

## SAFETY DATA SHEET

Revision Date 26-March-2024

Revision Number 4

### 1. Identification

**Product Name** Zirconium(IV) oxide, Puratronic®

**Cat No. :** 11141

**CAS-No** 1314-23-4  
**Synonyms** No information available

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Food, drug, pesticide or biocidal product use.

#### Details of the supplier of the safety data sheet

##### Company

##### **Importer/Distributor**

Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

##### **Emergency Telephone Number**

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11

Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99

**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

### 2. Hazard(s) identification

#### Classification

**WHMIS 2015 Classification** Not classified under the Hazardous Products Regulations (SOR/2015-17)

Based on available data, the classification criteria are not met

#### Label Elements

None required

#### **Hazard Statements**

#### **Precautionary Statements**

### 3. Composition/Information on Ingredients

| Component | CAS-No | Weight % |
|-----------|--------|----------|
|-----------|--------|----------|

|                                     |           |     |
|-------------------------------------|-----------|-----|
| Zirconium oxide (ZrO <sub>2</sub> ) | 1314-23-4 | 100 |
|-------------------------------------|-----------|-----|

#### 4. First-aid measures

|   |   |
|---|---|
| <b>Eye Contact</b>  | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.         |
| <b>Skin Contact</b>   | Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur. |
| <b>Inhalation</b>   | Remove to fresh air. Get medical attention immediately if symptoms occur.   |
| <b>Ingestion</b>  | Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.                   |
| <b>Most important symptoms/effects<br/>Notes to Physician</b> | None reasonably foreseeable.<br>Treat symptomatically   |

#### 5. Fire-fighting measures

|   |                          |
|---|--------------------------|
| <b>Unsuitable Extinguishing Media</b>   | No information available |
| <b>Flash Point</b>                      | No information available |
| <b>Method -</b>                         | No information available |
| <b>Autoignition Temperature</b>         | 1000 °C / 1832 °F        |
| <b>Explosion Limits</b>                 |                          |
| <b>Upper</b>                            | No data available        |
| <b>Lower</b>                            | No data available        |
| <b>Sensitivity to Mechanical Impact</b> | No information available |
| <b>Sensitivity to Static Discharge</b>  | No information available |

#### Specific Hazards Arising from the Chemical

Keep product and empty container away from heat and sources of ignition.

#### Hazardous Combustion Products

None known.

#### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

#### NFPA

**Health**  
2

**Flammability**  
0

**Instability**  
0

**Physical hazards**  
N/A

#### 6. Accidental release measures

|   |  |
|---|--|
| <b>Personal Precautions</b>                 | Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.  |
| <b>Environmental Precautions</b>            | Should not be released into the environment. See Section 12 for additional Ecological Information. |
| <b>Methods for Containment and Clean Up</b> | Sweep up and shovel into suitable containers for disposal. Avoid dust formation.                   |

#### 7. Handling and storage

|                 |  |
|-----------------|--|
| <b>Handling</b> | Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid |
|-----------------|--|

contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust formation.

**Storage.**

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

## 8. Exposure controls / personal protection

**Exposure Guidelines**

| Component                           | Alberta  | British Columbia                                       | Ontario TWAEV  | Quebec   | ACGIH TLV  | OSHA PEL   | NIOSH  |
|-------------------------------------|--|--|--|--|--|--|--|
| Zirconium oxide (ZrO <sub>2</sub> ) | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | (Vacated) TWA: 5 mg/m <sup>3</sup><br>(Vacated) STEL: 10 mg/m <sup>3</sup> | IDLH: 25 mg/m <sup>3</sup><br>TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> |

**Legend**

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

**Engineering Measures**

None under normal use conditions.

**Personal protective equipment****Eye Protection**

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Hand Protection**

Wear appropriate protective gloves and clothing to prevent skin exposure.

| Glove material | Breakthrough time                 | Glove thickness | Glove comments         |
|----------------|-----------------------------------|-----------------|------------------------|
| Nitrile rubber | See manufacturers recommendations | -               | Splash protection only |

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

**Respiratory Protection**

No protective equipment is needed under normal use conditions.

**Recommended Filter type:** Particle filter

**Environmental exposure controls**

No information available.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

## 9. Physical and chemical properties

|                            |                          |
|----------------------------|--------------------------|
| <b>Physical State</b>      | Powder Solid             |
| <b>Appearance</b>          | White                    |
| <b>Odor</b>                | Odorless                 |
| <b>Odor Threshold</b>      | No information available |
| <b>pH</b>                  |                          |
| <b>Melting Point/Range</b> | 2700 °C / 4892 °F        |

|  |                          |
|--|--------------------------|
| Boiling Point/Range                    | 4300 °C / 7772 °F        |
| Flash Point                            | No information available |
| Evaporation Rate                       | Not applicable           |
| Flammability (solid,gas)               | No information available |
| Flammability or explosive limits       |                          |
| Upper                                  | No data available        |
| Lower                                  | No data available        |
| Vapor Pressure                         | No information available |
| Vapor Density                          | Not applicable           |
| Specific Gravity                       | 5.60                     |
| Solubility                             | Insoluble in water       |
| Partition coefficient; n-octanol/water | No data available        |
| Autoignition Temperature               | 1000 °C / 1832 °F        |
| Decomposition Temperature              | No information available |
| Viscosity                              | Not applicable           |
| Molecular Formula                      | ZrO <sub>2</sub>         |
| Molecular Weight                       | 123.2188                 |

## 10. Stability and reactivity

|                                  |  |
|----------------------------------|--|
| Reactive Hazard                  | None known, based on information available |
| Stability                        | Stable under normal conditions.            |
| Conditions to Avoid              | Incompatible products.                     |
| Incompatible Materials           | Strong oxidizing agents                    |
| Hazardous Decomposition Products | None under normal use conditions           |
| Hazardous Polymerization         | Hazardous polymerization does not occur.   |
| Hazardous Reactions              | None under normal processing.              |

## 11. Toxicological information

### Acute Toxicity

#### Product Information Component Information

| Component                           | LD50 Oral  | LD50 Dermal | LC50 Inhalation             |
|-------------------------------------|------------|-------------|-----------------------------|
| Zirconium oxide (ZrO <sub>2</sub> ) | Not listed | Not listed  | LC50 > 4.3 mg/L ( Rat ) 4 h |

**Toxicologically Synergistic Products** No information available

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

|                 |  |
|-----------------|--|
| Irritation      | No information available   |
| Sensitization   | No information available   |
| Carcinogenicity | The table below indicates whether each agency has listed any ingredient as a carcinogen. |

| Component                           | CAS-No    | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|-------------------------------------|-----------|------------|------------|------------|------------|------------|
| Zirconium oxide (ZrO <sub>2</sub> ) | 1314-23-4 | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

|   |  |
|---|--|
| <b>Teratogenicity</b>                             | No information available.                                      |
| <b>STOT - single exposure</b>                     | None known   |
| <b>STOT - repeated exposure</b>                   | None known   |
| <b>Aspiration hazard</b>                          | No information available                                       |
| <b>Symptoms / effects, both acute and delayed</b> | No information available                                       |
| <b>Endocrine Disruptor Information</b>            | No information available                                       |
| <b>Other Adverse Effects</b>                      | The toxicological properties have not been fully investigated. |

## 12. Ecological information

### Ecotoxicity

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| Component                           | Freshwater Algae | Freshwater Fish                            | Microtox   | Water Flea |
|-------------------------------------|------------------|--|------------|------------|
| Zirconium oxide (ZrO <sub>2</sub> ) | Not listed       | LC50: > 100 mg/L, 96h static (Danio rerio) | Not listed | Not listed |

**Persistence and Degradability** No information available

**Bioaccumulation/ Accumulation** No information available.

**Mobility** No information available.

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## 14. Transport information

|                 |               |
|-----------------|---------------|
| <b>DOT</b>      | Not regulated |
| <b>TDG</b>      | Not regulated |
| <b>IATA</b>     | Not regulated |
| <b>IMDG/IMO</b> | Not regulated |

## 15. Regulatory information

### International Inventories

| Component                           | CAS-No    | DSL | NDSL | TSCA | TSCA Inventory notification - Active-Inactive | EINECS    | ELINCS | NLP |
|-------------------------------------|-----------|-----|------|------|---|-----------|--------|-----|
| Zirconium oxide (ZrO <sub>2</sub> ) | 1314-23-4 | X   | -    | X    | ACTIVE  | 215-227-2 | -      | -   |

| Component                           | CAS-No    | IECSC | KECL     | ENCS | ISHL | TCSI | AICS | NZIoC | PICCS |
|-------------------------------------|-----------|-------|----------|------|------|------|------|-------|-------|
| Zirconium oxide (ZrO <sub>2</sub> ) | 1314-23-4 | X     | KE-35630 | X    | X    | X    | X    | X     | X     |

#### Legend:

X - Listed '-' - Not Listed

**KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

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

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

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

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

ENCS - Japanese Existing and New Chemical Substances  
 AICS - Australian Inventory of Chemical Substances  
 PICCS - Philippines Inventory of Chemicals and Chemical Substances

#### Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

#### Other International Regulations

##### Authorisation/Restrictions according to EU REACH

| Component                           | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|-------------------------------------|---|---|---|
| Zirconium oxide (ZrO <sub>2</sub> ) | -   | Use restricted. See item 75. (see link for restriction details)               | -   |

##### REACH links

<https://echa.europa.eu/substances-restricted-under-reach>

##### Safety, health and environmental regulations/legislation specific for the substance or mixture

| Component                           | CAS-No    | OECD HPV | Persistent Organic Pollutant | Ozone Depletion Potential | Restriction of Hazardous Substances (RoHS) |
|-------------------------------------|-----------|----------|------------------------------|---------------------------|--|
| Zirconium oxide (ZrO <sub>2</sub> ) | 1314-23-4 | Listed   | Not applicable               | Not applicable            | Not applicable                             |

| Component                           | CAS-No    | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements | Rotterdam Convention (PIC) | Basel Convention (Hazardous Waste) |
|-------------------------------------|-----------|---|--|----------------------------|------------------------------------|
| Zirconium oxide (ZrO <sub>2</sub> ) | 1314-23-4 | Not applicable  | Not applicable   | Not applicable             | Not applicable                     |

## 16. Other information

##### Prepared By

Product Safety Department  
 Email: chem.techinfo@thermofisher.com  
 www.thermofisher.com

##### Revision Date

26-March-2024

##### Print Date

26-March-2024

##### Revision Summary

New emergency telephone response service provider.

##### 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 SDS**