



**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

➤ **Section 1.0 Identification of the substance / mixture and of the company**

**1.1 Product Identifier**

Product Name : Yttria Stabilized Zirconia (YSZ) Ceramic  
HSN Code : 85462090  
Physical state : Solid  
Formula :  $X(Y_2O_3) \bullet Y(ZrO_2)$   
Synonyms : Y-TZP Yttria-Stabilized Tetragonal Zirconia Polycrystal  
Chemical family : Inorganic Oxide

**1.2 Recommended use of the substance/mixture and restrictions on use**

Recommended use : Technical Ceramic Components

Article(Not identified as Substances of Very  
High Concern SVHC, Article 57 Reach Regulation)  
For research and industrial use only

**1.3 Details of the supplier of the safety data sheet**



Jyoti Ceramic Industries Pvt Ltd  
C-21, N.I.C.E, Satpur Nashik Maharashtra India  
Tel +91-253-2350120/2351251; Fax +91-253-2350023  
[www.jyoticeramic.com](http://www.jyoticeramic.com)  
E-mail: [info@jyoticeramic.com](mailto:info@jyoticeramic.com)

For EU member states:

**EC**

**REP**

Jyoti Ceramic GmbH  
Frankenstr. 12, 90762 Fürth, Germany  
Tel: +49 911 7871 2084; Fax +49 911 7871 2082  
E-Mail: [sales@jyoticeramic.com](mailto:sales@jyoticeramic.com)

**1.4 Emergency Telephone Number**

Jyoti Ceramic Industries Pvt Ltd  
+ 91-253-2350120

Reachable during office hours (Indian Standard time): Sunday - Friday: 9.00 AM – 6.00 PM

Jyoti Ceramic GmbH  
+49 911 7871 2084;

Reachable during office hours (Central European time): Monday - Friday: 8.30 AM – 5.00 PM



**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

➤ **Section 2.0 Hazard(s) identification**

- 2.1 Classification of the substance or mixture** : Not classified (Reg. (EG)No.1272/2008)  
**2.2 Label elements** : Not applicable (Reg. (EG)No.1272/2008)  
**2.3 Hazards not otherwise classified (HNOC)** :No additional information available

➤ **Section 3.0 Composition / Information on Ingredients**

**3.1 Substance** : Not Applicable

**3.2 Mixture**

Name : Yttria Stabilized Zirconia  
CAS No. : Not available

Name of ingredient	Product Identifier (CAS No)	EINECS No	Wt %	GHS classification	REACH Reg.
Zirconium Oxide	1314-23-4	215-227-2	94-96	Not classified	01-2119486976-14
Hafnium Oxide	12055-23-1	235-013-2	1-2	Not classified	01-2119967820-31
Yttrium Oxide	1314-36-9	215-233-5	4-6	Not classified	01-2119971254-36
Aluminium Oxide	1344-28-1	215-691-6	<0.5	Not classified	01-2119529248-35

The product is obtained after undergoing thermal treatment of above mentioned raw materials and is inert. Its properties are not identical to those of its components.

Full text of hazard classes and H-statement : see section 15

➤ **Section 4.0 Description of First Aid measures**

**4.1 Description of first aid measures**

- General** : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; If not available show packaging or label.
- After inhaled** : In case there are symptoms of cough or shortness of breath, move from exposure to a well ventilated place, and if breathing difficulty occurs then consult a physician.
- After skin contact** : If irritation to skin occurs then wash the affected area with fresh and clean water.
- After eye contact** : If irritation occurs flush the eyes with fresh clean running tap



**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

water. Get medical attention if irritation continues.

After Ingestion : If substantial quantity is swallowed, dilute with large amount of water, then consult a physician.

#### **4.2 Most important symptoms and effects, both acute and delayed**

Product dust generated through grinding or machining may cause irritation to the mucous membrane, eyes, skin and respiratory organs.

