### CAUTIONARY RESPONSE INFORMATION

<table>
<thead>
<tr>
<th>Common Synonyms</th>
<th>Solid</th>
<th>White</th>
<th>Odorless</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bromelite</td>
<td>Sinks in water.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beryllia</td>
<td></td>
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</tbody>
</table>

**Restrict access.**

*Shut off ignition sources and call fire department.*

*Avoid contact with solid and dust.*

*Wear dust respirator and rubber overgloving (including gloves).*

*Notify local health and pollution control agencies.*

*Protect water intakes.*

**Exposure**

Not flammable.

**POISONOUS GASES MAY BE PRODUCED IN FIRE.**

*Wear goggles and self-contained breathing apparatus.*

**Fire**

Not flammable.

**POISONOUS GASES MAY BE PRODUCED IN FIRE.**

*Wear goggles and self-contained breathing apparatus.*

**Water Pollution**

Effect of low concentrations on aquatic life is unknown.

*May be dangerous if it enters water intakes.*

*Notify local health and wildlife officials.*

*Notify operators of nearby water intakes.*

### 1. CORRECTIVE RESPONSE ACTIONS

**Stop discharge.**

Collection Systems: Dredge

### 2. CHEMICAL DESIGNATIONS

<table>
<thead>
<tr>
<th>2.1</th>
<th>CS Compatibility Group: Not listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>Formula: BeO</td>
</tr>
<tr>
<td>2.3</td>
<td>IMO/UN Designation: 6.1/1566</td>
</tr>
<tr>
<td>2.4</td>
<td>DOT No.: 1566</td>
</tr>
<tr>
<td>2.5</td>
<td>CAS Registry No.: 1304-56-9</td>
</tr>
<tr>
<td>2.6</td>
<td>NAMRO Guide No.: 154</td>
</tr>
<tr>
<td>2.7</td>
<td>Standard Industrial Trade Classification: 52029</td>
</tr>
</tbody>
</table>

### 3. HEALTH HAZARDS

**3.1 Personal Protective Equipment:** Respiratory protection: gloves; freshly laundered clothing; chemical safety goggles

**3.2 Symptoms Following Exposure:** Any dramatic, unexplained weight loss should be considered as possible first indication of beryllium disease. Other symptoms include anorexia, fatigue, weakness, malaise. Inhalation causes pneumonitis, nasopharyngitis, tracheobronchitis, dyspnea, chronic cough. Contact with dust causes conjunctival inflammation of eyes and irritation of skin.

**3.3 Treatment of Exposure:**

- **INHALATION:** Take chest x-ray immediately to check for pneumonitis.
- **INGESTION:** Induce vomiting; get medical attention.
- **SKIN:** Cut or puncture wounds in which beryllium may be embedded under the skin should be thoroughly cleansed immediately by a physician.
- **Ocular:** Flush with water for at least 15 min.; get medical attention.

