



LTS Research Laboratories, Inc.
Safety Data Sheet
Barium Calcium Zirconium Titanium Oxide

1. Product and Company Identification

Trade Name: Barium Calcium Zirconium Titanium Oxide
Chemical Formula: $(1 - x)\text{Ba}(\text{Zr}0.2\text{Ti}0.8)\text{O}_3 - x(\text{Ba}0.7\text{Ca}0.3)$
Recommended Use: Scientific research and development

Manufacturer/Supplier: LTS Research Laboratories, Inc.
Street: 37 Ramland Road
City: Orangeburg
State: New York
Zip Code: 10962
Country: USA
Tel #: 855-587-2436 / 855-lts-chem

24-Hour Emergency Contact: 800-424-9300 (US & Canada)
+1-703-527-3887 (International)

2. Hazards Identification

Signal Word: Danger



Hazard Statements: H302+H332: Harmful if swallowed or if inhaled.
H314: Causes severe skin burns and eye damage.
H315: Causes skin irritation.

Precautionary Statements: P260: Do not breathe dust/fume/gas/mist/vapors/spray.
P264: Wash face, hands and any exposed skin thoroughly after handling.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P405: Store locked up.
P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

HMIS Health Ratings (0-4):
Health: 1
Flammability: 0
Physical: 1

3. Composition

Chemical Family: Ceramic
Additional Names: N/A

Barium Oxide (BaO):
Percentage: 0-100 wt%
CAS #: 1304-28-5
EC #: 215-127-9

Calcium Oxide (CaO):
Percentage: 0-100 wt%
CAS #: 1305-78-8
EC #: 215-138-9

Zirconium Oxide (ZrO₂):
Percentage: 0-100 wt%
CAS #: 1314-23-4
EC #: 215-227-2

Titanium Oxide (TiO₂):
Percentage: 0-100 wt%
CAS #: 13463-67-7 (General)
1317-70-0 (Anatase)
1317-80-2 (Rutile)
EC #: 236-675-5 (General)
215-280-1 (Anatase)
215-282-2 (Rutile)



4. First Aid Procedures

General Treatment: Seek medical attention if symptoms persist.
Special Treatment: None
Important Symptoms: None

Inhalation: Remove victim to fresh air. Supply oxygen if breathing is difficult.
Ingestion: Give one to two glasses of water and induce vomiting. Never induce vomiting or give anything by mouth to an unconscious person.

Skin: Wash affected area with mild soap and water. Remove any contaminated clothing.

Eyes: Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing

5. Firefighting Measures

Flammability: Non-flammable, except as powder

Extinguishing Media: No special restrictions – use suitable extinguishing agent for surrounding material and type of fire.

Spec. Fire Fighting Procedure: Use full-face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

6. Accidental Release Measures

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| If Material Is Released/Spilled: | Wear appropriate respiratory and protective equipment specified in special protection information. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for disposal. Take care not to raise dust. |
| Environmental Precautions: | Isolate runoff to prevent environmental pollution. |

7. Handling and Storage

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| Handling Conditions: | Wash thoroughly after handling. |
| Storage Conditions: | Store in a cool dry place in a tightly sealed container. Store apart from materials and conditions listed in section 10. |
| Work/Hygienic Maintenance: | Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air. |
| Ventilation: | Provide sufficient ventilation to maintain concentration at or below threshold limit. |

8. Exposure Controls and Personal Protection

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|------------------------------|---|
| Permissible Exposure Limits: | 0.5 mg/m ³ as Ba, long-term value 5 mg/m ³ as CaO, long-term value 5 mg/m ³ as Zr, long-term value |
| Threshold Limit Value: | 0.5 mg/m ³ as Ba, long-term value 2 mg/m ³ as CaO, long-term value 5 mg/m ³ as Zr, long-term value |
| Special Equipment: | None |
| Respiratory Protection: | Dust Respirator |
| Protective Gloves: | Rubber gloves |
| Eye Protection: | Safety glasses or goggles |
| Body Protection: | Protective work clothing. Wear close-toed shoes and long sleeves/pants. |

9. Physical and Chemical Characteristics

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|---------------------------|--|
| Color | N/A |
| Form: | Powder, Granules, Pellets, Sputtering target, Custom parts |
| Odor: | N/A |
| Water Solubility: | N/A |
| Boiling Point: | N/A |
| Melting Point: | N/A |
| Flash Point: | N/A |
| Autoignition Temperature: | N/A |
| Density: | N/A |
| Molecular weight: | N/A |

10. Reactivity

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|-----------------------------------|---|
| Stability: | Stable under recommended storage conditions |
| Reacts With: | Acids, Halogens, Water, Oxidizing agents |
| Incompatible Conditions: | Water, Moisture, Oxidizing agents, |
| Hazardous Decomposition Products: | Metal oxide fume |

11. Toxicological Information

Potential Health Effects:

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|-------------|----------------------|
| Eyes: | Causes severe damage |
| Skin: | Causes skin burns |
| Ingestion: | Harmful if swallowed |
| Inhalation: | Harmful if inhaled |
| Chronic: | N/A |

Signs & Symptoms: N/A

Aggravated Medical Conditions: N/A

Median Lethal Dose: N/A

Carcinogen: N/A

12. Ecological Information

Aquatic Toxicity: Low

Persistent Bioaccumulation Toxicity: No

Very Persistent, Very Bioaccumulative: No

Notes: Do not allow undiluted product or large quantities reach ground water, water course or sewage system.

13. Disposal Considerations

Dispose of in accordance with local, state, national, and international regulations.

14. Transportation Data

Hazardous: Not hazardous for transportation.

Hazard Class: N/A

Packing Group: N/A

UN Number: N/A

Proper Shipping Name: N/A

15. Regulatory Information

Sec 302 Extremely Hazardous: No

Sec 304 Reportable Quantities: N/A

Sec 313 Toxic Chemicals: Yes

16. Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.

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