

# SAFETY DATA SHEET

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## SECTION 1. IDENTIFICATION

**Product Identifier:** Scandia Stabilized Zirconia Sputtering Target (10 mol. %)

**Product Code:** ZRO-SC10-01-ST

**CAS Number:** 151575-30-3

**Relevant identified uses of the substance:** Scientific research and development

Supplier details:

American Elements  
10884 Weyburn Ave.  
Los Angeles, CA 90024  
Tel: +1 310-208-0551  
Fax: +1 310-208-0351  
Emergency telephone number:  
+1 800-424-9300

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## SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture.

2.2 GHS Label elements, including precautionary statements

Not a hazardous substance or mixture.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Synonyms : Scandia-stabilized zirconia, Scandium zirconium oxide, ScSZ, Sc6SZ

Hazardous components

Component Classification Concentration

Zirconium dioxide

CAS-No.

EC-No.

1314-23-4

215-227-2

>= 90 - <= 100

%

Hafnium dioxide  
CAS-No.  
EC-No.  
12055-23-1  
235-013-2  
≥ 1 - < 5 %  
Aluminum oxide  
CAS-No. 1344-28-1 ≥ 1 - < 5 %  
EC-No.  
215-691-6

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## **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. FIREFIGHTING MEASURES**

### **5.1 Extinguishing media**

Suitable extinguishing media

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

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

No data available

### **5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

### **5.4 Further information**

No data available

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

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

Avoid dust formation. Avoid breathing Vapors, mist or gas.

For personal protection see section 8.

### **6.2 Environmental precautions**

No special environmental precautions required.

### **6.3 Methods and materials for containment and cleaning up**

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**

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.

Hygroscopic. Keep in a dry place.

Storage class (TRGS 510): Non Combustible Solids

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

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

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

### **8.1 Control parameters**

Components with workplace control parameters

Component CAS-No. Value Control  
parameters

Basis

Zirconium dioxide 1314-23-4 TWA 5.000000

mg/m<sup>3</sup>

USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 5.000000

mg/m<sup>3</sup>

USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 5.000000

mg/m<sup>3</sup>

USA. ACGIH Threshold Limit Values

(TLV)

Remarks Not classifiable as a human carcinogen

STEL 10.000000

mg/m<sup>3</sup>

USA. ACGIH Threshold Limit Values

(TLV)

Not classifiable as a human carcinogen

TWA 5.000000

mg/m<sup>3</sup>

USA. NIOSH Recommended

Exposure Limits

ST 10.000000

mg/m<sup>3</sup>

USA. NIOSH Recommended

Exposure Limits

TWA 5 mg/m<sup>3</sup> USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 5 mg/m<sup>3</sup> USA. ACGIH Threshold Limit Values

(TLV)

Not classifiable as a human carcinogen

STEL 10 mg/m<sup>3</sup> USA. ACGIH Threshold Limit Values

(TLV)

Not classifiable as a human carcinogen

TWA 5 mg/m<sup>3</sup> USA. NIOSH Recommended

Exposure Limits

ST 10 mg/m<sup>3</sup> USA. NIOSH Recommended

Exposure Limits

PEL 5 mg/m<sup>3</sup> California permissible exposure

limits for chemical contaminants

(Title 8, Article 107)

STEL 10 mg/m<sup>3</sup> California permissible exposure

limits for chemical contaminants

(Title 8, Article 107)

Hafnium dioxide 12055-23-1 TWA 0.500000

mg/m<sup>3</sup>

USA. ACGIH Threshold Limit Values

(TLV)

Upper Respiratory Tract irritation

Eye irritation

Liver damage

TWA 0.500000

mg/m<sup>3</sup>

USA. NIOSH Recommended

Exposure Limits

TWA 0.5 mg/m<sup>3</sup> USA. ACGIH Threshold Limit Values

(TLV)

Upper Respiratory Tract irritation

Eye irritation

Liver damage

TWA 0.5 mg/m<sup>3</sup> USA. NIOSH Recommended

Exposure Limits

alpha-Alumina is the main component of technical grade alumina.

Corundum is natural Al<sub>2</sub>O<sub>3</sub>. Emery is an impure crystalline variety of Al<sub>2</sub>O<sub>3</sub>.

