Zinc oxide
Safety Data Sheet
according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830
Date of issue: 30/03/2012 Revision date: 10/04/2017

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

1.1. Product identifier
Product form : Substance
Substance name : Zinc oxide
Chemical name : zinc oxide
EC Index-No. : 030-013-00-7
EC-No. : 215-222-5
CAS-No. : 1314-13-2
Product code : 265225
Formula : ZnO
Product group : Raw material

1.2. Relevant identified uses of the substance or mixture and uses advised against
1.2.1. Relevant identified uses
Main use category : Pharmaceutical
Function or use category : Raw material

1.2.2. Uses advised against
No additional information available

1.3. Details of the supplier of the safety data sheet
Supplier
Duchefa Farma BV
A. Hofmanweg 71
2031BH Haarlem - The Netherlands
T +31(0)23-5319093
farma@duchefa.nl - www.duchefa-farma.com

1.4. Emergency telephone number
Emergency number : Supplier contact information:
+31(0)23-5319093 (M-F 09:00-17:00)
+31(0)6-30109355 (outside office hours)

<table>
<thead>
<tr>
<th>Country</th>
<th>Organisation/Company</th>
<th>Address</th>
<th>Emergency number</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>Guy's &amp; St Thomas' Poisons Unit, Medical Toxicology Unit, Centre Hospitalier Universitaire de Constantine</td>
<td>Avonley Road SE14 5ER London</td>
<td>0870 243 2241</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification according to Regulation (EC) No. 1272/2008 [CLP]
Hazardous to the aquatic environment — Chronic Hazard, Category 1 H410

Full text of hazard classes and H-statements : 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]

Hazard pictograms (CLP) : 
GHS09

Signal word (CLP) : Warning
Hazard statements (CLP) : H410 - Very toxic to aquatic life with long lasting effects
Precautionary statements (CLP) : P273 - Avoid release to the environment

2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
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</thead>
<tbody>
<tr>
<td>Zinc oxide</td>
<td>(CAS-No.) 1314-13-2 (EC-No.) 215-222-5 (EC Index-No.) 030-013-00-7</td>
<td>99 - 100.5</td>
<td>Aquatic Chronic 1, H410</td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16

3.2. Mixtures
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Assure fresh air breathing.
First-aid measures after skin contact : Wash skin with mild soap and water.
First-aid measures after eye contact : Rinse immediately with plenty of water.
First-aid measures after ingestion : Drink plenty of water. Induce vomiting if person is conscious. Seek medical advice.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms/effects : Irritation of the respiratory tract and the other mucous membranes. Gastrointestinal complaints.

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available
SECTION 5: Fire-fighting measures

5.1. Extinguishing media
Suitable extinguishing media: All extinguishing agents can be used.

5.2. Special hazards arising from the substance or mixture
Fire hazard: The product is not flammable.
Explosion hazard: Product is not explosive.

5.3. Advice for firefighters
Precautionary measures fire: Exercise caution when fighting any chemical fire.
Firefighting instructions: Prevent fire fighting water from entering the environment.
Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Emergency procedures: Ensure adequate air ventilation. Avoid raising dust.

6.1.2. For emergency responders
Protective equipment: Wear proper protective equipment.

6.2. Environmental precautions
Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up: Sweep up dry powder and dispose properly.

6.4. Reference to other sections
No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling
No additional information available

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Store in dry, well-ventilated area. Keep container tightly closed.
Maximum storage period: 5 year
Storage temperature: 15 - 25 °C

7.3. Specific end use(s)
Pharmaceutical industry.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

8.2. Exposure controls
Hand protection:

<table>
<thead>
<tr>
<th>Type</th>
<th>Material</th>
<th>Permeation</th>
<th>Thickness (mm)</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloves</td>
<td>Nitrile rubber (NBR)</td>
<td>6 (&gt; 480 minutes)</td>
<td>0.11</td>
<td>EN 374</td>
</tr>
</tbody>
</table>

Eye protection:

