

# BARIUM CYANIDE

BCY

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Barium cyanide solid		Solid crystals      White  Sinks and mixes with water.
<p>Restrict access.  <b>AVOID CONTACT WITH SOLID, DUST, AND WATER SOLUTION. Keep people away.</b>  Wear chemical protective suit with self-contained breathing apparatus.  Notify local health and pollution control agencies.  Protect water intakes.</p>		
<b>Fire</b>	Not flammable. <b>POISONOUS GASES MAY BE PRODUCED IN FIRE.</b> Wear chemical protective suit with self-contained breathing apparatus.	
<b>Exposure</b>	<b>CALL FOR MEDICAL AID</b> <b>DUST</b> <b>POISONOUS IF INHALED OR IF SKIN IS EXPOSED.</b> Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.  <b>SOLID</b> <b>POISONOUS IF SWALLOWED OR IF SKIN IS EXPOSED.</b> Irritating to skin and eyes. Remove contaminated clothing and shoes. <b>IF IN EYES,</b> hold eyelids open and flush with plenty of water. <b>IF SWALLOWED</b> and victim is <b>UNCONSCIOUS,</b> have victim drink water or milk and induce vomiting. <b>IF SWALLOWED</b> and victim is <b>UNCONSCIOUS OR HAVING CONVULSIONS,</b> do nothing except keep victim warm.	
<b>Water Pollution</b>	<b>HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.</b> May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.	

### 1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse  
Stop discharge  
Collection Systems: Dredge

### 2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.  
2.2 **Formula:** Ba(CN)<sub>2</sub>  
2.3 **IMO/UN Designation:** 6.1/1565  
2.4 **DOT ID No.:** 1565  
2.5 **CAS Registry No.:** 542-62-1  
2.6 **NAERG Guide No.:** 157  
2.7 **Standard Industrial Trade Classification:** 52381

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Safety goggles, protective clothing, self-contained breathing apparatus. Equipment should be approved for use around cyanides.
- 3.2 **Symptoms Following Exposure:** **INHALATION OR INGESTION:** Exposure to cyanides can cause headache, vertigo, nausea, and vomiting may occur at low concentrations. High concentration causes difficult breathing, palpitation, paralysis, unconsciousness, respiratory arrest, cyanosis, and death. **EYES:** Irritation. **SKIN:** Rash, desquamation and itching.
- 3.3 **Treatment of Exposure:** **CALL A DOCTOR IMMEDIATELY.** **INHALATION:** Remove from exposure. Break amyl nitrate pearl in cloth and hold lightly under nose for 15 seconds. Repeat 5 times at 15-second intervals. Use artificial respiration if breathing stops. **EYES:** Wash eyes with copious quantities of water for a minimum of 20 minutes. **SKIN:** Wash with soap and water. **INGESTION:** If patient is conscious, induce vomiting and repeat until vomit is clear. Treat as for inhalation.
- 3.4 **TLV-TWA:** 0.5 mg/m<sup>3</sup> as Barium (soluble compound).  
3.5 **TLV-STEL:** Not listed.  
3.6 **TLV-Ceiling:** Not listed.  
3.7 **Toxicity by Ingestion:** Grade 4; LD<sub>50</sub> <50 mg/kg.  
3.8 **Toxicity by Inhalation:** Currently not available.  
3.9 **Chronic Toxicity:** Exposure to small amounts of cyanide compounds over long periods of time is reported to cause loss of appetite, headache, weakness, nausea, dizziness, and irritation of upper respiratory tract and eyes.
- 3.10 **Vapor (Gas) Irritant Characteristics:** Currently not available  
3.11 **Liquid or Solid Characteristics:** Currently not available  
3.12 **Odor Threshold:** Currently not available  
3.13 **IDLH Value:** 50 mg/m<sup>3</sup> as barium  
3.14 **OSHA PEL-TWA:** 0.5 mg/m<sup>3</sup> as barium  
3.15 **OSHA PEL-STEL:** Not listed.  
3.16 **OSHA PEL-Ceiling:** Not listed.  
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 Products:** Toxic cyanides and barium oxides.
- 4.6 **Behavior in Fire:** Not pertinent
- 4.7 **Auto Ignition Temperature:** Not flammable
- 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:** Barium will precipitate as sulfate or carbonate. Cyanide will slowly convert to the less toxic cyanate. The cyanide ion is in equilibrium with HCN, a very weak acid.
- 5.2 **Reactivity with Common Materials:** Cyanides in water are corrosive to metals.
- 5.3 **Stability During Transport:** Currently not available
- 5.4 **Neutralizing Agents for Acids and Caustics:** Barium: sodium sulfate or CO<sub>2</sub> will precipitate insoluble salts. Cyanide: ferric salts will precipitate. Lime will suppress HCN evolution and help convert to cyanates.
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

### 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**  
96-hour TL<sub>m</sub> for finfish <1 mg/l, highly toxic.
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** Currently not available
- 6.4 **Food Chain Concentration Potential:** Possible for Barium. Barium has been concentrated 150 times by Goldfish. Half-life in human body - 65 days.
- 6.5 **GESAMP Hazard Profile:**  
**Bioaccumulation:** 0  
**Damage to living resources:** 4  
**Human Oral hazard:** 3  
**Human Contact hazard:** II  
**Reduction of amenities:** XXX

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available  
7.2 **Storage Temperature:** Currently not available  
7.3 **Inert Atmosphere:** Currently not available  
7.4 **Venting:** Currently not available  
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:** I  
8.4 **Marine Pollutant:** Yes  
8.5 **NFPA Hazard Classification:** Not listed  
8.6 **EPA Reportable Quantity:** 10 pounds  
8.7 **EPA Pollution Category:** A  
8.8 **RCRA Waste Number:** P013  
8.9 **EPA FWPCA List:** Yes

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid  
9.2 **Molecular Weight:** 189.40  
9.3 **Boiling Point at 1 atm:** Currently not available  
9.4 **Freezing Point:** Currently not available  
9.5 **Critical Temperature:** Currently not available  
9.6 **Critical Pressure:** Currently not available  
9.7 **Specific Gravity:** Currently not available  
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:** Currently not available  
9.13 **Heat of Combustion:** -3604 Btu/lb = -1447 cal/g = -60.5 X 10<sup>5</sup> J/kg  
9.14 **Heat of Decomposition:** Currently not available  
9.15 **Heat of Solution:** Exothermic -26.6 Btu/lb = -14.8 cal/g = -6.19 X 10<sup>5</sup> J/kg  
9.16 **Heat of Polymerization:** Not pertinent  
9.17 **Heat of Fusion:** Currently not available  
9.18 **Limiting Value:** Currently not available  
9.19 **Reid Vapor Pressure:** Currently not available

### NOTES

# BARIUM CYANIDE

BCY

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
57	80.000		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