

Issue Date: 03-Dec-2023

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Version 1

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product Identifier

Product Name Ytria Stabilized Zirconia
Synonyms YSZ, Yttrium stabilized zirconium oxide, Zirconium(IV) oxide - yttria stabilized

1.2. Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Recommended Use Laboratory chemicals and manufacture of substances

1.3. Details of the Supplier of the Safety Data Sheet

Supplier

Stanford Advanced Materials
23661 Birtcher Dr.,
Lake Forest, CA 92630 U.S.A.
www.samaterials.com

For further information, please contact

Contact Point Tel: (949) 407-8904
Fax: (949) 812-6690
Email Address sales@samaterials.com

1.4. Emergency telephone number

Emergency Telephone (24 hr) (949) 407-8904
(This telephone number is available 24 hours per day, 7 days per week.)

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Regulation (EC) No 1272/2008

Not classified as dangerous according to Regulation (EC) No. 1272/2008.

Classification according to 67/548/EEC

Full text of R-phrases: see section 16

Hazard Symbols

Not dangerous

2.2. Label Elements

Not classified as dangerous according to Regulation (EC) No. 1272/2008.

Signal Word

None

EUH210 - Safety data sheet available on request

2.3. Other Hazards

General Hazards

None known

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Chemical Name	EC No	CAS No	Weight-%	Classification according to 67/548/EEC	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH Registration Number
Zirconium Oxide	Present	1314-23-4	78-94	-	Not determined	Not determined
Yttrium Oxide	Present	1314-36-9	4-20	-	Not determined	Not determined
Hafnium Oxide	Present	12055-23-1	1-2	-	Not determined	Not determined
Aluminum Oxide	Present	1344-28-1	0-3	-	Not determined	Not determined

Full text of R-phrases: see section 16

Full text of H- and EUH-phrases: see section 16

Additional Information

Substances without a classification are included, because they have established occupational exposure limits

Section 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

Eye Contact	Rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
Inhalation	Remove to fresh air.
Ingestion	Clean mouth with water and drink afterwards plenty of water.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms	None known.
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4.3. Indication of any Immediate Medical Attention and Special Treatment Needed

Notes to Physician	Treat symptomatically.
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Section 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

Not determined.

5.2. Special Hazards Arising from the Substance or Mixture

Product is not flammable.

5.3. Advice for Firefighters

Wear self-contained breathing apparatus and protective suit. Use personal protective equipment as required.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions

Use personal protective equipment as required. Avoid creating dust.

For Emergency Responders

Use personal protection recommended in Section 8.

6.2. Environmental Precautions

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

6.3. Methods and Material for Containment and Cleaning Up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Place in appropriate containers for disposal.

6.4. Reference to Other Sections

See Section 13: DISPOSAL CONSIDERATIONS.

Section 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Advice on Safe Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Avoid generation of dust.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions

Keep container tightly closed and store in a cool, dry and well-ventilated place.

7.3. Specific End Use(s)

Specific Use(s)

Laboratory chemicals and Manufacture of substances.

Risk Management Methods (RMM)

The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

Exposure Limits

Chemical Name	European Union	United Kingdom	France	Spain	Germany
Zirconium Oxide 1314-23-4		TWA: 5 mg/m ³		STEL: 10 mg/m ³ TWA: 5 mg/m ³	
Yttrium Oxide 1314-36-9				TWA: 1 mg/m ³	
Hafnium Oxide 12055-23-1				TWA: 0.5 mg/m ³	
Aluminum Oxide 1344-28-1		TWA: 10 mg/m ³ TWA: 4 mg/m ³	TWA: 10 mg/m ³	TWA: 10 mg/m ³	TWA: 4 mg/m ³ TWA: 1.5 mg/m ³ Skin
Component	Italy	Portugal	Netherlands	Finland	Denmark
Zirconium Oxide 1314-23-4 (78-94)		STEL: 10 mg/m ³ TWA: 5 mg/m ³		TWA: 1 mg/m ³	TWA: 5 mg/m ³
Yttrium Oxide 1314-36-9 (4-20)		TWA: 1 mg/m ³		TWA: 1 mg/m ³	TWA: 1 mg/m ³
Hafnium Oxide 12055-23-1 (1-2)		TWA: 0.5 mg/m ³		TWA: 0.5 mg/m ³	
Aluminum Oxide 1344-28-1 (0-3)		TWA: 10 mg/m ³	TWA: 0.05 mg/m ³		TWA: 5 mg/m ³ TWA: 2 mg/m ³
Chemical Name	Austria	Switzerland	Poland	Norway	Ireland
Zirconium Oxide 1314-23-4	TWA: 5 mg/m ³	TWA: 5 mg/m ³	STEL: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³
Yttrium Oxide 1314-36-9			TWA: 1 mg/m ³		
Hafnium Oxide 12055-23-1	TWA: 0.5 mg/m ³		TWA: 0.5 mg/m ³		
Aluminum Oxide 1344-28-1	STEL 10 mg/m ³ TWA: 5 mg/m ³	STEL: 24 mg/m ³ TWA: 3 mg/m ³	TWA: 2.5 mg/m ³ TWA: 1.2 mg/m ³	TWA: 10 mg/m ³ STEL: 20 mg/m ³	TWA: 10 mg/m ³ TWA: 4 mg/m ³

8.2. Exposure Controls

Engineering Controls

Apply technical measures to comply with the occupational exposure limits.

