



LTS Research Laboratories, Inc.  
Safety Data Sheet  
Nickel Oxide-Titanium Oxide

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1. Product and Company Identification

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Trade Name: Nickel Oxide-Titanium Oxide  
Chemical Formula: NiO-TiO<sub>2</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

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: Danger



Hazard Statements: H317: May cause an allergic skin reaction  
H350: May cause cancer  
H372: Causes damage to organs through prolonged or repeated exposure  
H413: May cause long lasting harmful effects to aquatic life

Precautionary Statements: P260: Do not breathe dust/fume/gas/mist/vapours/spray  
P264: Wash skin thoroughly after handling  
P270: Do not eat, drink or smoke when using this product  
P272: Contaminated work clothing should not be allowed out of the workplace  
P273: Avoid release to the environment  
P280: Wear protective gloves/protective clothing/eye protection/face protection  
P302+P352: IF ON SKIN: Wash with soap and water  
P308+P313: IF exposed or concerned: Get medical advice/attention  
P333+P313: If skin irritation or a rash occurs: Get medical advice/attention  
P363: Wash contaminated clothing before reuse  
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: 0  
Physical: 1

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### 3. Composition

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Chemical Family:	Ceramic
Additional Names:	N/A
Nickel Oxide (NiO):	
Percentage:	0-100 wt%
CAS #:	1313-99-1
EC #:	215-215-7
Titanium Oxide (TiO <sub>2</sub> ):	
Percentage:	0-100 wt%
CAS #:	13463-67-7
EC #:	236-675-5

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### 4. First Aid Procedures

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General Treatment:	Seek medical attention if symptoms persist. Move out of dangerous area.
Special Treatment:	None
Important Symptoms:	May cause allergic skin reaction, symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.
Inhalation:	Remove victim to fresh air. Supply oxygen if breathing is difficult. Seek medical attention
Ingestion:	Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek medical attention
Skin:	Wash affected area with mild soap and water. Remove any contaminated clothing. Seek medical attention
Eyes:	Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention

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### 5. Firefighting Measures

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Flammability:	Non-flammable, except as powder
Extinguishing Media:	Water spray, carbon dioxide (CO <sub>2</sub> ), dry chemical, chemical foam
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:	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.

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## 8. Exposure Controls and Personal Protection

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Permissible Exposure Limits:	1 mg/m <sup>3</sup> as Ni, long-term value 15 mg/m <sup>3</sup> as TiO <sub>2</sub> , long-term value
Threshold Limit Value:	0.2 mg/m <sup>3</sup> as Ni, long-term value 10 mg/m <sup>3</sup> as TiO <sub>2</sub> , long-term value
Special Equipment:	None
Respiratory Protection:	Use a recommended dust respirator or mask. Only use equipment tested and approved under appropriate government standards.
Protective Gloves:	Nitrile Rubber gloves, NBR 0.11 mm thick
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	Bright green
Form:	Powder, Granules, Pellets, Sputtering target, Custom parts
Odor:	Odorless
Water Solubility:	Insoluble
Boiling Point:	N/A
Melting Point:	N/A
Flash Point:	N/A
Autoignition Temperature:	N/A
Density:	N/A
Molecular weight:	N/A

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## 10. Reactivity

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Stability:	Stable under recommended storage conditions
Reacts With:	Oxidizing agents, strong acids, fluorine, peroxides
Incompatible Conditions:	None
Hazardous Decomposition Products:	Metal oxide fume

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## 11. Toxicological Information

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### Potential Health Effects:

Eyes:	May cause irritation
Skin:	May cause allergic skin reaction
Ingestion:	May cause irritation
Inhalation:	May cause irritation
Chronic:	May cause damage to organs through prolonged or repeated exposure

### Signs & Symptoms:

Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

### Aggravated Medical Conditions:

N/A

### Median Lethal Dose:

>10,000 mg/kg for rat by mouth (as TiO<sub>2</sub>)  
>5,000 mg/kg for by mouth (as NiO)  
>10,000 mg/Kg for rabbit (dermal) (as TiO<sub>2</sub>)

### Carcinogen:

As NiO:

IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity  
ACGIH A1: Confirmed human carcinogen: Agent is carcinogenic to humans based on epidemiologic studies of, or convincing clinical evidence in, exposed humans.  
Carcinogen as defined by OSHA  
NTP-K: Known to be carcinogenic: sufficient evidence from human studies

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## 12. Ecological Information

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### Aquatic Toxicity:

N/A

### Persistent Bioaccumulation Toxicity:

N/A

### Very Persistent, Very Bioaccumulative:

N/A

### Notes:

Do not allow material to be released to the environment without proper governmental permits.  
Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.  
Avoid transfer into the environment.

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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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