

MATERIAL SAFETY DATA SHEET

1. PRODUCT IDENTIFIERNAME: **Barium Sulfide, All Grades**

SYNONYMS: Barium Sulfide, Grey; Barium Sulfide, Black Ash; Barium Monosulfide

MANUFACTURER: Chemical Products Corporation (CPC)
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2. INFORMATION ON INGREDIENTS

<u>COMPONENT</u>	<u>CAS #</u>	<u>EXPOSURE LIMITS</u>	<u>% BY WT</u>
Barium Sulfide	21109-95-5	OSHA PEL: 0.5 mg/cu m as Ba 0.74 mg/cu m as This Product ACGIH TLV-TWA: Same	ca 85%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: WARNING! MAY CAUSE PERMANENT EYE INJURY. CAUSES RESPIRATORY TRACT IRRITATION. HARMFUL IF SWALLOWED. HARMFUL IF INHALED. Do not taste or swallow. Avoid breathing dust. Use only with adequate ventilation. Avoid skin contact. Wash thoroughly after handling.

CONTACT WITH ACID RELEASES POISONOUS AND FLAMMABLE HYDROGEN SULFIDE GAS.

POTENTIAL HEALTH EFFECTS: Alkalinity can cause burns to eyes and mucous membranes. Acute overexposure can cause headache, dizziness, abdominal pain, vomiting, diarrhea, and unconsciousness. Paralysis of the breathing muscles can lead to death.

Routes of Entry: Ingestion; inhalation.

Human Effects: Acute over-exposure to soluble barium will cause severe abdominal pain, violent purging with watery and bloody stools, vomiting, muscle twitching, and confusion, followed by transient muscle paralysis, including paralysis of the respiratory muscles, which may be fatal. Symptoms of over-exposure will disappear with time as the body eliminates barium, primarily in the feces. Hypokalemia is often observed; potassium should be administered - large doses may be required. Acute over-exposure to sulfide will cause headache, dizziness, confusion, followed by a precipitous lapse into unconsciousness.

Acute Inhalation: Dust produces a choking and burning sensation. Destruction of mucous membranes in nose and throat can occur if immediate steps are not taken to wash dust away.

Chronic Inhalation: Dust will irritate nose and throat.

Acute Skin Contact: Barium ion is not likely to penetrate intact skin; penetration through cuts and burns may produce symptoms of over-exposure. This product removes hair and its alkalinity will irritate skin if it is not quickly washed away.

Chronic Skin Contact: Barium ion is not likely to penetrate intact skin. A slight irritation of the skin may result from the alkaline nature of this product.

Acute Eye Contact: Particles in the eye will cause pain, tearing, and acute damage to the conjunctiva and cornea of the eye.

Chronic Eye Contact: Particles in the eye will cause tearing and irritation, and may lead to development of corneal opacity.

Acute Ingestion: Alkalinity can cause destruction of the lining of the stomach. Barium poisoning and hydrogen sulfide poisoning can result. See Human Effects on Page 1.

Chronic Ingestion: See Human Effects on Page 1. Alkalinity may cause painful alkali burns.

Carcinogenicity: NTP.....: No evidence of carcinogenicity for either soluble barium or sulfide.
IARC.....: Not listed. OSHA.....: Not regulated as a carcinogen.

Medical Conditions Aggravated by Exposure: None are known.

4. FIRST AID MEASURES

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Have victim drink as much milk or water as possible. Then give Epsom salts (magnesium sulfate) or Glauber's Salt (sodium sulfate) dissolved in water.

Physician: Administer potassium intravenously to counteract the effects of barium. This product is highly alkaline.

For eye contact, flush eyes with large amounts of water for at least 15 minutes and get IMMEDIATE medical attention.

For skin contact, wash with soap and water. Wash clothing before reuse.

5. FIRE FIGHTING MEASURES

Flashpoint: Non-Flammable under normal conditions.

Flammability: Finely divided dust can form combustible mixtures with air.

Autoignition: Not applicable.

General Hazard: Poison, flammable hydrogen sulfide gas will be evolved from this product on exposure to acid. If this product is involved in a fire, toxic sulfur oxide gases may be produced.

Fire Fighting Instructions: Limit water runoff if it is likely to contain suspended barium sulfide. Add soluble sulfate such as sodium sulfate to the water to remove dissolved barium. Do not use carbon dioxide fire extinguishers because toxic hydrogen sulfide gas may be liberated from this product.

Fire Fighting Equipment: No special equipment is required. Wash away any barium sulfide which may contact the body, clothing, or equipment.

Hazardous Combustion Products: Poisonous sulfur dioxide gas will be generated if this product burns.

6. ACCIDENTAL RELEASE MEASURES

General: Avoid generating dust and keep this product away from acids. Use appropriate Personnel Protective Equipment (PPE). Spilled product is a RCRA hazardous waste because of its soluble barium content and sulfide content.

Small Spill: Carefully shovel or sweep up spilled material and place in suitable container.

Large Spill: Try to keep material dry and away from acids. Prevent material from entering storm sewers or ditches which lead to natural waterways. Dispose of material in an approved hazardous waste landfill. Mix with excess sulfate to make material non-hazardous.

7. HANDLING AND STORAGE

Storage Temperature: Not critical.

Storage Pressure: Not critical.

General: This product is water-soluble; keep this material dry.

--Keep containers closed. --

Emptied containers may present a toxic hazard; treat or dispose of appropriately.

--Do not store in zinc, aluminum, or copper containers.

