

## 1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

**PRODUCT IDENTIFIER:** Zirconia Powder

**MANUFACTURER:** TOSOH USA Inc.

**ADDRESS:** 3600 Gantz Road  
Grove City, Ohio 43213

**PHONE:** 1-866-844-6953

**EMERGENCY PHONE:** CHEMTREC 1-800-424-9300 OR 1-703-527-3887

**RECOMMENDED USE:** General industrial products

## 2. HAZARDS IDENTIFICATION

**GHS CLASSIFICATION:** Not Classified

**HAZARD SYMBOL:** None

**SIGNAL WORD:** None

**HAZARD STATEMENTS:** None

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS #</u>	<u>OSHA Hazardous(Y/N)</u>	<u>Concentration (%)</u>
Zirconium oxide	1314-23-4	Y	> 85
Hafnium oxide	12055-23-1	N	< 5
Yttrium oxide	1314-36-9	Y	< 6
Organic binder	Proprietary	N	< 5

## 4. FIRST AID MEASURES

**EYE CONTACT:** Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek medical attention if irritation develops or persists or if visual changes occur.

**SKIN CONTACT:** Remove contaminated clothing and shoes. Wash with plenty of water, for at least 15 minutes. Seek medical attention if irritation develops or persists. Launder contaminated clothing and shoes before re-use.

#### **4. FIRST AID MEASURES (continued)**

<b>INGESTION:</b>	Do not induce vomiting. If victim is conscious and alert, give 1-2 glasses of water to drink. Do not give anything by mouth to an unconscious person. Seek immediate medical attention. Do not leave victim unattended.
<b>INHALATION:</b>	If respiratory irritation or distress occurs, remove victim to fresh air. Seek medical attention if respiratory irritation or distress continues.
<b>NOTES TO PHYSICIAN:</b>	All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Treat symptomatically. No specific antidote available.

#### **5. FIRE FIGHTING MEASURES**

<b>EXTINGUISHING MEDIA:</b>	Water spray, fog, dry chemical, foam, CO <sub>2</sub>
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS:</b>	Closed containers may rupture due to buildup of pressure when exposed to extreme heat.
<b>SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS:</b>	Firefighters should wear NIOSH/MSHA-approved self-contained breathing apparatus and full protective clothing. Cool containers exposed to fire with water.

#### **HAZARDOUS DECOMPOSITION**

**MATERIALS UNDER FIRE CONDITIONS:** None known

#### **6. ACCIDENTAL RELEASE MEASURES**

<b>PERSONAL PRECAUTIONS:</b>	Wear appropriate protective gear for the situation. (See Personal Protection Information in Section 8).
<b>ENVIRONMENTAL PRECAUTIONS:</b>	Do not flush to drain. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.
<b>METHOD FOR CLEAN UP:</b>	Extinguish or remove all sources of ignition. Sweep up and place in an appropriate closed container. Clean up residual material by washing area with water. Collect washings for disposal. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

## **7. HANDLING AND STORAGE**

**PRECAUTIONS FOR SAFE HANDLING:** Handle material with suitable protection (See Section 8). Handle with adequate ventilation. Avoid breathing dusts. Avoid contact with eyes, skin and clothing.

**VENTILATION:** General area dilution/exhaust ventilation. This product contains an organic binder. As with most organic materials, this binder may produce oxides of carbon upon thermal decomposition. These gases may be produced at temperatures of 40°C and above. Customers should take appropriate precautions to avoid exposure to these gases. In addition to a general (mechanical) ventilation system, customers should consider the installation of specific exhaust in the vicinity of pre-drying, molding, de-waxing and sintering areas. Consideration should be given to the use of appropriate respiratory protection (including the use of respirators containing organic vapor cartridges). Any release of these decomposition gases to the atmosphere should be in conformance with any and all Federal, state and local environmental regulations.

**CONDITIONS FOR SAFE STORAGE:** Store upright in a cool, dry, well ventilated area out of direct sunlight. Keep away from heat, open flames and ignition sources. Keep container tightly closed. Do not reuse container.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**ENGINEERING MEASURES:** Set up hand-wash station and eyewash station near work area.  
General area dilution/exhaust ventilation.

**EXPOSURE LIMITS:**

Zirconium compounds (as Zr)	5 mg/M <sup>3</sup> – ACGIH TWA
	5mg/M <sup>3</sup> – OSHA PEL
Zirconium compounds (as Zr)	10 mg/M <sup>3</sup> – ACGIH STEL
	10 mg/M <sup>3</sup> – OSHA STEL
Yttrium compounds (as Y)	1 mg/M <sup>3</sup> – ACGIH TWA

(where: TWA = Time-Weighted Average (8-hour exposure), STEL = Short-Term Exposure Limit (15-minute time-weighted average exposure))

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)**

### **PERSONAL PROTECTION MEASURES:**

#### **Respiratory protection:**

When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with regulatory standards and/or industrial recommendations. Dust/mist filtering respirator is recommended.

#### **Eye protection:**

Safety glasses with side shields, goggles or face shield are recommended.

#### **Skin protection:**

Skin contact should be minimized through the use of chemical-resistant gloves and boots, and suitable protective clothing.