See Appendix D - Substances with No Established RELs

Aluminum oxide 1344-28-1 TWA 15.000000

mg/m<sup>3</sup>

USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 5.000000

mg/m<sup>3</sup>

USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 15.000000

mg/m<sup>3</sup>

USA. Occupational Exposure Limits  
(OSHA) - Table Z-1 Limits for Air  
Contaminants

TWA 5.000000

mg/m<sup>3</sup>

USA. Occupational Exposure Limits  
(OSHA) - Table Z-1 Limits for Air  
Contaminants

TWA 1.000000

mg/m<sup>3</sup>

USA. ACGIH Threshold Limit Values  
(TLV)

Lower Respiratory Tract irritation

Pneumoconiosis

Neurotoxicity

Not classifiable as a human carcinogen

varies

TWA 1.000000

mg/m<sup>3</sup>

USA. ACGIH Threshold Limit Values  
(TLV)

Lower Respiratory Tract irritation

Pneumoconiosis

Neurotoxicity

Not classifiable as a human carcinogen

varies

TWA 1 mg/m<sup>3</sup> USA. ACGIH Threshold Limit Values  
(TLV)

Lower Respiratory Tract irritation

Pneumoconiosis

Neurotoxicity

Not classifiable as a human carcinogen

varies

PEL 10 mg/m<sup>3</sup> California permissible exposure  
limits for chemical contaminants  
(Title 8, Article 107)

PEL 5 mg/m<sup>3</sup> California permissible exposure  
limits for chemical contaminants  
(Title 8, Article 107)

Appropriate engineering controls

General industrial hygiene practice.

Personal protective equipment

Eye/face protection

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

Choose body protection in relation to its type, to the concentration and amount of dangerous

substances, and

to the specific work-place., The type of protective equipment must be selected according to the concentration

and amount of the dangerous substance at the specific workplace.

Respiratory protection

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type

N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under

appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

No special environmental precautions required.

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

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

a) Appearance Form: powder

b) Odor No data available

c) Odor Threshold No data available

d) pH No data available

e) Melting point/freezing  
point

No data available

f) Initial boiling point and  
boiling range

No data available

g) Flash point No data available

h) Evaporation rate No data available

i) Flammability (solid, gas) No data available

j) Upper/lower

flammability or

explosive limits

No data available

k) Vapor pressure No data available

l) Vapor density No data available

m) Relative density No data available

n) Water solubility No data available

o) Partition coefficient: octanol/  
water

No data available

p) Auto-ignition

temperature

No data available

q) Decomposition

temperature

No data available

r) Viscosity No data available

s) Explosive properties No data available

t) Oxidizing properties No data available

### **9.2 Other safety information**

No data available

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## SECTION 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

No data available

### 10.5 Incompatible materials

No data available

### 10.6 Hazardous decomposition products

Other decomposition products - No data available

Hazardous decomposition products formed under fire conditions. - Aluminum oxide, Zirconium oxides, Scandium oxide, Hafnium oxide

In the event of fire: see section 5

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## SECTION 11. TOXICOLOGICAL INFORMATION

### 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 sensitisation

No data available

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 identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No data available

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

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.

Liver - Irregularities - Based on Human Evidence

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## 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

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## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

Product

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.

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## SECTION 14. TRANSPORT INFORMATION

DOT (US)

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

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## 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

The following components are subject to reporting levels established by SARA Title III, Section 313:

Aluminum oxide



CAS-No.  
1344-28-1  
Revision Date  
1994-04-01  
SARA 311/312 Hazards  
Chronic Health Hazard  
Massachusetts Right To Know Components  
Zirconium dioxide

CAS-No.  
1314-23-4  
Revision Date  
1993-04-24  
Aluminum oxide 1344-28-1 1994-04-01  
Pennsylvania Right To Know Components  
Zirconium dioxide

CAS-No.  
1314-23-4  
Revision Date  
1993-04-24  
Scandium oxide 12060-08-1  
Aluminum oxide 1344-28-1 1994-04-01  
New Jersey Right To Know Components  
Zirconium dioxide

CAS-No.  
1314-23-4  
Revision Date  
1993-04-24  
Scandium oxide 12060-08-1  
Hafnium dioxide 12055-23-1  
Aluminum oxide 1344-28-1 1994-04-01  
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.

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## 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). 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. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.