MATERIAL SAFETY DATA SHEET
Bismuth nitrate pentahydrate

Section 1 - Chemical Product and Company Identification

**MSDS Name:** Bismuth nitrate pentahydrate

**Catalog Numbers:** B/3200/48

**Synonyms:** Nitric acid, bismuth(3+) salt, pentahydrate; Bismuth trinitrate pentahydrate.

**Company Identification:** Fisher Scientific UK
Bishop Meadow Road, Loughborough
Leics. LE11 5RG

For information in Europe, call: (01509) 231166

Emergency Number, Europe: 01509 231166

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS#</th>
<th>Hazard Symbols</th>
<th>Risk Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>10035-06-0</td>
<td>Bismuth nitrate pentahydrate</td>
<td>98</td>
<td>unlisted</td>
<td>XI O</td>
<td>36/37/38 8</td>
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</tbody>
</table>

Text for R-phrases: see Section 16

**Hazard Symbols:** XI O

**Risk Phrases:** 36/37/38 8

Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

*Irritating to eyes, respiratory system and skin. Contact with combustible material may cause fire.* *Hygroscopic (absorbs moisture from the air).*

**Potential Health Effects**

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation.

**Ingestion:** May cause irritation of the digestive tract. Ingestion of nitrate containing compounds can lead to methemoglobinemia.

**Inhalation:** Dust is irritating to the respiratory tract. May cause methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, tachycardia, dyspnea (labored breathing), and death. May cause acute pulmonary edema, asphyxia, chemical pneumonitis, and upper airway obstruction caused by edema.

**Chronic:** May cause kidney injury. 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.
Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. Get medical aid if cough or other symptoms appear. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician: For methemoglobinemia, administer oxygen alone or with Methylene Blue depending on the methemoglobin concentration in the blood.

Antidote: Methylene blue, alone or in combination with oxygen is indicated as a treatment in nitrite induced methemoglobinemia.

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: May require flooding with water in order to eliminate hazardous reactions since the materials generate their own oxygen.

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. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. 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 eyes, skin, and clothing. Keep from 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 tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture. Avoid storage on wood floors.

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

CAS# 10035-06-0:

CAS# 10361-44-1:

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 gloves to prevent skin exposure.

Clothing: Wear appropriate clothing to prevent skin exposure.
Respirators: Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

### Section 9 - Physical and Chemical Properties

- **Physical State:** Crystals
- **Color:** white
- **Odor:** none reported
- **pH:** Not available
- **Vapor Pressure:** Not available
- **Viscosity:** Not available
- **Boiling Point:** Not available
- **Freezing/Melting Point:** 30 deg C (86.00°F)
- **Autoignition Temperature:** Not applicable
- **Flash Point:** Not applicable.
- **Explosion Limits: Lower:** Not available
- **Explosion Limits: Upper:** Not available
- **Decomposition Temperature:** Not available
- **Solubility in water:** Not available.
- **Specific Gravity/Density:** 2.83 g/cm³
- **Molecular Formula:** Bi(NO₃)₃·5H₂O
- **Molecular Weight:** 485.11

### Section 10 - Stability and Reactivity

- **Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.
- **Conditions to Avoid:** High temperatures, dust generation, moisture.
- **Incompatibilities with Other Materials:** Reducing agents, strong acids, finely powdered metals, organic materials, combustible materials.
- **Hazardous Decomposition Products:** Nitrogen oxides, bismuth oxide.
- **Hazardous Polymerization:** Has not been reported.

### Section 11 - Toxicological Information

- **RTECS#:** CAS# 10035-06-0: EB2984430
  CAS# 10361-44-1: EB2984400
- **LD50/LC50:**
  - **RTECS:**
    CAS# 10035-06-0: Oral, mouse: LD₅₀ = 3710 mg/kg;
    Oral, rat: LD₅₀ = 4042 mg/kg;
  - **RTECS:**
    CAS# 10361-44-1: Oral, mouse: LD₅₀ = >357 mg/kg;
- **Carcinogenicity:** Bismuth nitrate pentahydrate - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
  Nitric acid, bismuth(3+) salt, anhydrous - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
- **Other:** See actual entry in RTECS for complete information.

### Section 12 - Ecological Information

Not available
Section 13 - Disposal Considerations

Products considered hazardous for supply are classified as Special Waste and the disposal of such chemicals is covered by regulations which may vary according to location. Contact a specialist disposal company or the local authority or advice. Empty containers must be decontaminated before returning for recycling.

Section 14 - Transport Information

<table>
<thead>
<tr>
<th>Shipping Name:</th>
<th>IATA</th>
<th>IMO</th>
<th>RID/ADR</th>
</tr>
</thead>
<tbody>
<tr>
<td>NITRATES, INORGANIC, N.O.S.</td>
<td>NITRATES, INORGANIC, N.O.S.</td>
<td>NITRATES, INORGANIC, N.O.S.</td>
<td></td>
</tr>
</tbody>
</table>

| Hazard Class: | 5.1 | 5.1 | 5.1 |
| UN Number: | 1477 | 1477 | 1477 |
| Packing Group: | III | III | III |

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XI O
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.

WGK (Water Danger/Protection)

CAS# 10035-06-0: Not available
CAS# 10361-44-1: Not available

Canada

CAS# 10361-44-1 is listed on Canada's DSL List

US Federal

TSCA

CAS# 10035-06-0 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form in on the Inventory (40CFR720.3(u)(2)).
CAS# 10361-44-1 is listed on the TSCA Inventory.

Section 16 - Other Information

Text for R-phrases from Section 2

MSDS Creation Date: 6/07/1999
Revision #5 Date 2/11/2008

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