

# BERYLLIUM

BEM

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b>	Solid Silver color Odorless  Sinks in water.
<p>Restrict access.  <b>AVOID CONTACT WITH SOLID AND DUST,</b>  Wear dust respirator and rubber overclothing (including gloves).  Shut off ignition sources and call fire department.  Notify local health and pollution control agencies.  Protect water intakes.</p>	
<b>Fire</b>	<p>Combustible.  <b>POISONOUS GASES MAY BE PRODUCED IN FIRE.</b>  Dust cloud may explode if ignited in an enclosed area.  Wear goggles and self-contained breathing apparatus.  Extinguish with dry graphite, soda ash, or other inert powder.  <b>DO NOT USE WATER ON FIRE.</b></p>
<b>Exposure</b>	<p>CALL FOR MEDICAL AID.  <b>DUST</b>  <b>POISONOUS IF INHALED OR IF SKIN IS EXPOSED.</b>  If inhaled will cause coughing or difficult breathing.  If in eyes, hold eyelids open and flush with plenty of water.  If breathing has stopped, give artificial respiration.  If breathing is difficult, give oxygen.</p> <p><b>SOLID</b>  <b>POISONOUS IF SWALLOWED OR IF SKIN IS EXPOSED.</b>  Remove contaminated clothing and shoes.  Flush affected areas with plenty of water.  <b>IF IN EYES,</b> hold eyelids open and flush with plenty of water.  <b>IF SWALLOWED</b> and victim is <b>CONSCIOUS,</b> have victim drink water or milk and have victim induce vomiting.  <b>IF SWALLOWED</b> and victim is <b>UNCONSCIOUS OR HAVING CONVULSIONS,</b> do nothing except keep victim warm.</p>
<b>Water Pollution</b>	<p>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.</p>

### 1. CORRECTIVE RESPONSE ACTIONS

Stop discharge  
Collection Systems: Dredge

### 2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** Not listed.
- 2.2 **Formula:** Be
- 2.3 **IMO/UN Designation:** 6.1/1567
- 2.4 **DOT ID No.:** 1567
- 2.5 **CAS Registry No.:** 7440-41-7
- 2.6 **NAERG Guide No.:** 134
- 2.7 **Standard Industrial Trade Classification:** 52229

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Self contained positive pressure breathing apparatus; clean work clothes daily; gloves; eye protection
- 3.2 **Symptoms Following Exposure:** Any dramatic, unexplained weight loss should be considered as possible first indication of beryllium disease. Dust is extremely toxic when inhaled; symptoms include coughing, shortness of breath, and acute or chronic lung disease. There is no record of illness from ingestion of beryllium. Contact with dust causes conjunctival inflammation of eyes and dermatitis.
- 3.3 **Treatment of Exposure:** **INHALATION:** acute disease may require hospitalization with administration of oxygen; chest x-ray should be taken immediately. **EYES:** flush with water for at least 15 min. **SKIN:** flush with water; wash with soap and water; all cuts, scratches or other injuries should receive prompt medical attention.
- 3.4 **TLV-TWA:** 0.002 mg/m<sup>3</sup>
- 3.5 **TLV-STEL:** 0.01 mg/m<sup>3</sup>
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 3; oral LD<sub>50</sub> = 100 mg/kg (mouse)
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Berylliosis of lungs may occur from 3 months to 15 years after exposure. Chronic systemic diseases of the liver, spleen, lymph nodes, bone, kidney, and other organs may also occur.
- 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/m<sup>3</sup>
- 3.14 **OSHA PEL-TWA:** 0.002 mg/m<sup>3</sup>
- 3.15 **OSHA PEL-STEL:** 0.025 mg/m<sup>3</sup> 30 minute peak per 8 hour shift.
- 3.16 **OSHA PEL-Ceiling:** 0.005 mg/m<sup>3</sup>
- 3.17 **EPA AEGL:** Not listed

### 4. FIRE HAZARDS

- 4.1 **Flash Point:** Not pertinent
- 4.2 **Flammable Limits in Air:** Not pertinent
- 4.3 **Fire Extinguishing Agents:** Graphite, sand, or any other inert dry powder
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Water, CO<sub>2</sub>, or halogenated extinguishing agents.
- 4.5 **Special Hazards of Combustion Products:** Combustion yields beryllium oxide fume, which is toxic if inhaled.
- 4.6 **Behavior in Fire:** Powder may form explosive mixture with air.
- 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:** 2.4 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 1.0 (calc.)
- 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:** Reacts with acids and alkalis to form hydrogen gas.
- 5.3 **Stability During Transport:** Stable
- 5.4 **Neutralizing Agents for Acids and Caustics:** 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):** Currently not available
- 6.4 **Food Chain Concentration Potential:** Currently not available
- 6.5 **GESAMP Hazard Profile:**  
**Bioaccumulation:** 0  
**Damage to living resources:** 2  
**Human Oral hazard:** 2  
**Human Contact hazard:** II  
**Reduction of amenities:** XXX

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Grade AA, 99.96+%; Grade A, 99.87+%; Nuclear grade
- 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:** No
- 8.5 **NFPA Hazard Classification:**  

Category	Classification
Health Hazard (Blue).....	4
Flammability (Red).....	1
Instability (Yellow).....	0
- 8.6 **EPA Reportable Quantity:** 10 pounds
- 8.7 **EPA Pollution Category:** A
- 8.8 **RCRA Waste Number:** P015
- 8.9 **EPA FWPCA List:** Not listed

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid
- 9.2 **Molecular Weight:** 9.01
- 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:** 1.85 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:** -28,000 Btu/lb = -15,560 cal/g = -652 X 10<sup>3</sup> J/kg
- 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:** 260.0 cal/g
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
	N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	I N S O L U B L E		N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T