

1. PRODUCT IDENTIFIER - Barium Sulfide

1.1 Trade Name: Barium Sulfide Gray Ash and Barium Sulfide Black Ash

SYNONYMS: Barium Sulphide; Black Ash Barium Sulfide; Barium sulfide technical grade; Barium Monosulfide

Molecular formula - BaS

CAS No. 21109-95-5

1.2 Relevant identified uses of the substance and uses advised against

- production of barium chemicals
- manufacture of depilatory products for human hair removal
- added as component of articles for the purpose of providing x-ray opacity
- wastewater treatment for removal of heavy metals

Industrial uses advised against: None.

1.3 MANUFACTURER/Supplier of this SDS:

Chemical Products Corporation
102 Old Mill Road
Cartersville, Georgia 30120-1688
Telephone: 1-770-382-2144

1.4 EMERGENCY PHONE NUMBER: CHEMTREC, 800-424-9300 (24 hours every day)

2. HAZARD IDENTIFICATION

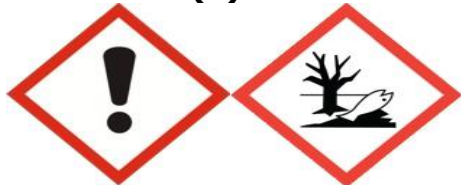
2.1 Classification in accordance with paragraph (d) of §1910.1200

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 4), H332

Additional GHS classification – Very toxic to aquatic life, H400

2.2 Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200.



Signal Word **WARNING**

Hazard Statements

- H302 Harmful if swallowed
- H332 Harmful if inhaled

Additional identified hazard - Causes serious eye irritation

Precautionary Statements

Prevention

- P264 Wash thoroughly after handling
- P270 Do not eat, drink, or smoke when using this product
- P280 Wear protective gloves/protective clothing/eye protection/face protection
- P271 Use only outdoors or in a well-ventilated area

Response

- P310 If SWALLOWED: Immediately call a POISON CENTER/doctor/physician.
- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P330 Rinse mouth.
- p310 IF IN EYES: Immediately call a POISON CENTER/doctor/physician.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
- P304+P312 IF INHALED: Call a POISON CENTER/doctor/physician if you feel unwell.

2.3 Other hazards not otherwise classified that have been identified during the classification process

- Contact with acids liberates toxic gas (Hydrogen Sulfide).
- Causes serious eye irritation and irritating to skin

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Common Name/Synonyms	CAS#	% by weight
Barium Sulfide	Barium Sulphide	21109-95-5	75 - 80

4. FIRST AID MEASURES

4.1 Description of necessary 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. Never give anything by mouth to an unconscious person. Give Epsom salts (magnesium sulfate) or Glauber's Salt (sodium sulfate) dissolved in water.

If inhaled

Move person into fresh air. If not breathing, give artificial respiration. Consult a physician if victim feels unwell.

For eye contact

Flush eyes with large amounts of water for at least 15 minutes and get IMMEDIATE medical attention.

For skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician if irritation persists.

4.2 Most important symptoms and effects, both acute and delayed

The main adverse effect caused by ingestion of soluble barium in high concentrations after repeated doses is nephrotoxicity which was observed in animal studies. The high alkalinity of barium sulfide causing painful corrosion to mucus membranes makes ingestion of high concentrations of this product unlikely.

In case of inhalation

- the alkalinity of this product would be highly irritating to mucus membranes in the respiratory tract

In case of eye contact

- physical abrasion of the eye may occur in addition to damage resulting from the alkalinity of this product.

In case of skin contact

-irritating to skin

In case of ingestion

-Acute overexposure to soluble barium will cause severe abdominal pain, violent purging and vomiting, muscle twitching, hypertension, and confusion, followed by transient muscle paralysis including potentially fatal paralysis of the respiratory muscles.

4.3 Indication of any immediate medical attention and special treatment needed, if necessary

- seek medical treatment if you feel unwell after being exposed to this product.

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



5. FIRE FIGHTING MEASURES

5.1 Suitable (and unsuitable) extinguishing media.

- Dry powder is the preferred extinguishing media.
- Avoid CO₂ fire extinguishers.

5.2 Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).

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

5.3 Special protective equipment and precautions for fire-fighters.

- Wear self-contained breathing apparatus for firefighting.
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6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment, and emergency Procedures.

- Avoid generating dust and keep this product away from acids because toxic hydrogen sulfide gas will be generated. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Wear respiratory protection. Evacuate personnel to safe areas.

6.2 Methods and materials for containment and cleaning up.

- Do not let product enter drains. Discharge into the environment must be avoided. Pick up and arrange disposal without creating dust. Do not flush with water. Sweep up and shovel. Keep in suitable, closed containers for disposal.
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7. HANDLING AND STORAGE

7.1 Precautions for safe handling.

- Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures

- **Avoid contact with skin and eyes.**
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards



7.2 Conditions for safe storage, including any incompatibilities.

- Keep in a dry place. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Do not store near acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV)

- For Barium Sulfide - TWA 0.50 mg/m³ – OSHA Occupational Exposure Limits Table Z-1 Limits for Air Contaminants
- For Barium Sulfide - TWA 0.50 mg/m³ - ACGIH Threshold Limit Values (TLV)

8.2 Appropriate engineering controls.

- Use only with adequate ventilation. Control airborne concentrations below the exposure limits. Apply technical measures to ensure compliance with the occupational exposure limits.

