



From: Avantor Performance Materials, Inc.  
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24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. and Canada  
Chemtrec: 703-527-3887

**NOTE:** CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service, 1-855-AVANTOR (855-282-6867) for assistance.

## Barium Oxide, Anhydrous

### 1. Product Identification

**Synonyms:** Barium Monoxide; Barium Protoxide

**CAS No.:** 1304-28-5

**Molecular Weight:** 153.34

**Chemical Formula:** BaO

**Product Codes:** B656

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Barium Oxide	1304-28-5	90 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. AFFECTS MUSCLES (INCLUDING THE HEART), AND CENTRAL NERVOUS SYSTEM. CAUSES EYE BURNS. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT.**

**SAF-T-DATA(tm)** Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Blue (Health)

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### **Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. May be absorbed into the bloodstream with symptoms similar to ingestion.

### **Ingestion:**

A systemic poison that competes with potassium in the nervous system. Causes severe irritation of the gastrointestinal tract, tightness in the muscles of the face and neck, vomiting, diarrhea, abdominal pain, muscular tremors, anxiety, weakness, labored breathing, cardiac irregularity, convulsions, and death from cardiac and respiratory failure. Death may occur within hours or up to a few days. May also damage kidneys, blood and blood forming organs and the brain.

### **Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain. Solutions are strongly alkaline, highly irritating and may cause burns.

### **Eye Contact:**

Causes irritation, redness, pain, and burns.

### **Chronic Exposure:**

Chronic exposure may cause respiratory system effects.

### **Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin and nervous system disorders or impaired respiratory or kidney function may be more susceptible to the effects of this substance.

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## 4. First Aid Measures

### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

### **Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

### **Skin Contact:**

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

### **Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

### **Note to Physician:**

Treatment is symptomatic and supportive. Sodium sulfate can be given in case of ingestion to precipitate out the barium as barium sulfate.

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## 5. Fire Fighting Measures

### **Fire:**

Not considered to be a fire hazard.

### **Explosion:**

Not considered to be an explosion hazard.

### **Fire Extinguishing Media:**

Use dry chemical or carbon dioxide. Do not use water or foam. Water may be used to cool containers.

### **Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. DO NOT USE WATER.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Keep away from water. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

For Soluble Barium Compounds:

OSHA Permissible Exposure Limit (PEL):

0.5 mg (Ba)/m<sup>3</sup>

ACGIH Threshold Limit Value (TLV):

0.5 mg (Ba)/m<sup>3</sup> A4 - not classifiable as a human carcinogen

A4 - Not classifiable as a human carcinogen.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

### **Appearance:**

White to slightly yellowish powder.

### **Odor:**

Odorless.

### **Solubility:**

Reacts with water, liberating much heat.

**Specific Gravity:**

5.72

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

No information found.

**Melting Point:**

1923C (3493F)

**Vapor Density (Air=1):**

Not applicable.

**Vapor Pressure (mm Hg):**

Not applicable.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Very Alkaline. Absorbs carbon dioxide and water from air.

**Hazardous Decomposition Products:**

Reacts with water forming barium hydroxide and liberating much heat.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Hydrogen sulfide, carbon dioxide, water, hydroxylamine, nitrogen tetroxide, sulfur trioxide, triuranium.

**Conditions to Avoid:**

Air, moisture, and incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Barium Oxide (1304-28-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container

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## 14. Transport Information

### Domestic (Land, D.O.T.)

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**Proper Shipping Name:** BARIUM OXIDE  
**Hazard Class:** 6.1  
**UN/NA:** UN1884  
**Packing Group:** III  
**Information reported for product/size:** 125G

### International (Water, I.M.O.)

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**Proper Shipping Name:** BARIUM OXIDE  
**Hazard Class:** 6.1  
**UN/NA:** UN1884  
**Packing Group:** III  
**Information reported for product/size:** 125G

### International (Air, I.C.A.O.)

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**Proper Shipping Name:** BARIUM OXIDE  
**Hazard Class:** 6.1  
**UN/NA:** UN1884  
**Packing Group:** III  
**Information reported for product/size:** 125G

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## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia

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Barium Oxide (1304-28-5) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient Korea DSL NDSL Phil.

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Barium Oxide (1304-28-5) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----

-----SARA 302-----SARA 313-----  
Ingredient RQ TPQ List Chemical Catg.

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Barium Oxide (1304-28-5) No No No Barium compo

-----\Federal, State & International Regulations - Part 2\-----

Ingredient CERCLA -RCRA- -TSCA-  
261.33 8(d)

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Barium Oxide (1304-28-5) No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
Reactivity: Yes (Pure / Solid)

**Australian Hazchem Code:** 2Z  
**Poison Schedule:** None allocated.  
**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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## 16. Other Information

**NFPA Ratings:** Health: 3 Flammability: 0 Reactivity: 2

**Label Hazard Warning:**

DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. AFFECTS MUSCLES (INCLUDING THE HEART), AND CENTRAL NERVOUS SYSTEM. CAUSES EYE BURNS. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.  
Do not breathe dust.  
Keep container closed.  
Use only with adequate ventilation.  
Wash thoroughly after handling.  
Do not contact with water.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Disclaimer:**

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**Prepared by:** Environmental Health & Safety