Symptoms/injuries after inhalation : May cause irritation  
Symptoms/injuries after skin contact : May cause skin irritation  
Symptoms/injuries after eye contact : May cause eye irritation  
Symptoms/injuries after ingestion : No information available

#### **4.3 Indication of any immediate medical attention and special treatment method**

No additional information available

### **➤ Section 5.0 Firefighting measures**

#### **5.1 Extinguishing media**

Suitable extinguishing media : Product is not combustible and non explosive.  
Use a suitable extinguishing media for the surrounding fire  
Unsuitable extinguishing media : None known

#### **5.2 Special hazards arising from the substrate or mixture**

Fire hazard : None known

#### **5.3 Advice for firefighters**

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

### **➤ Section 6.0 Accidental release measures**

#### **6.1 Personal precautions, protective equipment and emergency procedures**

##### **6.1.1 For non-emergency personnel**

Protective equipment : Wear protective equipment as described in Section 8  
Emergency procedures : Evacuate unnecessary and unprotected personnel.

##### **6.1.2 For emergency responders**

Protective equipment : Do not attempt to take action without suitable



**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

protective equipment. Equip clean-up crew with proper protection.  
Use protective clothing, dust mask, and eye protection. For further information refer to section 8: "Exposure controls/personal protection".

**6.2 Environmental precautions** : Prevent entry of product into sewers and public waters. Notify authorities if product enters sewers or public waters.

**6.3 Methods and material for contamination and cleaning up**  
For containment : Prevent migration and entry into sewers or streams  
Methods for cleaning up : Collect the pieces or dust by vacuum or mechanically for disposal and land filling as per local regulations.

**6.4 Reference to other sections:**

See Heading 8. Exposure controls and personal protection

➤ **Section 7.0 Handling and storage**

**7.1 Precautions for safe handling**

Use safety shoes while handling. Wear safety glasses for eye protection. Sweep up and recover into a container for reuse or disposal. If dust is generated then wear personal protecting clothing including particle filter/dust mask and eye protection.

**7.2 Hygiene Measures**

Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

**7.3 Conditions for safe storage, including any incompatibilities:**

Storage conditions : Keep container tightly closed  
Incompatible materials : Not known  
Storage area : Material should be stored in well protected dry place, in its original packing.

**7.4 Specific end uses**

See section 1.2



**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

➤ **Section 8.0 Exposure controls and personal protection**

### 8.1 Control parameters

Product dust generated through grinding or machining may cause irritation to the mucous membrane, eyes, skin and respiratory organs. The limits of dust concentration (mg/m<sup>3</sup>) at the work-place have to be considered.

The general dust limit according to the TRGS 900 , for dust which does not exhibit any mutagenic, carcinogenic, fibrogenic, allergising or toxic effect applies:

The OEL value for A dust (alveolar dust fraction) is 1.25 mg/m<sup>3</sup>

The OEL value for E dust (inhalable dust fraction) is 10 mg/m<sup>3</sup>

The individual values for ZrO<sub>2</sub> (considering it as the major component) may be applicable for this material:

Zirconium Oxide (1314-23-4)		
ACGIH	STEL (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> Zr
	TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> Zr
OSHA	STEL (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> Zr
	TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> Zr

### 8.2 Exposure controls

Appropriate engineering controls	: Provide local exhaust or general room ventilation. Suitable ventilation / dust extraction system must be used in the workplace or on the equipment.
Personal protective equipment	: Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Hand protection	: Neoprene or nitrile rubber gloves
Eye protection	: Safety glasses/goggles
Skin and body protection	: Wear suitable protective clothing. After work ensure that skin is cleaned and hand care products are used.
Respiratory protection	: In case of dust exposure respiratory protection equipment must be worn. FFP2/FFP3 dust masks with particle filters are recommended.



**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

➤ **Section 9.0 Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

Appearance	White
Surface Finish	Smooth
Condition	Solid
Odour	None
Melting point	>2000 °C
Freezing point	Not Applicable
Ignition point	Non Flammable
Density	6.05 g/cc ± 0.2
Hardness on Moh's Scale	9
Solubility in water	Non soluble
Porosity	Nil
PH	Not Applicable
Vapour Pressure	Not Applicable
Viscosity	Not Applicable
Vapour Density	Not Applicable
Partition Co-efficient	Not Applicable
Explosive Properties	Not Applicable
Oxidising Properties	Not Applicable

