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## ZIRCONIUM DIOXIDE

### Safety Data Sheet

In compliance with Regulation (EC)1907/2006(REACH)  
Date of issue: 24/01/2010 Revision date: 25/02/2014

## SECTION 1: Identification of the substance/mixture and of the company/undertaking.

### 1.1. Product identifier

Product form : Mixture

Product name : Zirconium Dioxide

EC no : Not applicable

CAS No. : Not applicable

REACH registration No. : Exempted in accordance with Annex V.7

Synonyms: Zirconia, Beneficiated Zirconia, Zirconium Concentrated Ore

### 1.2. Relevant identified uses of the substance or mixture and uses advised against 1.2.1. Relevant identified uses

Use of the substance/preparation:

Substance used as such, in formulation or in formulation of products such as:

- Electronics
- Glass
- Ceramics
- Industrial/Professionaluses

### 1.2. 2.Usesadvisedagainst

Additional information available.

Full text of use descriptors: see section 16.

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

Keramikos  
Oudeweg 153  
2031 CC Haarlem

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### 1.4. Emergency telephone number

T 023 – 542 44 16

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## SECTION 2: Hazards identification.

### 2.1. Classification of the substance or mixture

**Classification according to Regulation (EC) No. 1272/2008 [CLP]**

Physical and chemical hazards: Not classified

Human health: Not classified

Environment: Not classified

Full text of H-phrases: see section 16

**Classification according to Directive 67/548/EEC or 1999/45/EC**

Not classified

Full text of R-phrases: see section 16

**Adverse physicochemical, human health and environmental effects**

No additional information available.

### 2.2. Label elements

**Labelling according to Regulation (EC) No. 1272/2008 (CLP)** No

labelling applicable.

### 2.3. Other hazards

#### **Other hazards not contributing to the classification.**

Silica dust (inert – but may irritate respiratory tract and eyes). Chronic (long-term) health hazard. This product contains crystalline silica. Repeated inhalation of dusts containing crystalline silica over time can cause lung disease and cancer. Avoid dust creation. Do not inhale dusts from this product. Use a vacuum or wet clean-up methods to remove dusts. In common many minerals contains low levels of naturally occurring radioactive elements of the uranium and thorium series. The main radiological hazard from the product is internal exposure to alpha particles given off in small amounts by inhaled dust. Suitable dust control measures shall be employed to ensure occupational exposure to generated dust and alpha particles are kept as low as reasonably achievable. Low level gamma radiation from bulk or bagged stockpiles of the product may present a lesser, external hazard

## SECTION 3: Composition/information on ingredients.

### 3.1. Mixture

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Chemical name	CAS No.	EC-No.	%	Classification (67/548/EEC)	Classification (1272/2008/EC)
Zirconium dioxide	1314-23-4	215-227-2		Not classified	Not classified
Silica, vitreous	60676-86-0	262-373-8	>10	Xn; R48/20	STOT RE 2, H373

Full text of R-, H- and EUH-phrases: see section 16

### SECTION 4: First aid measures.

#### 4.1. Description of first aid measures

**Inhalation:** Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

**Ingestion:** Rinse mouth thoroughly. Get medical attention if any discomfort continues.

**Skin contact:** Wash skin with soap and water. Get medical attention if irritation persists after washing. **Eye**

**contact:** Make sure to remove any contact lenses from the eyes before rising. Rinse eye with water immediately. Get medical attention if any discomfort continues.

#### 4.2. Most important symptoms and effects, both acute and delayed

**Inhalation:** May cause coughing. Irritation to respiratory tract.

**Ingestion:** No specific symptoms noted.

**Skin contact:** No specific symptoms noted.

**Eye contact:** May cause eye irritation. Redness of the eye tissue.

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

Treat symptomatically.

### SECTION 5: Firefighting measures.

#### 5.1. Extinguishing media

**Suitable extinguishing media:**

All extinguishing media allowed.

**Unsuitable extinguishing media:**

None.

#### 5.2. Special hazards arising from the substance or mixture **Fire hazard:**

The product is not flammable.

**Explosion hazard:**

No explosive properties known.

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**Reactivity:**

Stable under normal conditions of handling and storage.

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**5.3. Advice for firefighters****Firefighting instructions:**

Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire/ Prevent fire-fighting water from entering environment.

**Protection during firefighting:**

Do not enter fire area without proper protective equipment, including respiratory protection.

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### SECTION 6: Accidental release measures.

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

**General measures:** Keep public away from danger area. See section 8.2. avoid dust production.

##### 6.1.1. For non-emergency personnel

Evacuate personnel to a safe area

##### 6.1.2. For emergency responders

Equip clean up crew with proper protection. Ventilate area.

#### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

#### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Sweep or shovel spills into appropriate container for disposal. Avoid dust production.

#### 6.4. Reference to other sections

See section 8 and 13 for more information.

### SECTION 7: Handling and storage.

#### 7.1. Precautions for safe handling

**Precautions for safe handling:** Do not breathe dust. Wash hands plentifully and other exposed areas with water after handling. Remove contaminated clothing and shoes. Wash clothing before re-using.

**Packagings:** Even those that have been emptied, will retain product residue. Always obey safety warnings and handle empty packages as if they were full. Avoid all contact with this substance.

**Hygiene measures:** When using do not eat, drink or smoke. Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Remove contaminated clothing and shoes.

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

**Storage conditions:** Store in dry, cool, well-ventilated area. Keep away from food, drink and animal feeding stuffs.

**Incompatible products:** Oxidising agent

**Incompatible materials:** Remove all sources of ignition. Protect material from direct sunlight.

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

The identified uses for this product are detailed in section 1.2

### SECTION 8: Exposure controls/personal protection.

#### 8.1. Control parameters

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Chemical Name	United Kingdom
Silica, vitreous (Silica, fused respirable)	WEL TWA: 0.08 mg/m <sup>3</sup>

### Exposure Limits:

Follow workplace regulatory exposure limits for all types of airborne dust (e.g. total dust, respirable dust).

### Ingredients comments:

Dust contains respirable silica. Prolonged and/or massive inhalation of respirable silica dust may cause lung fibrosis. Commonly referred to as silicosis. Principal symptoms of silicosis are cough and breathlessness. Occupational exposure to respirable dust should be monitored and controlled. The product should be handled using methods and techniques that minimise or eliminate dust generation. The product contains less than 1% w/w RCS (respirable crystalline silica) as determined by the SWERF method. The respirable crystalline silica content can be measured using the "SizeWeighted Respirable Fraction – SWERF" method. All details about the SWERF method are available at [www.crystallinesilica.eu](http://www.crystallinesilica.eu)

### 8.2. Exposure controls

**Appropriate engineering controls:** Use as far as possible in a closed system. Provide a regular control of the atmosphere. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Local exhaust and general ventilation must be adequate to meet exposure standards. Please refer to the annex (exposure scenarios).

**Hand protection:** Since the product consists of several substances, it is possible to estimate the durability of the glove material beforehand and it therefore needs to be tested before use. Choosing the proper glove is a decision that depends not only on the type of material, but also on other quality features, which differ for each manufacturer. The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed. If repeated and/or prolonged skin exposure to the substance is likely, then wear suitable gloves tested to EN374 and provide employee skin care programmes

**Eye protection:** Wear safety glasses with side shields according to EN 166.

**Skin and body protection:** Wear closed protective clothing.

**Respiratory protection:** Use respiratory protection mask according to EN 140 or EN 405 with filter type P3 according to EN 143:2000 or FFP3 according to EN 149:2001.

**Environmental exposure controls:** Avoid release to the environment.

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## SECTION 9: Physical and chemical; properties.

Physical state	Solid Powder.
Colour	White/cream coloured.
Odour	odourless.

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Odour threshold	Not applicable
pH	5 – 7.5
pH solution	20% at 20°C
Relative evaporation rate (butylacetate=1)	No data available
Melting point	2,700 °C
Freezing point	No data available
Boiling point	No data available
Flash point	Not flammable
Self ignition temperature	Not applicable
Decomposition temperature	No data available
Flammability (solid, gas)	Not flammable
Vapour pressure	Not applicable.
Relative vapour density at 20 °C	No data available
Relative density	No data available
Density	5.7
Solubility	Material insoluble in water.
Log Pow	Not applicable
Log Kow	Not applicable
Viscosity, kinematic	Not applicable
Viscosity, dynamic	Not applicable
Explosive properties	Not explosive.
Oxidising properties	No data available. Explosive limits
	Not applicable

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity.

### 10.1. Reactivity

No specific reactivity hazards associated with this product.

### 10.2. Chemical stability

Stable under normal conditions of handling and storage.

### 10.3. Possibility of hazardous reactions

Not established.

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#### 10.4. Conditions to avoid

Not relevant

#### 10.5. Incompatible materials

Strong Oxidising agent.

#### 10.6. Hazardous decomposition products

Not relevant

### SECTION 11: Toxicological information.

#### 11.1. Information on toxicological effects

Acute toxicity	Based on available data, the classification criteria are not met.
Skin corrosion/irritation Serious	Based on available data, the classification criteria are not met.
eye damage/irritation Respiratory	Based on available data, the classification criteria are not met.
or skin sensitisation Germ cell	Based on available data, the classification criteria are not met.
mutagenicity Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity STOT	Based on available data, the classification criteria are not met.
– single exposure STOT –	Based on available data, the classification criteria are not met.
repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.
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## SECTION 12: Ecological information.

