

# SAFETY DATA SHEET: Yttrium Stabilized Zirconia Milling Media (Any Size ball)

Version: 2.1

Revision Date: 03/04/2020

## Section 1: Identification

### 1.1) Product identifier:

Product Name : Yttrium Stabilized Zirconia  
Synonyms : YSZ, Yttrium Stabilized Zirconium Oxide  
Product Number :  
CAS Number : 114168-16-0

### 1.2) Company information:

Address: MSE Supplies, LLC  
4400 E Broadway Blvd, Suite 600  
Tucson, AZ 85711, USA  
Telephone: +1 520-789-6673  
Email: [info@mse Supplies.com](mailto:info@mse Supplies.com)  
Emergency Telephone : +1-703-527-3887

### 1.3) Relevant identified uses of the substance or mixture and uses advised against:

Identifies uses: Laboratory chemicals, Synthesis of substances

## Section 2: Hazard(s) Identification

### 2.1) Classification of the substance or mixture GHS classification in accordance with 29 CFR 1910 (OSHA HCS):

Skin irritation (Category 2), H315  
Eye irritation (Category 2A), H319  
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

### 2.2) GHS Label elements, including precautionary statements:



Pictograms:

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**Signal word:** Warning

**Hazard Statement(s)**

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

**Precautionary Statement(s)**

P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ eye protection/ face protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

**2.3) Hazards not otherwise classified (HNOC) or covered by GHS:**

None

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## 3.1) Substances:

Formula:  $ZrY_2O_5$   
Molecular Weight: 394.03 g/mol  
CAS Number: 114168-16-0

Component	Classification	Concentration
Zirconium(IV) oxide ( $ZrO_2$ ) CAS# 1314-23-4	Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3; H315, H319, H335	$\leq 100$ % wt
Yttrium(III) Oxide ( $Y_2O_3$ ) CAS# 1314-36-9		$\geq 5$ - $\leq 10$ wt%

For the full text of the H-Statements mentioned in this Section, see Section 16.

## Section 4: First-Aid Measures

### 4.1) Description of first aid measures:

#### General advice

Move out of dangerous area.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration.

#### In case of skin contact

Wash off with soap and plenty of water.

#### In case of eye contact

Flush eyes with water as a precaution.

#### If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water.

### 4.2) Most important symptoms and effects, both acute and delayed:

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

### 4.3) Indication of any immediate medical attention and special treatment needed:

No data available

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## Section 5: Fire-Fighting Measures

### 5.1) Suitable extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### 5.2) Special hazards arising from the substance or mixture:

Zirconium oxides, Yttrium oxides

### 5.3) Advise for firefighters:

Wear self-contained breathing apparatus for firefighting if necessary.

### 5.4) Further information:

No data available

## Section 6: Accidental Release Measures

### 6.1) Personal precautions, protective equipment, and emergency procedures:

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

For personal protection see section 8.

### 6.2) Environmental precautions:

Do not let product enter drains.

### 6.3) Methods and materials for containment and cleaning up:

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

### 6.4) Reference to other sections:

For disposal see section 13.

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Section 7: Handling and Storage

**7.1) Precautions for safe handling:**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Provide appropriate exhaust ventilation at places where dust is formed.

For precautions see section 2.2.

**7.2) Conditions for safe storage, including any incompatibilities:**

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

Keep in a dry place.

Storage class (TRGS 510): 13: Non Combustible Solids

**7.3) Specific end use(s):**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

Section 8: Exposure Controls/Personal Protection

**8.1) Control parameters:**

**Components with workplace control parameters**

Component	CAS-Number	Value	Control Parameters	Basis
Yttrium Oxide	1314-36-9	TWA	1 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Pulmonary fibrosis		

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		TWA	1 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits
		PEL	1 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Hazardous components without workplace control parameters

**8.2) Exposure controls:**

**Appropriate engineering controls:**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

**Eye/face protection:**

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection:**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body protection:**

Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection:**

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and

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components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure:**

Do not let product enter drains.

Section 9: Physical and Chemical Properties

**9.2) Information on basic physical and chemical properties:**

a) Appearance (physical state, color, etc.)	Solid, Ivory color
b) Upper/lower flammability or explosive limits	No data available
c) Odor	No data available
d) Odor threshold	No data available
e) Vapor pressure	No data available
f) Vapor density	No data available
g) pH	No data available
h) Density	No data available
i) Melting point/freezing point	>2600 °C
j) Solubility(ies)	No data available
k) Initial boiling point and boiling range	No data available
l) Flash point	No data available
m) Evaporation rate	No data available
n) Flammability (solid, gas)	No data available
o) Partition coefficient: n-octanol/water	No data available
q) Auto-ignition temperature	No data available
r) Decomposition temperature	No data available

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s) Viscosity	No data available
t) Explosive properties	No data available
u) Oxidizing properties	No data available

**9.2) Other Safety information:**

No data available

Section 10: Stability and Reactivity

**10.1) Reactivity:**

No data available

**10.2) Chemical Stability:**

Stable under recommended storage conditions. Contains the following stabilizer(s):

Yttrium oxide <= 10 wt%

**10.3) Possibility of hazardous reactions:**

No data available

**10.4) Conditions to avoid:**

No data available

**10.5) Incompatible materials:**

Strong oxidizing agents

**10.6) Hazardous decomposition products:**

Hazardous decomposition products formed under fire conditions. - Zirconium oxides, Yttrium oxides

Other decomposition products - No data available

In the event of a fire: see section 5.

Section 11: Toxicological Information



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**11.1) Information on toxicological effects:**

**Acute toxicity:**

No data available

Inhalation: No data available

Dermal: No data available

No data available

**Skin corrosion/irritation:**

No data available

**Serious eye damage/ eye irritation:**

No data available

**Respiratory or skin sensitization:**

**Germ cell mutagenicity:**

No data available

**Carcinogenicity:**

**IARC:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**OSHA:** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**Reproductive toxicity:**

No data available

**Specific target organ toxicity – single exposure:**

No data available

**Specific target organ toxicity – repeated exposure:**

No data available

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**Aspiration hazard:**

No data available

**Additional information:**

RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Section 12: Ecological Information

**12.1) Toxicity:**

No data available

**12.2) Persistence and degradability:**

No data available

**12.3) Bioaccumulative potential:**

No data available

**12.4) Mobility in soil:**

No data available

**12.5) Results of PBT and vPvB assessment:**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

**12.6) Other adverse effects:**

No data available

Section 13: Disposal Considerations

**13.1) Waste treatment methods:**

**Product:**



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Offer surplus and non-recyclable solutions to a licensed disposal company.  
Contact a licensed professional waste disposal service to dispose of this material.

## Contaminated packaging:

Dispose of as unused product.

## Section 14: Transport Information

### DOT (US):

Not dangerous goods

### IMDG:

Not dangerous goods

### IATA:

Not dangerous goods

## Section 15: Regulatory Information

### SARA 302 Components:

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components:

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### SARA 311/312 Hazards:

Acute Health Hazard

### Massachusetts Right To Know Components:

No components are subject to the Massachusetts Right to Know Act.



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### Pennsylvania Right To Know Components:

Zirconium(IV) Oxide, yttria stabilized	CAS#	Revision Date
	114168-16-0	1993-02-16
Yttrium oxide	1314-36-9	

### New Jersey Right To Know Components:

Zirconium(IV) Oxide, yttria stabilized	CAS#	Revision Date
	114168-16-0	1993-02-16
Yttrium oxide	1314-36-9	

### California Prop. 65 Components:

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

## Section 16: Other Information

### Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. MSE Supplies LLC and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.

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