**9.2. Other information**

No additional information available

➤ **Section 10.0 Stability and reactivity**

<b>10.1 Reactivity</b>	: Not known
<b>10.2 Chemical stability</b>	: Stable
<b>10.3 Possibility of hazardous reactions</b>	: Not known
<b>10.4 Conditions to avoid</b>	: Not known
<b>10.5 Incompatible materials</b>	: Not known
<b>10.6 Hazardous decomposition products</b>	: Not known

➤ **Section 11.0 Toxicological information**

**11.1 Information on the toxicological effects**

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: No evidence of carcinogenic effect
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified



**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: Product dust generated through grinding or machining may cause irritation to the mucous membrane, eyes, skin and respiratory organs
Symptoms/injuries after skin contact	: Product dust may cause skin irritation
Symptoms/injuries after eye contact	: Product dust may cause eye irritation
Symptoms/injuries after ingestion	: No information available

➤ **Section 12.0 Ecological information**

If used properly, no environmental problems are anticipated. Do not empty the product or collected dust into ground water or drains.

<b>12.1 Toxicity</b>	: Not known
<b>12.2 Persistence &amp; Degradability</b>	: Not known
<b>12.3 Bioaccumulative Potential</b>	: Not known
<b>12.4 Mobility in soil</b>	
<b>12.5 Results of PBT and vPvB assessment</b>	: Product does not contain PBT or vPvB substances (see. REACH Annex XIII)
<b>12.6 Other Adverse Effect</b>	
Effect on ozone layer	: Not known
Effect on the global warming	: No known effects from this product.
GWP mix comment	: No known effects from this product.

➤ **Section 13.0 Disposal considerations**

**13.1 Waste treatment methods**

Sewage disposal recommendations : Do not dispose of waste into sewer

Waste disposal recommendations : Unless contaminated in service, this product is neutral to the environment. Landfill dispose in a safe manner in accordance with local/national regulations.

Ecology - waste materials : Avoid release to the environment

➤ **Section 14.0 Transport information**

**No dangerous goods as defined by ADR/RID/ADN/GGVSEB, ICAO/IATA, IMDG, USDOT**

<b>14.1 UN number</b>	: Not regulated for transport.
<b>14.2 UN proper shipping name</b>	: Not applicable
<b>14.3 Transport hazard class(es)</b>	: Not applicable
<b>14.4 Packing Group</b>	: Not applicable
<b>14.5 Environmental Hazards</b>	: Not applicable



**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

**14.6 Special Precautions for the user** : See section 7 and 8

**14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**  
: Not applicable

➤ **Section 15.0 Regulatory information**

**15.1.: Safety, health and environmental regulations/legislation specific for the substance or mixture**

No classification or labelling applicable in accordance with Regulation (EC) No 1272/2008.

None of the chemicals in this product are considered highly hazardous by OSHA.

**15.2.: Chemical safety assessment**

A chemical safety assessment of the product or its components is not available.

➤ **Section 16.0 Other information**

**16.1.: Abbreviations and acronyms**

REACH: Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals.

TWA: Time Weighted Average;

OEL: Occupational exposure limit;

ACGIH: American Conference of Governmental Industrial Hygienists;

OSHA: Occupational Safety and Health Administration;

CAS No. : Chemical Abstract Service Registration Number;

EINECS: European Inventory of Existing Commercial Chemical Substances

GHS: The Globally Harmonized System of Classification and labelling;

IATA: International Air Transport Association;

DOT: Department Of Transport;

IMDG: International Maritime Dangerous Goods;

RID: Regulations concerning the International Transport of Dangerous Goods by Rail;

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road;

ICAO: International Civil Aviation Organization

PBT: Persistent, bioaccumulative and toxic substances

vPvB: Very persistent and very bioaccumulative substances





**SAFETY DATA SHEET**  
**According to Regulation (EC) No. 1907/2006 (REACH)**  
**Yttria stabilized zirconia (YSZ)**

Date of Printing: 10.04.2024

SDS/YSZ/REV3

Created:10/04/2024

Prepared by Jyoti Ceramic Industries In-House R&D Unit

Date of issue: 10.04.2024      Version: 3.0

The information is based on the current state of our knowledge and relates to the product in its condition as applied. However, no guarantee, warranty or assurance is accepted either explicitly or implicitly for the accuracy, reliability and/or completeness of this information.

We expressly call on the person receiving this information to check on the suitability and completeness of this information for their particular application.