



LTS Research Laboratories, Inc.  
Safety Data Sheet  
Yttria Stabilized Zirconia

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1. Product and Company Identification

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Trade Name: Yttria Stabilized Zirconia (YSZ)  
Chemical Formula:  $ZrO_2-Y_2O_3$   
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)

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2. Hazards Identification

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Signal Word: Warning



Hazard Statements: H315: Causes skin irritation  
H319: Causes serious eye irritation  
H335: May cause respiratory irritation

Precautionary Statements: P261: Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray  
P264: Wash face, hands, and any exposed skin thoroughly after handling  
P271: Use only outdoors or in a well-ventilated area  
P280: Wear protective gloves/ eye protection/ face protection  
P302 + P352: IF ON SKIN: Wash with plenty of soap and water  
P304 + P340 + P312: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell  
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P332 + P313: If skin irritation occurs: Get medical advice/ attention  
P337 + P313: If eye irritation persists: Get medical advice/ attention  
P362: Take off contaminated clothing and wash before reuse  
P403 + P233: Store in a well-ventilated place. Keep container tightly closed  
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: 0

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### 3. Composition

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Chemical Family: Ceramic  
Additional Names: Zirconium yttrium oxide, YSZ

Zirconium oxide-yttria stabilized ( $ZrO_2$ - $Y_2O_3$ )

Percentage: 0-100 wt. %  
CAS #: 114168-16-0  
EC #: N/A

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### 4. First Aid Procedures

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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: Seek Medical Attention.  
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

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### 5. Firefighting Measures

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Flammability: Non-flammable

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.

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### 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.

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### 7. Handling and Storage

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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.

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## 8. Exposure Controls and Personal Protection

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Permissible Exposure Limits:	1 mg/m <sup>3</sup> as Y <sub>2</sub> O <sub>3</sub> , long-term value
Threshold Limit Value:	1 mg/m <sup>3</sup> as Y <sub>2</sub> O <sub>3</sub> , long-term value
Special Equipment:	None
Respiratory Protection:	Dust Respirator, NIOSH approved
Protective Gloves:	Rubber gloves
Eye Protection:	Safety glasses or goggles
Body Protection:	Protective work clothing. Wear close-toed shoes and long sleeves/pants.

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## 9. Physical and Chemical Characteristics

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Color	Off-white
Form:	Powder, Granules, Pellets, Sputtering target, Custom parts
Odor:	Odorless
Water Solubility:	Insoluble
Boiling Point:	N/A
Melting Point:	> 2.6 °C
Flash Point:	N/A
Autoignition Temperature:	N/A
Density:	5.89 g/cc
Molecular weight:	349.03 g/mol

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## 10. Reactivity

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Stability:	Stable under recommended storage conditions
Reacts With:	Oxidizing agents
Incompatible Conditions:	None
Hazardous Decomposition Products:	Zirconium oxides, Yttrium oxides

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## 11. Toxicological Information

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Potential Health Effects:	
Eyes:	Causes serious eye irritation
Skin:	Causes skin irritation
Ingestion:	May cause irritation
Inhalation:	May cause respiratory irritation
Chronic:	Inhalation of zirconium compounds may cause pulmonary granulomas. Yttrium is similar to the lanthanons and may have an anticoagulant effect on blood. Exposure to lanthanons may also lead to sensitivity to heat, itching, increased awareness of odor and taste, and liver damage.
Signs & Symptoms:	N/A
Aggravated Medical Conditions:	N/A
Median Lethal Dose:	N/A
Carcinogen:	N/A

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## 12. Ecological Information

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Ecological data is not available.

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## 13. Disposal Considerations

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

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#### 14. Transportation Data

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Hazardous:	Not hazardous for transportation.
Hazard Class:	N/A
Packing Group:	N/A
UN Number:	N/A
Proper Shipping Name:	N/A

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#### 15. Regulatory Information

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

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#### 16. Other Information

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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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