--**Danger.** Do not rely upon the sense of smell to detect hydrogen sulfide gas (the ability to smell is rapidly lost).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Control airborne concentrations below the exposure limits. Use only with adequate ventilation.

Respiratory Protection: Use a NIOSH-approved dust mask if excessive dust is present.

Skin Protection: Cover exposed skin areas and wear general-purpose gloves.

Eye Protection: Wear safety glasses. Use chemical goggles if excessive dust is present.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid.

Vapor Pressure: Not applicable.

Specific Gravity: 4.2

Solubility in Water: 9 grams per 100 ml of water at 21 Deg. C. (70 Deg. F.)

pH: Highly alkaline.

Boiling Point: Not applicable.

Melting Point: About 1200 Deg. C.

Vapor Density: Not applicable.

Evaporation Rate: Not applicable.

Odor: Slight "rotten egg" odor if damp.

Appearance: White powder or granules.

10. STABILITY AND REACTIVITY

Chemical Stability: Keep away from acids which will cause decomposition. Intense heat may cause decomposition.

Incompatibility: Acids will decompose barium sulfide with the liberation of hydrogen sulfide.

Hazardous Decomposition Products: Poison hydrogen sulfide gas and another soluble barium salt which is toxic.

Hazardous Polymerization: Does not occur.

11. TOXICOLOGICAL INFORMATION

Skin: Contact can be irritating with the possibility of alkaline burns if moisture is present. Barium ion is not expected to pass through intact skin.

Eye: The dust is expected to be irritating with the possibility of alkaline burns.

Ingestion: Barium sulfide is soluble in stomach acid forming barium chloride. The Oral LD50 for rats is about 400 mg/kg of barium chloride. A National Toxicology Program study found no decrease in two-year survival for rats consuming 110 mg/kg/day of barium chloride for the entire two year period.

Inhalation: No studies. Inhaled dust is expected to exhibit the same systemic toxicity as ingestion because barium sulfide is cleared from the lungs into the bloodstream.

Sub-chronic: Rats and mice exposed to 1,250 ppm of barium chloride dihydrate in their drinking water continuously for two years showed no adverse effects.

Chronic/Carcinogenic: Rats and mice exposed to 2500 ppm of barium chloride dihydrate in drinking water for two years showed no evidence of carcinogenic response.

Teratogenic: Rats exposed to 2000 ppm of barium chloride dihydrate in their drinking water for thirty days exhibited no teratogenic effects, and no fetotoxicity was noted.

Reproductive: No effects were seen on reproductive indices in a mating trial after male rats were exposed to 2000 ppm of barium chloride dihydrate in their drinking water for sixty days and female rats were exposed to 2000 ppm in their drinking water for thirty days..

Mutagenic: Barium chloride dihydrate was not mutagenic in Salmonella typhimerium strains TA 100, TA 1535, TA 1537, TA 97, or TA 98, with or without exogenous metabolic activation (S9).

12. ECOLOGICAL INFORMATION

TOXICITY: Toxic to aquatic organisms at high concentrations.

DISTRIBUTION: This product reacts with sulfate ions in the environment to form barium sulfate. Sulfide is part of the naturally-occurring sulfur cycle and is present throughout the lithosphere. No appreciable bioconcentration is expected in the environment, because barium sulfate is naturally present in almost all rocks and soils.

CHEMICAL FATE: The environmental fate of barium sulfide is to become barium sulfate which is insoluble in both water and acids and thus is inert and non-toxic.

13. WASTE MANAGEMENT INFORMATION

Waste containing more than 0.2% soluble barium is hazardous under the RCRA criteria. If disposed of in its purchased form, this product would be a hazardous waste based on barium solubility in the RCRA TCLP test. It would also be a hazardous waste based on its sulfide content. Barium compounds can be rendered non-hazardous by reaction with excess sulfate to form insoluble barium sulfate; any strong oxidizing agent will oxidize sulfide. Any disposal practice must be in compliance with local, state, and federal laws and regulations.

14. TRANSPORT INFORMATION

D.O.T. Shipping Name..... : Not Regulated.

Technical Shipping Name..... : Barium Compound.

D.O.T. Hazard Class.....: None.

U.N./N.A. Number..... : None.

Product R.Q. (lbs)..... : None.

D.O.T. Label..... : None.

D.O.T. Placard..... : None.

Freight Class Bulk..... : Inorganic Chemical.

Freight Class Package..... : Inorganic Chemical.

Product Label.....: Barium Sulfide, Grey.
Barium Sulfide, Black Ash.

15. REGULATORY INFORMATION

OSHA Status..... : This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard, 29 CFR 1910.1200. It is classified as toxic based on the oral rat LD50.

TSCA Status..... : Listed on TSCA Inventory

CERCLA Reportable Quantity..... : None.

SARA Title III:

Section 302, Extremely Hazardous Substances.... : None.
Section 311/312, Hazard Categories..... : Category 1 (Acute Hazard).
Section 313, Toxics Release Inventory..... : Barium Compounds, Code N040.

RCRA Status..... : If discarded in its purchased form, this product would be a hazardous waste by characteristic because of its high alkalinity and soluble Barium content. Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste under 40 CFR 261.20-24.

16. OTHER INFORMATION

NFPA Rating (National Fire Protection Association):

Health - 2 (Materials which on intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given).

Fire -1 (Materials which will burn in air when exposed to a temperature of 1500 Deg. F.)

Reactivity -1 (Materials which are normally stable but which can become unstable at elevated temperature and pressure).

Special - NA

Reason for Issue.....: Minor Format revision.

Prepared by.....: Jerry A. Cook.

Title.....: Technical Director.

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