

Current Version: 2.0
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Material Safety Data Sheet

Identity: Zirconium oxide
Synonyms: Zirconium (IV) oxide

Formula: ZrO₂

SECTION I - GENERAL INFORMATION

Manufacturer: [Stanford Advanced Materials](#) (SAM)

The information below is believed to be accurate and represents the best information available to SAM. However, SAM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Molecular weight: 123.22

CAS #	OSHA PEL	ACGIH TLV	%
1314-23-4	5mg/m ³ (as Zr)	5mg/m ³ (as Zr)	100%

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: N/A	Specific Gravity (H ₂ O=1): 5.6
Melting Point: N/A	Vapor Pressure (vs. air or mmHg): N/A
Evaporation Rate: N/A	Vapor Density (vs. air=1): N/A
Solubility in water: Insoluble	Percent Volatile: N/A

Appearance and odor: White powder and pieces, odorless

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

Flash Point: N/A
Method Used: Non-combustible
Explosive Limits: LEL: N/A UEL: N/A

Extinguishing Media:
Material is non-flammable. Use suitable extinguishing agent for surrounding material

Special Fire Fighting Procedures:
Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire and Explosion Hazards: None

SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (stability): None

Incompatibility: None

Hazardous Decomposition or Byproducts: None

Hazardous Polymerization: Will not occur

Conditions to avoid (hazardous polymerization): None

SECTION VI - HEALTH HAZARD DATA

Routes of entry: Inhalation? Yes Skin? No

Eyes? No

Ingestion? No

Other? No

Signs and Symptoms of Overexposure:

Inhalation: Coughing, and dry throat

Ingestion: None

Skin: Irritation and/or redness from mechanical abrasion

Eye: Irritation, redness, watering from mechanical abrasion

Health Hazards (Acute and Chronic):

If Yttrium compounds are present, they may cause a few chronic hazards, including diffusion of pulmonary fibrosis after repeated exposure or if ingested, liver injuries and may increase blood clotting time.

Inhalation:

Acute: May be a nuisance dust and cause mild pulmonary irritation.

Chronic: Zirconium compounds may cause pulmonary granuloma

Ingestion:

Acute: Zirconium oxide is relatively non-toxic

Chronic: No chronic health effects recorded

Skin:

Acute: Unlikely to cause irritation. However, abrasive nature of powder may cause mechanical irritation.

Chronic: No chronic health effects recorded

Eye:

Acute: Unlikely to cause irritation. However, abrasive nature of powder may cause mechanical irritation.

Chronic: No chronic health effects recorded

Target Organs: None

Carcinogenicity: NTP? No

IARC Monographs? No

OSHA Regulated? No

Medical Conditions Aggravated by Exposure: Pre-existing lung disorders from inhalation of dust

Emergency and First Aid Procedures:

Inhalation: Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention

Ingestion: Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person

Skin: Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist

Eye: Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled:

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

Waste disposal method:

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

Hazard Label Information:

Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):

NIOSH approved respirator, impervious rubber gloves, safety glasses, clothes to prevent contact.

Ventilation:

Local Exhaust: To maintain concentration at or below TLV Mechanical

(General): Adequate for work that does not create dust

Work/Hygienic/Maintenance Practices:

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established