

## SAFETY DATA SHEET

### Section 1: Identification

Product name: Zirconium(IV) oxide  
Product use: For laboratory research purposes.  
Supplier: Trace Sciences International  
40 Vogell Rd Suite 42  
Richmond Hill, ON L4B 3N6  
CANADA  
Telephone: +1 905-770-1100  
Fax: +1 905-770-1160  
Emergency Phone: CANUTEC +1-613-996-6666

### Section 2: Hazard(s) Identification

#### 2.1 GHS Classification

Not a hazardous substance or mixture

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

Not a hazardous substance or mixture

### Section 3: Composition/ Information on Ingredients

**Formula** : ZrO<sub>2</sub>  
**Molecular Weight** : 123.22 g/mol

Material	CAS-No.	EC-No.	Index-No.	Concentration
Zirconium(IV) oxide	1314-23-4	215-227-2	-	<=100%

### Section 4: First-Aid Measures

#### 4.1 Description of first aid measures

##### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move person out of dangerous area if safe to do so.

##### If inhaled

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

##### In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water for at least 15 minutes. Use chemical shower if available. Consult a physician.

##### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Remove contacts if possible.

##### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

## Section 5: Fire-Fighting Measures

### 5.1 Conditions of flammability

Not flammable or combustible.

### 5.2 Suitable extinguishing media

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

### 5.3 Hazardous combustion products

Hazardous decomposition products formed under fire conditions: Zirconium oxides

### 5.4 Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### 5.5 Further information

No data available

## Section 6: Accidental Release Measures

### 6.1 Personal precautions

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

### 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.

## Section 7: Handling and Storage

### 7.1 Precautions for safe handling

Provide appropriate exhaust ventilation at places where dust is formed.

### 7.2 Conditions for safe storage

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

## Section 8: Exposure Controls/Personal Protection

### 8.1 Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Zirconium(IV) oxide	1314-23-4	TWA	5 mg/m <sup>3</sup>	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		STEL	10 mg/m <sup>3</sup>	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWAEV	5 mg/m <sup>3</sup>	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
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			Permissible exposure values for airborne contaminants
		STEV	10 mg/m <sup>3</sup> Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		TWA	5 mg/m <sup>3</sup> USA. ACGIH Threshold Limit Values (TLV)
		STEL	10 mg/m <sup>3</sup> USA. ACGIH Threshold Limit Values (TLV)

## 8.2 Personal protective equipment

### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### Hand 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.

### Eye 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 and body protection

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

### Hygiene measures

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

### Specific engineering controls

Use mechanical exhaust or laboratory fume hood to avoid exposure.

## Section 9: Physical and Chemical Properties

### Appearance

Form Powder  
Colour White

### Safety Data

pH  
Melting point/freezing point 2,700 °C (4,892 °F)  
Boiling point 5,000 °C (9,032 °F)  
Flash point Not applicable  
Flammability (solid, gas) No data available  
Ignition temperature No data available  
Auto-ignition temperature No data available  
Lower explosion limit No data available

Upper explosion limit	No data available
Vapour pressure	No data available
Density	5.89 g/mL at 25 °C (77 °F)
Water solubility	0.00006 g/l at 20 °C (68 °F)
Partition coefficient: n-octanol/water	No data available
Relative vapour density	No data available
Odour	Odourless
Odour Threshold	No data available
Evaporation rate	No data available

## Section 10: Stability and Reactivity

### 10.1 Chemical stability

Stable under recommended storage conditions

### 10.2 Possibility of hazardous reactions

No data available

### 10.3 Conditions to avoid

No data available

### 10.4 Materials to avoid

Strong oxidizing agents, strong acids

### 10.5 Hazardous decomposition products

See section 5

## Section 11: Toxicological Information

### Acute toxicity

#### Oral

No data available

#### Inhalation

LC50 Inhalation - Rat - male and female - 4 h - > 4.3 mg/l - aerosol  
(OECD Test Guideline 436)

#### Dermal

No data available

#### Other information on acute toxicity

No data available

### Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation  
(OECD Test Guideline 404)

### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Mild eye irritation  
(OECD Test Guideline 405)

### Respiratory or skin sensitization

Maximization Test - Guinea pig

Result: Not a skin sensitizer.  
(OECD Test Guideline 406)

**Germ cell mutagenicity**

Test Type: In vitro mammalian cell gene mutation test  
Test system: Mouse lymphoma test  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

No data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

No data available

**Aspiration hazard**

No data available

**Signs and Symptoms of Exposure**

No data available

**Additional Information**

RTECS: ZH8800000

**Section 12: Ecological Information**

**12.1 Toxicity**

Toxicity to fish                      Static test - Danio rerio (zebra fish) - > 100 mg/l - 96 h  
(OECD Test Guideline 203)

Toxicity to daphnia and              Static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h  
other aquatic invertebrates        (Regulation (EC) No. 440/2008, Annex, C.2)

**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 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

**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.

### Section 14: Transport Information

**IATA**

Not dangerous good

### Section 15: Regulatory Information

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR

### Section 16: Other Information

**Further information**

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