



Material Safety Data Sheet: Delta Yttria Stabilized Zirconia

Section I: Product and Company Information

Product Name: Delta Yttria Stabilized Zirconia
Chemical Name: Yttrium oxide stabilized zirconia oxide ceramic
Product Use: Machinable green ceramic for dental appliances
Company: Aurident, Inc.
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Section II: Composition

A green state ceramic that has not been completely sintered ceramic consisting primarily of yttrium oxide blended with zirconium oxide with the following composition:

Chemical/Formula	Weight Percentage	CAS Number
Zirconium Oxide – ZrO(2)	92-93%	1314-23-4
Yttrium Oxide – Yt(2)O(3)	5-6%	1314-36-9
Hafnium Oxide – HfO(2)	1-2%	12055-23-1
Aluminum Oxide – Al(2)O(3)	<1%	1344-28-1
Silicon Oxide – SiO(2)	<0.1%	7631-86-9
Iron Oxide – Fe(2)O(3)	<1%	1309-37-1

Section III: Hazard Identification

Form: Disks or blocks of green state ceramic
Color: White
Odor: Odorless

May cause mechanical irritation to eyes, skin and respiratory tract.

Eyes: May cause mechanical irritation

Skin: May cause mechanical irritation

Ingestion: None known

Inhalation: May cause mechanical irritation to the respiratory tract.

Chronic Exposure: None known

Carcinogenicity: Components CAS-No. Classification

IARC: None

NTP: None

OSHA: None

Under normal conditions of use, this product meets the definition of an OSHA and TSCA Article and is nonhazardous. If this product is ground or otherwise processed, potentially those ingredients mentioned in Section 2 could be generated.

Section IV: First Aid Measures

Eyes: Flush with copious amounts of lukewarm water for at least 5 minutes. Get medical attention of irritation develops or persists.



- Skin:** Wash thoroughly with soap and water.
Inhalation: Move to fresh air.
Ingestion: Rinse mouth. If there are persistent difficulties, consult a medical doctor.

Section V: Fire Fighting Measures

The material is non-flammable and non-explosive. Fire fighting measures applied should be appropriate to the surrounding fire.

Section VI: Accidental Release Measures

- Personal Precautions:** If dust is generated, use appropriate respiratory protection. Avoid the generation of dust.
Environmental Precautions: Keep from entering water or ground water. Collect water for approved disposal.
Methods for Cleaning: Vacuum dust from equipment and spills. Containerize all dusts and no special disposal requirements are necessary.

Section VII: Handling and Storage

No special handling and storage precautions are necessary. Keep all packages sealed until use.

Section VIII: Exposure Control and Personal Protection

Exposure Limit Values

1. Zirconium and compounds, as Zr; CAS-No. 1314-23-4
 - a. OSHA – PEL – fraction capable of being inhaled: $5\text{mg}/\text{m}^3$
 - b. ACGIH – STEL (short term exposure limit) $4\text{mg}/\text{m}^3$
2. Hafnium and compounds, as Hf; CAS-No. 12055-23-1
 - a. ACGIH – TLV -- fraction capable of being inhaled $0.5\text{mg}/\text{m}^3$
3. Yttrium and compounds, as Y, CAS-No. 1314-36-9
 - a. ACGIH – TLV -- fraction capable of being inhaled $1\text{mg}/\text{m}^3$

Section IX: Physical and Chemical Properties

- Physical Appearance:** White Solid Disk or Block
Color: White
Odor: Odorless
Boiling Point: Approx. $5,500^{\circ}\text{C}$
Melting Point: Approx. $2,680^{\circ}\text{C}$
Flash Point: Not applicable
Ignition Temperature: Not applicable
Explosion Limits: Not applicable
Vapor Pressure: Not applicable
Density: Approx. $3\text{g}/\text{cm}^3$
Solubility in Water: Insoluble

Section X: Stability and Reactivity

- Thermal Stability:** Stable



Conditions to Avoid: None
Hazardous Decomposition Products: None
Hazardous Reactions: None

Section XI: Toxicological Information

Acute oral toxicity:

Yttrium Oxide: LD50 rat > 5,000 mg/kg (Method: No information available)

Skin irritation:

Yttrium Oxide: No skin irritation, rabbit (Method: No information available)

Eye irritation:

Yttrium Oxide: Mild eye irritation (Method: No information available)

Section XII: Ecological Information

Not Available

Section XIII: Disposal Considerations

Dispose of product in accordance with applicable state, federal and local laws and regulations. Notice local regulations may be more stringent than state or federal requirements.

Section XIV: Transportation Information

Considered non-hazardous, no special handling required.

Section XV: Regulatory Information

OSHA Hazards: Hazardous
TDG: Not dangerous goods
Air Transport ICAO-TI/IATA-DGR: Not dangerous goods
Sea Transport IMDG: Not dangerous goods

Section XVI: Other Information

The information and recommendations set forth herein are presented in good faith and believed to be correct. Aurident, Inc. makes no representations as to the completeness or accuracy of this information and supplies it on the condition that the persons receiving same will make their own determination as to its suitability for their purpose prior to used. In no event will Aurident, Inc. be responsible for damages of any nature whatsoever resulting for the use of or reliance upon this information.

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