**3.4 TLV-TWA:** 0.002 mg/m³ (as beryllium)

**3.5 TLV-STEL:** Not listed.

**3.6 TL-Ceiling:** 0.01 mg/m³ as beryllium.

**3.7 Toxicity by Ingestion:** Currently not available.

**3.8 Toxicity by Inhalation:** Currently not available.

**3.9 Chronic Toxicity:** Beryllium disease may occur in lymph nodes, liver, spleen, kidney, etc. as well as long.

**3.10 Vapor (Gas) Irritant Characteristics:** Currently not available

**3.11 Liquid or Solid Characteristics:** Currently not available

**3.12 Odor Threshold:** Odorless

**3.13 IDLH Value:** 4 mg/m³ as beryllium.

**3.14 OSHA PEL-TWA:** 0.002 mg/m³ as beryllium.

**3.15 OSHA PEL-STEL:** 0.025 mg/m³ 30 minute peak per 8 hour shift.

**3.16 OSHA PEL-Ceiling:** 0.005 mg/m³ as beryllium.

**3.17 EPA AEGL:** Not listed

### 4. FIRE HAZARDS

**4.1 Flash Point:** Not flammable.

**4.2 Flammable Limits in Air:** Not flammable.

**4.3 Fire Extinguishing Agents:** Not pertinent.

**4.4 Fire Extinguishing Agents Not To Be Used:** Not pertinent.

**4.5 Special Hazards of Combustion:** POISONOUS AS Fume. Toxic beryllium oxide fume may form in fire.

**4.6 Behavior in Fire:** Currently not available.

**4.7 Auto-Ignition Temperature:** Not pertinent.

**4.8 Electrical Hazards:** Not pertinent.

**4.9 Burning Rate:** Not pertinent.

**4.10 Adiabatic Flame Temperature:** Currently not available.

**4.11 Stoichiometric Air to Fuel Ratio:** Not pertinent.

**4.12 Flame Temperature:** Currently not available.

**4.13 Combustion Molar Ratio (Reactant to Product):** Not pertinent.

**4.14 Minimum Oxygen Concentration for Combustion (MOCC):** Not listed.

### 5. CHEMICAL REACTIVITY

**5.1 Reactivity with Water:** No reaction.

**5.2 Reactivity with Common Materials:** Currently not available.

**5.3 Stability During Transport:** Stable.

**5.4 Neutralizing Agents for Acids and Corrosives:** Not pertinent.

**5.5 Polymerization:** Not pertinent.

**5.6 Inhibitor of Polymerization:** Not pertinent.

### 6. WATER POLLUTION

**6.1 Aquatic Toxicity:** Currently not available.

**6.2 Waterfowl Toxicity:** Currently not available.

**6.3 Biological Oxygen Demand (BOD):** None.

**6.4 Food Chain Concentration Potential:** Bioconcentration of 100-fold can occur under constant exposure. Not significant in split conditions.

**6.5 GESAMP Hazard Profile:** Not listed.

### 7. SHIPPING INFORMATION

**7.1 Grades of Purity:** Technical; Nuclear

**7.2 Storage Temperature:** Ambient

**7.3 Inert Atmosphere:** No requirement

**7.4 Venting:** Open

**7.5 IMO Pollution Category:** Currently not available.

**7.6 Ship Type:** Currently not available.

**7.7 Barge Hull Type:** Currently not available.

### 8. HAZARD CLASSIFICATIONS

**8.1 49 CFR Category:** Poison.

**8.2 49 CFR Class:** 6.1

**8.3 49 CFR Package Group:** II

**8.4 Marine Pollutant:** Not pertinent.

**8.5 NFPA Hazard Classification:** Not listed.

**8.6 EPA Reportable Quantity:** Not listed.

**8.7 EPA Pollution Category:** Not listed.

**8.8 RQRA Waste Number:** Not listed.

**8.9 EPA PWWCA List:** Not listed.

### 9. PHYSICAL & CHEMICAL PROPERTIES

**9.1 Physical State at 15°C and 1 atm:** Solid

**9.2 Molecular Weight:** 11

**9.3 Boiling Point at 1 atm:** Not pertinent.

**9.4 Freezing Point:** Not pertinent.

**9.5 Critical Temperature:** Not pertinent.

**9.6 Critical Pressure:** Not pertinent.

**9.7 Specific Gravity:** 3.0 at 20°C (solid)

**9.8 Liquid Surface Tension:** Not pertinent.

**9.9 Liquid Water Interfacial Tension:** Not pertinent.

**9.10 Vapor (Gas) Specific Gravity:** Not pertinent.

**9.11 Ratio of Specific Heats of Vapor (Gas):** Not pertinent.

**9.12 Latent Heat of Vaporization:** Not pertinent.

**9.13 Heat of Combustion:** Not pertinent.

**9.14 Heat of Decomposition:** Not pertinent.

**9.15 Heat of Solution:** Not pertinent.

**9.16 Heat of Polymerization:** Not pertinent.

**9.17 Heat of Fusion:** 679.7 cal/g

**9.18 Limiting Value:** Currently not available.

**9.19 Reid Vapor Pressure:** Currently not available.

### NOTES

JUNE 1999
### BERYLLIUM OXIDE

#### 9.20 Saturated Liquid Density

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>Pounds per cubic foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT</td>
<td>NOT</td>
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<tr>
<td>NOT</td>
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</table>

#### 9.21 Liquid Heat Capacity

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>British thermal unit per pound-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT</td>
<td>NOT</td>
</tr>
<tr>
<td>PERTINENT</td>
<td>PERTINENT</td>
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#### 9.22 Liquid Thermal Conductivity

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>British thermal unit inch per hour-square foot-F</th>
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</thead>
<tbody>
<tr>
<td>NOT</td>
<td>NOT</td>
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<tr>
<td>PERTINENT</td>
<td>PERTINENT</td>
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#### 9.23 Liquid Viscosity

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>Centipoise</th>
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#### 9.24 Solubility in Water

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>Pounds per 100 pounds of water</th>
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<tbody>
<tr>
<td>INSOLUBLE</td>
<td>INSOLUBLE</td>
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#### 9.25 Saturated Vapor Pressure

<table>
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<tr>
<th>Temperature (degrees F)</th>
<th>Pounds per square inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT</td>
<td>NOT</td>
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#### 9.26 Saturated Vapor Density

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<th>Temperature (degrees F)</th>
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</thead>
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#### 9.27 Ideal Gas Heat Capacity

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>British thermal unit per pound-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT</td>
<td>NOT</td>
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