

**MATERIAL SAFETY DATA SHEET****I PRODUCT IDENTIFICATION**

<b>Trade Name:</b>	Barium	<b>Formula:</b>	Ba
<b>Common Name:</b>	Barium	<b>CAS #:</b>	7440-39-3

**II HAZARDOUS INGREDIENTS**

<b>Hazardous Component</b>	<b>%</b>	<b>OSHA/PEL</b>	<b>ACGIH/TLV</b>
Barium	0-100	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>

**III PHYSICAL DATA**

<b>Boiling Point:</b>	1640 °C	<b>Melting Point:</b>	725 °C
<b>Vapor Density (Air=1):</b>	NA	<b>Solubility in H<sub>2</sub>O:</b>	Insoluble, reacts with water
<b>Vapor Pressure:</b>	Not Measurable (mm Hg @ 25 °C)	<b>Specific Gravity:</b>	3.600
<b>Appearance and Odor:</b>	Silver white metal, odorless	<b>% Volatiles:</b>	0

**NOTE:** The physical data presented above are typical values and should not be construed as a specification.

**IV FIRE AND EXPLOSION HAZARDS DATA**

<b>Flash Point (Method used):</b> N/A	<b>Autoignition Temperature:</b> N/E
<b>Explosive Limits: Lower:</b> N/E	<b>Upper:</b> N/E

**Extinguishing Media:** Dry chemical powder-Chemical/Dolomite(Powdered Limestone. DO NOT USE WATER, CARBON DIOXIDE, OR HALOCARBON EXTINGUISHERS! FLAMMABLE SOLID!!

**Special Fire Fighting Procedures:** Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes. Flammable solid.

**Unusual Fire and Explosion Hazards:** Material readily reacts with water generating flammable and/or explosive hydrogen gas. Do not expose to air and fire. Emits toxic fumes under fire conditions. Isolate with dolomite and allow to burn. Large Fires: Contain and Smother with dolomite.

**Caution!** Fire may reignite after having been extinguished. Blend with large excess of dolomite.

**V HEALTH HAZARD INFORMATION****Effects of Exposure:**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Barium poisoning is virtually unknown in industry, although the potential exists when the soluble forms are used. When ingested or given orally, the soluble ionized barium compounds exert a profound effect on all muscles and especially smooth muscles, markedly increasing their contractility. The heart rate is slowed and may stop in systole. Other effects are increased intestinal peristalsis, vascular constriction, bladder contraction, and increased voluntary muscle tension.

**Acute Effects:**

**Inhalation:** Can cause irritation to the nose, throat, and upper respiratory tract.

**Ingestion:** Causes severe irritation of the mouth, throat, and esophagus.

**Skin:** Contact with skin can cause mild to moderate irritation. Contact with skin can lead to the development of a hypersensitivity (ie. allergic) in susceptible individuals.

**Eye:** Can cause mild to moderate irritation to the ocular tissues.

**Chronic Effects:** Severe irritation or burns.

**Primary Routes of Exposure:** Eye, skin, and inhalation.

**Target Organs:** Depending on the route, frequency, and duration of exposure, toxicity may occur in the following organs and/or systems: Respiratory System, Eye, Skin, Immune System (Allergic Reactions), Central Nervous System, and Heart.

**Medical Conditions Generally Aggravated by Exposure:** Respiratory system, skin, immune system and/or specific chemical allergies, central nervous system, and the heart.

#### **EMERGENCY AND FIRST AID PROCEDURES:**

**INHALATION:** Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

**INGESTION:** Call a poison control center, emergency room, or physician. Unless advised otherwise, induce vomiting after giving 1-2 glasses of milk or water. If a soluble barium compound has been swallowed, get medical attention. Never induce vomiting or give anything by mouth to an unconscious person. Loosen tight fitting clothing, clear the airway, and keep the person warm.

**SKIN:** Immediately remove and isolate contaminated clothing. Carefully brush material off skin and wash area with soap and water. Seek medical attention if irritation develops.

**EYE:** Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water. Lift upper and lower eye lids frequently. Get prompt medical attention.

**NOTE TO PHYSICIAN:** Treatment should be directed at preventing absorption, administering to the symptoms as they occur, and providing supportive therapy.

#### **VI REACTIVITY DATA**

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**Stability:** Stable

**Conditions to Avoid:** Do not allow water to enter container because of violent reaction. Avoid friction, heat, sparks, and flame.

**Incompatibility (Materials to Avoid):** Oxidizing agents, oxygen, acids, halocarbons, carbon dioxide.

**Hazardous Decomposition Products:** Toxic fumes.

**Hazardous Polymerization:** Will not occur

#### **VII SPILL OR LEAK PROCEDURES**

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**Steps to Be Taken in Case Material Is Released or Spilled:** Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area and provide ventilation. Shovel spilled product and place in a closed container for further handling and disposal. Do not flush to sewer, stream, or other bodies of water unless authorized to do so by appropriate government official. Small quantities of barium metal may be dissolved in large quantities of water. Soda ash is added and the solution then neutralized with HCL.

**Waste Disposal Method:** Material in the elemental state should be recovered for reuse or recycling. Observe all federal, state & local laws.

#### **VIII SPECIAL PROTECTION INFORMATION**

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**Respiratory Protection:** Avoid breathing dust. Wear a NIOSH/MSHA approved dust respirator.

**Ventilation:** Provide adequate ventilation. Handle only in protective argon or helium atmosphere or under oil.

**Protective Gloves:** Leather-palmed, heat resistant gloves.

**Eye Protection:** Chemical splash goggles and a full face shield. An eye wash facility should be readily available.

**Other Protective Clothing or Equipment:** The use of fire resistant outer clothing is advisable.

## **IX SPECIAL PRECAUTIONS**

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**Precautions to Be Taken in Handling and Storage:** Barium metal should be stored in tightly-closed containers under argon or helium atmosphere or a paraffin oil blanket. When handling, wear non-sparking shoes and flame resistant clothing. Avoid friction, heat, sparks, and flame. Use only non-sparking tools and utensils. Ground all equipment, vessels, tables, and other metallic objects that may come into contact with the product.

**Other Precautions:** Can autoignite in air. Extremely sensitive to shock, heat, friction and static electricity. Rubber gloves, rubber protective clothing and apron, goggles and gas filter mask should be worn when working in a barium storage area.

**Empty Container Precautions:** This container is hazardous when empty. Do not use heat, sparks, open flame, torches, or cigarettes on or near empty container. Empty containers can retain product residues. Do not reuse empty container for food, clothing, or other products for human or animal consumption or where skin contact may occur.

**Work Practices:** Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Do not use tobacco or food in work area. Wash thoroughly after handling, especially before eating, drinking, smoking, or using restroom facilities. Contaminated clothing and shoes should be thoroughly cleaned before reuse. Do not blow dust off clothing or skin with compressed air. Maintain eyewash capable of sustained flushing, safety drench shower and facilities for washing.

**DOT Shipping Name:** Barium

**DOT Label:** Dangerous when wet

**DOT Identification No.:** UN 1400

The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. ESPI shall not be held liable for any damage resulting from handling or from contact with the above product.

Issued by: S. Dierks  
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