### 12.1. Toxicity

No additional information available.

### 12.2. Persistence and degradability

**Zirconium Dioxide:** No additional information available.

**Silica, vitreous:** Biodegradability in soil: not applicable.

Biochemical oxygen demand (BOD): Not applicable.

Chemical oxygen demand (COD): Not applicable. ThOD:

Not applicable.

BOD (% of ThOD): Not applicable.

### 12.3. Bioaccumulative potential

**Zirconium Dioxide:** Not established.

**Silica, vitreous:** No bioaccumulation data available.

### 12.4. Mobility in soil

No additional information available.

### 12.5. Results of PBT and vPvB assessment

No additional information available.

### 12.6. Other adverse effects

Avoid release to the environment.

## SECTION 13: Disposal considerations.

### 13.1. Waste treatment methods

**Waste disposal recommendations:**

Dispose in a safe manner and in accordance with local authority requirements.

**Ecology - waste materials:**

Avoid release to the environment.

**European List of Waste (LoW) code:**

10 00 00 – WASTES FROM THERMAL PROCESSES

10 12 00 – wastes from manufacture of ceramic goods, bricks, tiles and construction products.

10 12 99 – wastes not otherwise specified.

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**SECTION 14: Transport information.****14.1. UN number**

The product is not covered by international regulation on transport of dangerous goods (IMDG, IATA, ADR/RID).

**14.2. UN proper shipping name**

Not classified for transportation.

**14.3. Transport hazard class(es)** Not

classified for transportation.

**14.4. Packing group**

Not classified for transportation.

**14.5. Environmental hazards**

Other information: No environmental hazards known with this product.

**14.6. Special precautions for user** Not

classified for transportation.

**14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable.

## SECTION 15: Regulatory information.

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

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#### 15.1.1. EU Regulations

No REACH Annex XVII restrictions.

Contains no REACH candidate substance.

#### 15.1.2. National Regulations

Ensure all national/local regulations are observed.

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#### **EULegislation:**

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18<sup>th</sup> December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulations (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16<sup>th</sup> December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 with amendments.

#### **15.2. Chemical Safety Assessment.**

No chemical safety assessment has been carried out.

## **SECTION 16: Other information.**

#### **Indication of changes:**

The classification of the product (according to EU regulations) has been altered.

Full text of R, H and EUH phrases

**STOT RE 2:** Specific target organ toxicity – Repeated exposure, Category 2.

H373: May cause damage to organs through prolonged or repeated exposure.

**R48/20:** Harmful: danger of serious damage to health by prolonged exposure through inhalation.

**Xn:** Harmful

#### **Data sources:**

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixturejs, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

#### **Training advice:**

Workers must be informed of the presence of crystalline silica and trained in the proper use and handling of this product as required under applicable regulations.

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#### **Social Dialogue on Respirable Crystalline Silica**

A multi-sectorial social dialogue agreement on workers Health Protection through the Good Handling and Use of Crystalline Silica Products Containing it was signed on 25<sup>th</sup> April 2006. This autonomous agreement, which receives the European Commission's financial support, is based on a Good Practices Guide. The requirements of the Agreement came into force on 25<sup>th</sup> October 2006. The Agreement was published in the Official Journal of the European Union (2006/C 279/02). The text of the Agreement and its annexes, including the Good Practices Guide, are available from <http://wwwnepsi.eu> and provide useful information and guidance for the handling of products containing respirable crystalline silica. Literature references are available on request from EUROSIL, the European Association of Industrial Silica Producers.

#### **Health & Safety Executive (Specific for UK)**

Detailed reviews of the scientific evidence on the health effects of crystalline silica have been published by HSE (Health and Safety Executive, UK) in the Hazard Assessment Documents EH75/4 (2002) and EH75/5 (2003). The HSE points out on its website that "Workers exposed to fine dust containing quartz are at risk of developing a chronic and possibly severely disabling lung disease known as "silicosis". In addition to silicosis, there is now evidence that heavy and prolonged workplace exposure to dust containing crystalline silica can lead to an increased risk of lung cancer. The evidence suggests that an increased risk of lung cancer is likely to occur only in those workers who have developed silicosis". In addition to silicosis, there is now evidence that heavy and prolonged workplace exposure to dust containing crystalline silica can lead to an increased risk of lung cancer. The evidence suggests that an increased risk of lung cancer is likely to occur only in those workers who have developed silicosis.

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

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