8.3 Individual protection measures, such as personal protective equipment.

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

Appearance (physical state, color, etc.): Solid. Light gray fine powder.

Odor: Slight "rotten egg" odor; more pronounced if damp.

Odor Threshold: No data available.

pH: Highly alkaline. No data available.

Melting point/Freezing point: about 1,200 °C (2,192 °F)

Initial boiling point and boiling range: No data available.

Flash point: No data available.

Evaporation rate: No data available.

Flammability (solid, gas): No data available.

Upper/lower flammability or explosive limits: No data available.

Vapor pressure: No data available.

Vapor density: No data available.

Relative density – Specific Gravity: about 4.2 at 20 °C (68 °F).

Solubility: about 8 grams per 100 ml of water at 21 °C (70 °F).

Partition coefficient: n-octanol/water: No data available.

Auto-ignition temperature: No data available.
Decomposition temperatures: No data available.
Viscosity: No data available.

10. STABILITY AND REACTIVITY

10.1 Reactivity

- Reacts with acids to release toxic hydrogen sulfide gas. May react with strong oxidizing agents to release toxic sulfur dioxide gas.

10.2 Chemical Stability

- Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions

- No data available.

10.4 Conditions to avoid (e.g., static discharge, shock, or vibration)

- No data available.

10.5 Incompatible materials

- No data available.

10.6 Hazardous decomposition products

- Hazardous decomposition products formed under fire conditions. - Sulfur oxides, Barium oxide
- Other decomposition products - No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)

Most likely route of exposure is expected to be skin contact.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

- Acute toxicity

Alkalinity will cause extreme irritation of mucus membranes upon ingestion or inhalation.

Skin - in vitro assay - Result: Causes severe burns.
(Skin corrosion: Human Skin Model Test)

11.3 Delayed and immediate effects and also chronic effects from short- and long-term exposure

- Nausea, vomiting, and diarrhea would be expected if this product is ingested. - To the best of our knowledge, the short and long term toxicological effects have not been thoroughly investigated.

11.4 Numerical measures of toxicity (such as acute toxicity estimates)

- The European Commission has published its determination of the appropriate classification and labeling for barium sulfide (barium sulphide) in Table 3 of Annex VI to the consolidated version of the Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation). The classification is "Acute toxicity, Oral – Category 4; Acute toxicity, Inhalation – Category 4." These correspond to "harmful if swallowed and harmful if inhaled".

11.5 Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA.

- Germ cell mutagenicity
No data available
 - Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
 - Reproductive toxicity
No data available
 - Specific target organ toxicity - single exposure
No data available
 - Specific target organ toxicity - repeated exposure
No data available
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12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity (aquatic and terrestrial, where available)

- Very toxic to aquatic life. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

12.2 Persistence and degradability

- No data available. Soluble barium in this product reacts with sulfate ions present in the environment or from oxidation of this product to form insoluble barium sulfate. Sulfide is part of the naturally-occurring sulfur cycle and is present throughout the lithosphere.

12.3 Bioaccumulative potential

- No data available. No appreciable bioconcentration is expected in the environment because this product becomes insoluble barium sulfate which is naturally present in almost all rocks and soils.

12.4 Mobility in soil

- No data available. 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.

12.5 Other adverse effects

- No data available.

13. DISPOSAL CONSIDERATIONS

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 characteristic D005 hazardous waste (exceeding regulatory limit for soluble barium in the RCRA TCLP test). Any disposal practice must be in compliance with local, state, and federal laws and regulations.

14. TRANSPORT INFORMATION

DOT HazMat proper shipping name.....: Not Regulated.
U.N./N.A. Number.....: None.
Technical Shipping Name.....: Barium Compound.
D.O.T. Transport Hazard Class.....: None.
Packing group
Product R.Q. (lbs).....: None.
D.O.T. Label.....: None.
D.O.T. Placard: None.



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Environmental hazards: Not a Marine Pollutant
Freight Class Bulk.....: Inorganic Chemical.
Freight Class Package.....: Inorganic Chemical.
Product Label.....: Barium Sulfide Black Ash or
Barium Sulfide Gray 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 as ACTIVE

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. Under RCRA, it is the responsibility of the product user to determine, at the time of disposal, whether a waste 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 - 0 (Materials which are nonflammable).

Reactivity - 0 (Materials which in themselves are normally stable even under fire exposure conditions, and which are not reactive with water).

Special - NA



Reason for Issue..... : Review and reapproval.

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

Title..... : Technical Director.

Approval Date..... : June 5, 2023

Supersedes Date..... : November 4, 2020.

MSDS Number..... : 48A

Disclaimer: The information contained herein is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions; it does not represent any guarantee of the properties of the product. Chemical Products Corporation makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. The data on this sheet relates only to the specific material designated herein. Chemical Products Corporation assumes no legal responsibility for use or reliance upon these data.