</tr>
</tbody>
</table>

### Section 15 - Regulatory Information

**European/International Regulations**

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**
- XI

**Risk Phrases:**
- R 36/37/38 Irritating to eyes, respiratory system and skin.
- R 8 Contact with combustible material may cause fire.

**Safety Phrases:**
- S 17 Keep away from combustible material.
- S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S 37/39 Wear suitable gloves and eye/face protection.
Section 16 - Additional Information

MSDS Creation Date: 9/02/1997
Revision #3 Date: 8/10/2004

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