The following general measures should be taken when working or handling this material:

- 1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.
- 2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.
- 3) Wash exposed skin promptly to remove accidental splashes of contact with this material.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>PHYSICAL STATE:</b>	Powder
<b>COLOR:</b>	White
<b>ODOR:</b>	Odorless
<b>pH:</b>	No data available
<b>MELTING POINT:</b>	No data available
<b>BOILING POINT:</b>	No data available
<b>FLASH POINT:</b>	No data available
<b>AUTOIGNITION POINT:</b>	No data available
<b>EXPLOSIVE LIMITS(Lower):</b>	No data available
<b>EXPLOSIVE LIMITS(Upper):</b>	No data available
<b>VAPOR PRESSURE:</b>	No data available
<b>VAPOR DENSITY:</b>	No data available
<b>EVAPORATION RATE:</b>	No data available
<b>RELATIVE DENSITY:</b>	1.0-1.5 g/cc (bulk density)
<b>SOLUBILITY IN WATER:</b>	Insoluble
<b>PARTITION COEFFICIENT:</b>	No data available
<b>DECOMPOSITION TEMPERATURE:</b>	No data available
<b>VISCOSITY, DYNAMIC:</b>	No data available
<b>SURFACE TENSION:</b>	No data available

## **10. STABILITY AND REACTIVITY**

### **CHEMICAL STABILITY:**

This material is stable under normal handling and storage conditions described in Section 7.

### **CONDITIONS TO AVOID:**

Heat, open flame, sparks.

## **10. STABILITY AND REACTIVITY (continued)**

**INCOMPATIBLE MATERIALS:** Strong oxidizing agents.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None known

**HAZARDOUS POLYMERIZATION:** Not applicable

## **11. TOXICOLOGICAL INFORMATION**

**EYE CORROSION/IRRITATION** Slight irritant (rabbit). Data for zirconium oxide.  
**SKIN CORROSION/IRRITATION:** Non-irritating (rabbit). Data for zirconium oxide.

### **ACUTE TOXICITY:**

**ACUTE ORAL TOXICITY:** LD<sub>50</sub> > 5000 mg/kg (rat) Data for zirconium oxide.

**ACUTE DERMAL TOXICITY:** No data available.

**ACUTE INHALATION TOXICITY:** LC<sub>50</sub> > 4.3 mg/L (4-hour exposure, rat) Data for zirconium oxide.

**SKIN SENSITIZATION** Not a sensitizer (guinea pig). Data for zirconium oxide.

**GENETIC TOXICITY** Negative in the Ames test and chromosomal aberration study. Data for zirconium oxide.

**CARCINOGENICITY:** This product does not contain any substances that are considered by OSHA, NTP, IARC or ACGIH to be “probable” or “suspected” human carcinogens.

**REPRODUCTIVE TOXICITY:** No Observed Adverse Effect Level (NOAEL) ≥ 10,000 mg/kg/bodyweight (rat, data based on zirconium acetate).

**STOT-SINGLE EXPOSURE:** No data available

**STOT-REPEATED EXPOSURE:** No data available

## **12. ECOLOGICAL INFORMATION**

**ECOTOXICITY:** 96hr LC<sub>50</sub> > 100 mg/L (zebrafish) Data for zirconium oxide.  
48hr EC<sub>50</sub> > 100 mg/L (daphnia magna) Data for zirconium oxide.

**PERSISTENCE AND DEGRADABILITY:** No data available

**MOBILITY IN SOIL:** No data available

### **13. DISPOSAL CONSIDERATION (INCLUDING CONTAINER)**

**RESIDUAL WASTE:** Chemical additions, processing or otherwise altering this material may make the waste management information presented in this SDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from Federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

**CONTAMINATED VESSELS AND CONTAINERS:** Rinse containers before disposal. Do not allow rinsate to enter the water systems.  
EPA Hazardous Waste = No

### **14. TRANSPORTATION INFORMATION**

**PROPER SHIPPING NAME:** NOT REGULATED  
**UN NUMBER:** None  
**UN CLASS or DIVISION:** None  
**UN PACKING GROUP:** None  
**LABELS:** None  
**EMERGENCY GUIDE#:** None

### **15. REGULATORY INFORMATION**

**Inventory Status:** US (TSCA): Exempt  
Canada (DSL): No  
Europe (REACH): Yes  
Australia (AICS): No  
Japan (MITI): No  
Korea (KECL): No

Where: Yes = all ingredients are listed on the inventory, Exempt = All ingredients are either on the inventory or exempt from the requirements of listing, No = Not determined, or one or more ingredients are not on the inventory and are not exempt from listing

**SARA Title III Hazard Classes:** Fire Hazard: No  
Reactive Hazard: No  
Release of Pressure: No  
Acute Health Hazard: Yes  
Chronic Health Hazard: No

**SARA Extremely Hazardous Substances/CERCLA Hazardous Substances:** None

**California Proposition 65:** This product does not contain any components that are regulated under Proposition 65.

**16. OTHER INFORMATION INCLUDING INFORMATION ON PREPARATION AND REVISION OF THIS SDS**

**National Fire Protection Association (“NFPA”) Hazard Ratings:**

Health: 1 (Slight)

Flammability: 0 (Minimal)

Reactivity: 0 (Minimal)

**National Paint and Coatings Hazardous Materials Identification System (“HMIS”) Hazard Ratings:**

Health: 1 (Slight)

Flammability: 0 Minimal)

Physical Hazard: 0 (Minimal)

**HISTORY:**

Date previous SDS:

March 13, 2014

Date of issue:

June 2, 2015

Reasons for Revision:

GHS Format

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**END OF SAFETY DATA SHEET**