Personal Protective Equipment

Eye/Face Protection

Avoid contact with eyes.

Hand Protection

Gloves are not required for normal use.

Skin and Body Protection

Suitable protective clothing.

Respiratory Protection

Ensure adequate ventilation, especially in confined areas. In case of inadequate ventilation wear respiratory protection.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	Solid	Odour	None
Appearance	White solid	Odour Threshold	Not determined
Colour	White		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	Not determined	
Melting Point/Freezing Point	~ 2500 °C / ~4530 °F	
Boiling Point/Boiling Range	~ 3800 °C / ~6870	
Flash Point	Not determined	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Not flammable	
Flammability Limits in Air		

Upper Flammability Limits	Not determined
Lower Flammability Limit	Not determined
Vapour Pressure	Not determined
Vapour Density	Not determined
Relative Density	Not determined
Water Solubility	Practically insoluble
Solubility(ies)	Not determined
Partition Coefficient	Not determined
Auto-ignition Temperature	Not determined
Decomposition Temperature	Not determined
Kinematic Viscosity	Not determined
Dynamic Viscosity	Not determined
Explosive Properties	Not determined
Oxidizing Properties	Not determined

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Not reactive under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of Hazardous Reactions

Possibility of Hazardous Reactions

None under normal processing.

10.4. Conditions to Avoid

Keep out of reach of children. Avoid generation of dust.

10.5. Incompatible Materials

None known based on information supplied.

10.6. Hazardous Decomposition Products

None under normal use conditions.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects

Acute Toxicity

Product Information

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Eye Contact Avoid contact with eyes.

Skin Contact Avoid contact with skin.

Inhalation Avoid inhalation of dust.

Ingestion Do not ingest.

Unknown Acute Toxicity 100% of the mixture consists of ingredient(s) of unknown toxicity.

The following values are calculated based on chapter 3.1 of the GHS document:

Oral LD50	99,999.00
Units	mg/kg
Dermal LD50	99,999.00
Units	mg/kg
Inhalation	
Gas	99,999.00
Units	mg/L
Mist	99,999.00
Units	mg/L
Vapor	99,999.00
Units	mg/L

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Aluminum Oxide	> 5000 mg/kg (Rat)		

Skin corrosion/irritation	Not classified.
Serious eye damage/eye irritation	Not classified.
Sensitization	Not classified.
Germ cell mutagenicity	Not classified.
Carcinogenicity	None known based on information supplied.
Reproductive toxicity	Not classified.
STOT - single exposure	Not classified.
STOT - repeated exposure	Not classified.
Aspiration hazard	Not classified.
Symptoms	Please see section 4 of this SDS for symptoms.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Not determined.

12.2. Persistence and Degradability

Not determined.

12.3. Bioaccumulative Potential

Not determined.

12.4. Mobility in Soil**Mobility**

Not determined.

12.5. Results of PBT and vPvB Assessment

Not determined.

12.6. Other Adverse Effects

Not determined.

Section 13: DISPOSAL CONSIDERATIONS**13.1. Waste Treatment Methods****Waste from Residues / Unused Products**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging

Improper disposal or reuse of this container may be dangerous and illegal.

Section 14: TRANSPORT INFORMATION**IMDG**

14.2 Proper Shipping Name Not regulated

RID

14.2 Proper Shipping Name Not regulated

ADR

14.2 Proper Shipping Name Not regulated

ICAO (air)

14.2 Proper Shipping Name Not regulated

IATA

14.2 Proper Shipping Name Not regulated

Section 15: REGULATORY INFORMATION**15.1. Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture****European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

International Inventories

Not determined.

TSCA	-
EINECS/ELINCS	-
DSL/NDSL	-
PICCS	-
ENCS	-
IECSC	-
AICS	-
KECL	-

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

PICCS - Philippines Inventory of Chemicals and Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

AICS - Australian Inventory of Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

15.2. Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

Section 16: OTHER INFORMATION**Full text of R-phrases referred to under sections 2 and 3**

Not applicable

Full text of H-Statements referred to under sections 2 and 3

Not applicable

Classification Procedure

Calculation method

Issue Date:	03-Dec-2023
Revision Date:	01-Oct-2023
Revision Note:	Company name change

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended by Regulation (EU) No. 453/2010

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet