

# Safety Data Sheet

according to Regulation (EC) No 1907/2006

## Zirconium(IV)oxide

Revision Date: 6/17/2026

Version: 3

### 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

#### 1.1 Product identifier

<b>Product name</b>	Zirconium(IV) oxide, Nanoform 20 nm
<b>Product code</b>	NO-0013
<b>CAS</b>	1314-23-4
<b>EC-Number</b>	215-227-2
<b>REACH No.</b>	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration envisaged for a later registration deadline.

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Identified uses** Laboratory chemicals, Manufacture of substances

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

**Supplier** IoLiTec  
Ionic Liquids Technologies GmbH  
Im Zukunftspark 9  
D – 74076 Heilbronn  
Germany

**Telephone** +49 (0)7131-89839-0

**Fax** +49 (0)7131-89839-109

**Email** msds@iolitec.de

#### 1.4 Emergency telephone number

**Emergency telephone** +49 (0)151-41255671

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### 2 HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

##### Classification (REGULATION (EC) No 1272/2008)

Hazardous respirable dust may be formed when used. Do not breathe dust.

#### 2.2 Label elements

##### Labelling (REGULATION (EC) No 1272/2008)

**Pictogram** Not applicable.

**Signal word** Not applicable.

**Symbols** Not applicable.

##### *Hazard statements*

##### **H phrases**

**EUH212** Warning! Hazardous respirable dust may be formed when used. Do not breathe dust.

##### *Precautionary statements*

##### **P phrases**

**P202** Do not handle until all safety precautions have been read and understood.

**P261** Avoid breathing dust/fume/mist/vapours/spray.

**P262** Do not get in eyes, on skin, or on clothing.

**P271** Use only outdoors or in a well-ventilated area.

**P273** Avoid release to the environment.

**P280** Wear protective gloves/ protective clothing/ eye protection/ face protection.

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P308+P313

IF exposed or concerned: Get medical advice/  
attention.

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

#### *Ecological information:*

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### *Toxicological information:*

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 3 COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

Zirconium(IV) – oxide, 20 nm,

**CAS:** 1314-23-4

**EC-Number:** 215-227-2

Ingredient name	Contents	Classification
Zirconium(IV) – oxide, 20 nm,	99.5+%	Not classified
Formula	Molecular Weight	
ZrO <sub>2</sub>	123.218 g/mol	

Zirconium usually found with a low level of hafnium as their separation is difficult.

No components need to be disclosed according to the applicable regulations.

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### 4 FIRST AID MEASURES

#### 4.1 Description of first aid measures

##### General

Contaminated clothing should be removed and washed before being reused.

Contaminated clothing should not be allowed out of the work place.

##### Inhalation

Move the exposed person to fresh air at once. If respiratory problems, provide artificial respiration/oxygen. [Get medical attention if you feel unwell.](#)

##### Ingestion

Immediately rinse mouth and provide fresh air. Do not induce vomiting. Get medical attention immediately.

##### Skin

Wash the skin immediately with soap and water. [Get medical attention if you feel unwell.](#)

##### Eyes

Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. [Get medical attention if you feel unwell.](#)

#### 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.

### 5 FIRE FIGHTING MEASURES

#### 5.1 Extinguishing media

Use: Water spray, fog or mist. Carbon dioxides (CO<sub>2</sub>). Dry chemicals, sand, dolomite etc.

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

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Avoid water in straight hose stream, will scatter and spread fire. Keep run-off water out of sewers and water sources. Dike for water control. Fire causes formation of toxic gases.

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus as combustion may produce hazardous fumes.

## 6 ACCIDENTAL RELEASE MEASURES

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

Wear protective clothing and avoid inhalation of vapor, skin or eye contact.

### 6.2 Environmental precautions

Avoid washing into water courses. Avoid contaminating public drains or water supply.

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

Avoid contact with skin or inhalation of spillage, dust or vapor. Avoid dust formation. Collect and reclaim or dispose in sealed containers in license waste. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate.

### 6.4 Reference to other sections

For disposal see section 13.

## 7 HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Minimize dust generation and accumulation. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Avoid ingestion and inhalation. Do not use in confined spaces without adequate ventilation and/or respirator.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Storage conditions

Store in a cool, dry place. Store in a tightly closed container. Good ventilation at the workplace is required. Store away from oxidizing agents, from halogens, from acids.

#### Storage class

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Storage class (TRGS 510): LGK 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.

## 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

### 8.1 Control parameters

Ingredients with workplace control parameters.

### 8.2 Exposure controls

#### 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.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

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

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### Exposure Limits

No special precautionary measures necessary.

## 9 PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

a) Physical state	Solid
b) Color	White
c) Odor	no characteristic odor
d) Melting point/freezing point	2.705°C
e) Initial boiling point	4.999°C
f) Flammability	no data available
g) Upper/lower explosive limits	no data available
h) Flash point	no data available
i) Autoignition temperature	no data available
j) Decomposition temperature	no data available
k) pH	no data available
l) Kinematic viscosity	no data available
m) Water solubility	insoluble
n) Partition coefficient	no data available
o) Vapor pressure	no data available
p) Density	5.85 g/cm <sup>3</sup>
q) Relative vapor density	no data available
r) Particle characteristics	20 nm APS, SSA ~25 m <sup>2</sup> /g
s) Explosive properties	no data available
t) Oxidizing properties	no data available

### 9.2 Other safety information

No data available.

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### 10 STABILITY AND REACTIVITY

#### 10.1 Reactivity

No data available.

#### 10.2 Chemical stability

Stable under normal temperatures and pressures.

#### 10.3 Possibility of hazardous reactions

No data available.

#### 10.4 Conditions to avoid

Avoid contact to strong oxidizers and bases.

#### 10.5 Incompatible materials

Strong oxidizing agents. Acids.

#### 10.6 Hazardous decomposition products

High temperatures generate: Corrosive gases/vapor/fumes of: Zirconium oxides.

### 11 TOXICOLOGICAL INFORMATION

#### 11.1 Information on hazard classes

##### Acute toxicity

No data available.

##### Skin corrosion/irritation

No data available.

##### Serious eye damage/eye irritation

No data available.

##### Respiratory or skin sensitization

No data available.

##### Germ cell mutagenicity

No data available.

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### **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.

### **Reproductive toxicity**

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.

### **Potential health effects**

**Inhalation** No data available.

**Ingestion** No data available.

**Skin** No data available.

**Eyes** No data available.

### **Signs and Symptoms of Exposure**

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

### **11.2 Additional Information**

#### **Endocrine disrupting properties**

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU)2018/605 at levels of 0.1% or higher.

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

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### 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

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

#### 12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU)2018/605 at levels of 0.1% or higher.

#### 12.7 Other adverse effects

No data available.

### 13 DISPOSAL CONSIDERATIONS

#### 13.1 Waste treatment methods

Contact specialist disposal companies. Dispose of in accordance with Local Authority requirements. Recover and reclaim or recycle, if practical.

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### 14 TRANSPORT INFORMATION

#### 14.1 UN number

ADR/RID: -

IMDG: -

IATA: -

#### 14.2 UN proper shipping name

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA: Not dangerous goods

#### 14.3 Transport hazard class(es)

ADR/RID: -

IMDG: -

IATA: -

#### 14.4 Packaging group

ADR/RID: -

IMDG: -

IATA: -

#### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

#### 14.6 Special precautions for user

No data available.

### 15 REGULATORY INFORMATION

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

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

#### 15.2 Chemical safety assessment

No data available.

#### Country specific information

Germany

WGK: 1

(Self-Classification)

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### 16 OTHER INFORMATION

#### DISCLAIMER

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