Safety glasses

Skin and body protection:

Not required

Respiratory protection:

Dust production: dust mask with filter type P1

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Solid
Appearance: Amorphous powder.
Molecular mass: 81.4 g/mol
Colour: White. Slightly yellow.
Odour: Odourless.
Odour threshold: No data available
pH: ca. 8
pH solution: 100 g/l 20ºC
Relative evaporation rate (butylacetate=1): No data available
Melting point: 1975 °C
Freezing point: No data available
Boiling point: 1800 ºC
Flash point: No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): No data available
Vapour pressure: No data available
Relative vapour density at 20 ºC: No data available
Relative density: No data available
Density: ca. 5.5 g/cm³ 20ºC
Solubility: Water: < 2 mg/l 20°C

Log Pow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available

9.2. Other information

No additional information available
SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
Strong bases. Strong acids.

10.6. Hazardous decomposition products
No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>Not classified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zinc oxide (1314-13-2)</strong></td>
<td></td>
</tr>
<tr>
<td>LD50 oral rat</td>
<td>15000 mg/kg</td>
</tr>
<tr>
<td>LC50 inhalation rat</td>
<td>5.7 mg/l/4h</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>pH: ca. 8</td>
<td></td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>pH: ca. 8</td>
<td></td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>STOT-single exposure</td>
<td>Not classified</td>
</tr>
<tr>
<td>STOT-repeated exposure</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
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</table>

SECTION 12: Ecological information

12.1. Toxicity

<table>
<thead>
<tr>
<th><strong>Zinc oxide (1314-13-2)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>1.1 mg/l Oncorhynchus mykiss</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>2.2 mg/l 48 h</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information 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
No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Waste treatment methods: Avoid release to the environment.
Waste disposal recommendations: Dispose of this material and its container at hazardous or special waste collection point.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

<table>
<thead>
<tr>
<th>ADR</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1. UN number</td>
<td>3077</td>
</tr>
<tr>
<td>14.2. UN proper shipping name</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. Not applicable</td>
</tr>
<tr>
<td>14.3. Transport hazard class(es)</td>
<td>9</td>
</tr>
<tr>
<td>14.4. Packing group</td>
<td>III</td>
</tr>
<tr>
<td>14.5. Environmental hazards</td>
<td>Dangerous for the environment: Yes</td>
</tr>
</tbody>
</table>

14.6. Special precautions for user

- Overland transport
  Classification code (ADR): M7
  Excepted quantities (ADR): E1
  Hazard identification number (Kemler No.): 90
  Orange plates: 90
  Tunnel restriction code (ADR): E
  EAC code: 2Z

- Air transport
  No data available

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable
SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions
Zinc oxide is not on the REACH Candidate List
Zinc oxide is not on the REACH Annex XIV List

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

<table>
<thead>
<tr>
<th>1.4</th>
<th>Emergency telephone</th>
<th>Modified</th>
<th>Added additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>R-phrases</td>
<td>Removed</td>
<td>Obsolete</td>
</tr>
<tr>
<td>8.2</td>
<td>Hand protection</td>
<td>Modified</td>
<td>Specified material, thickness, etcetera of gloves</td>
</tr>
</tbody>
</table>

Abbreviations and acronyms:

<table>
<thead>
<tr>
<th>SDS</th>
<th>Safety Data Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>RID</td>
<td>Regulations concerning the International Carriage of Dangerous Goods by Rail</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>ADR</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Road</td>
</tr>
<tr>
<td>ADN</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways</td>
</tr>
<tr>
<td>CLP</td>
<td>Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008</td>
</tr>
</tbody>
</table>

Data sources:


Full text of H- and EUH-statements:

<table>
<thead>
<tr>
<th>Aquatic Chronic 1</th>
<th>Hazardous to the aquatic environment — Chronic Hazard, Category 1</th>
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<tbody>
<tr>
<td>H410</td>
<td>Very toxic to aquatic life with long lasting effects</td>
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SDS EU (REACH Annex II) Version 2017

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.