



LTS Research Laboratories, Inc.  
Safety Data Sheet  
Zinc Oxide Aluminum Oxide Gallium Oxide

---

1. Product and Company Identification

---

Trade Name: Zinc oxide Aluminum Oxide Gallium oxide  
Chemical Formula: ZnO/TiO<sub>2</sub>/Ga<sub>2</sub>O<sub>3</sub>  
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

Emergency Contact (ChemTrec) Tel #: 800-424-9300 (US & Canada)  
+1-703-527-3887 (International)

---

2. Hazards Identification

---

Signal Word: None



Hazard Statements: H401: Toxic to aquatic life  
H351 Suspected of causing cancer

Precautionary Statements: P281 Use personal protective equipment as required  
P201 Obtain special instructions before use  
P308+P313 If exposed or concerned: Get medical advice/attention  
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  
Reactivity: 1

---

### 3. Composition

---

Chemical Family:	Ceramic
Additional Names:	N/A
Zinc oxide (ZnO):	
Percentage:	0-100 wt.%
CAS #:	1314-13-2
EC #:	215-222-5
Titanium oxide (TiO <sub>2</sub> ):	
Percentage:	0-100 wt.%
CAS #:	1317-80-2
EC #:	215-282-2
Gallium oxide (Ga <sub>2</sub> O <sub>3</sub> ):	
Percentage:	0-100 wt.%
CAS #:	12024-21-4
EC #:	234-691-7

---

### 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 ten minutes.

---

### 5. Fire and explosion hazards data

---

Flammability:	Non-flammable, except as powder
Flash Point:	N/A
Autoignition Temperature:	N/A
Extinguishing Media:	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.

---

### 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:	Wash thoroughly after handling.
Storage Conditions:	Store in a cool dry place in a tightly sealed container.
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 TLV.

---

## 8. Exposure Controls / Personal Protection

---

Permissible Exposure Limits:	5 mg/m <sup>3</sup> as ZnO, respirable fraction (USA)
Threshold Limit Value:	2 mg/m <sup>3</sup> as ZnO, long-term respirable fraction (USA)
Special Equipment:	None
Respiratory Protection:	Dust Respirator, NIOSH approved
Protective Gloves:	Rubber gloves
Eye Protection:	Safety glasses / goggles
Body Protection:	Protective work clothing. Wear close-toed shoes and long sleeves/pants.

---

## 9. Physical and Chemical Characteristics

---

Color	White
Form:	Powder, Granules, Pellets, Sputtering target, Custom parts
Odor:	Odorless
Water Solubility:	Insoluble
Boiling Point:	N/A
Melting Point:	N/A
Density:	N/A
Molecular weight:	N/A

---

## 10. Reactivity

---

Stability:	Stable under recommended storage conditions
Reacts with:	Strong oxidizing agents
Incompatible Conditions/Materials:	Oxidizing agents
Haz. Decomposition Products:	Metal oxide fume

---

## 11. Toxicological Information

---

Potential Health Effects:	
Eyes:	May cause irritation
Skin:	May cause irritation
Ingestion:	Low toxicity
Inhalation:	May cause irritation
Details:	Zinc compounds have variable low toxicity. Zinc is not inherently a toxic element. However, when heated it evolves a fume of zinc oxide which, when inhaled fresh can cause a disease known as “brass founders” “ague”, or brass chills”. Zinc dust which is not freshly formed is virtually innocuous. There is no cumulative effect from the inhalation of zinc fumes.
Routes of Entry:	None
Target Organs:	N/A
Signs & Symptoms of Exposure:	N/A
Medical Conditions	
Aggravated by Exposure:	N/A
Median Lethal Dose:	N/A
Carcinogen:	Inadequate information

---

## 12. Ecological Information

---

Ecological effects: Danger to drinking water, even in small doses.  
Poisonous to fish and aquatic life.

---

## 13. Disposal Considerations

---

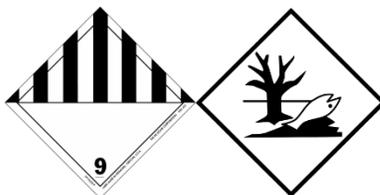
Dispose of in accordance with local, state and federal regulations.

---

## 14. Transportation Data

---

Hazardous: Hazardous as powder only



Hazard Class: 9 Miscellaneous dangerous substances and articles.  
Packing Group: III  
UN Number: UN3077  
Proper Shipping Name: Environmentally hazardous substances, solid, n.o.s (Gallium Oxide-Titanium Oxide-Zinc Oxide)

---

## 15. Regulatory Information

---

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

---

## 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: 07/13/2016