



LTS Research Laboratories, Inc.  
Safety Data Sheet  
Niobium doped Lithium Lanthanum Zirconium Oxide

---

1. Product and Company Identification

---

Trade Name: Niobium doped Lithium Lanthanum Zirconium Oxide  
Chemical Formula:  $\text{Li}_{6.5}\text{La}_3\text{Zr}_{1.5}\text{Nb}_{0.5}\text{O}_{12}$   
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: H228: Flammable solid  
H314: Causes severe skin burns and eye damage  
H335: May cause respiratory irritation

Precautionary Statements: P210: Keep away from heat/sparks/flame. No smoking.  
P240: Ground/bond container and receiving equipment  
P241: Use explosion-proof electrical/ventilating/light/equipment  
P260: Do not breathe dust/fume/gas/mist/vapours/spray  
P280: Wear protective gloves/protective clothing/eye protection/face protection  
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting  
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  
P370+P378: In case of fire: Use CO<sub>2</sub>, sand, or extinguishing powder for extinction  
P405: Store locked up  
P501: Dispose of contents/container in accordance with local/regional/national/international regulations

HMIS Health Ratings (0-4):  
Health: 3  
Flammability: 2  
Physical: 1

---

### 3. Composition

---

Chemical Family: Inorganic Compound  
Additional Names: None

Lithium Lanthanum Zirconium Oxide ( $\text{Li}_{6.5}\text{La}_3\text{Zr}_{1.5}\text{Nb}_{0.5}\text{O}_{12}$ ):

Percentage: 100 wt%  
CAS #: NIL  
EC #: NIL

---

### 4. First Aid Procedures

---

General Treatment: Seek immediate medical attention.  
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. Never induce vomiting or give anything by mouth to an unconscious person. Seek immediate medical attention.  
Skin: Wash affected area with mild soap and water. Remove any contaminated clothing. Call a physician if irritation persists.  
Eyes: Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Get medical attention.

---

### 5. Firefighting Measures

---

Flammability: Non-flammable, except as powder  
Extinguishing Media: Do not use water or foam for metal fires. Use  $\text{CO}_2$ , sand, or extinguishing powder.  
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

---

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

---

Handling Conditions: Handle under dry protective gas. Wash thoroughly after handling.  
Storage Conditions: Store in a cool dry place in a tightly sealed container. Store under dry inert gas. 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

---

|                                     |   |
|-------------------------------------|---|
| Permissible Exposure Limits:        | 5 mg/m <sup>3</sup> as Zr, long-term value  |
| Threshold Limit Value:              | 10 mg/m <sup>3</sup> as Zr, short-term value<br>5 mg/m <sup>3</sup> as Zr, long-term value  |
| Special Equipment:                  | None  |
| Respiratory Protection:             | Use a respirator with type P100 (USA) or P3 (EN143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards. |
| Protective Gloves:                  | Nitrile rubber, NBR   |
| Penetration time of glove material: | N/A   |
| Eye Protection:                     | Safety glasses or goggles, Full face protection   |
| Body Protection:                    | Protective work clothing. Wear close-toed shoes and long sleeves/pants.   |

---

## 9. Physical and Chemical Characteristics

---

|                           |  |
|---------------------------|--|
| 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

---

|                                   |  |
|-----------------------------------|--|
| Stability:                        | Stable under recommended storage conditions                                      |
| Reacts With:                      | Mineral acids, Acids, Water, Oxidizing agents, Strong bases, Halogens, Oxygen    |
| Incompatible Conditions:          | Air, Water/moisture, Exposure to heat/sparks/flare                               |
| Hazardous Decomposition Products: | Lithium oxide, Lanthanum oxide, Zirconium oxide, Niobium oxide, Metal oxide fume |

---

## 11. Toxicological Information

---

|                                |  |
|--------------------------------|--|
| Potential Health Effects:      |  |
| Eyes:                          | Causes serious eye damage  |
| Skin:                          | Causes severe skin burns   |
| Ingestion:                     | Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach. |
| Inhalation:                    | May cause irritation   |
| 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: May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

---

## 13. Disposal Considerations

---

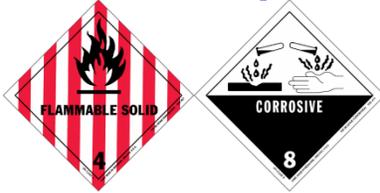
Dispose of in accordance with local, state, national, and international regulations.

---

## 14. Transportation Data

---

Hazardous: Hazardous for transportation.



Hazard Class: 4.1 Flammable Solids  
Secondary Class: 8 Corrosive Substances  
Packing Group: II  
UN Number: UN3180  
Proper Shipping Name: Flammable solid, corrosive, inorganic, n.o.s. (Niobium doped Lithium Lanthanum Zirconium Oxide)

---

## 15. Regulatory Information

---

Sec 302 Extremely Hazardous: No  
Sec 304 Reportable Quantities: N/A  
Sec 313 Toxic Chemicals: No

---

## 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.

Document Last Revised: 12/09/2022