Zinc oxide: sc-213180

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION
Product Name: Zinc oxide
Product Number: sc-213180
Supplier: Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, CA 95060
800.457.3801 or 831.457.3800
Emergency: ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255 (1-800-CHEMCALL) or call +613 9573 3112

2. HAZARDS IDENTIFICATION
Emergency Overview
OSHA Hazards
No known OSHA hazards
GHS Classification
Skin irritation (Category 3)
Eye irritation (Category 2B)
Acute aquatic toxicity (Category 1)
GHS Label elements, including precautionary statements
Pictogram

Signal word
Warning
Hazard statement(s)
H316 Causes mild skin irritation.
H320 Causes eye irritation.
H400 Very toxic to aquatic life.
Precautionary statement(s)
P273 Avoid release to the environment.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification
Health hazard: 0
Flammability: 0
Physical hazards: 0

NFPA Rating
Health hazard: 0
Fire: 0
Reactivity Hazard: 0

Potential Health Effects
Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS
Formula: ZnO
Molecular Weight: 81.39 g/mol
CAS Number: 1314-13-2
4. FIRST AID MEASURES
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.
If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact
Wash off with soap and plenty of water. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES
Conditions of flammability
Not flammable or combustible.
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.
Hazardous combustion products
Hazardous decomposition products formed under fire conditions - Zinc/zinc oxides

6. ACCIDENTAL RELEASE MEASURES
Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE
Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.
Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place at room temperature.

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<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc oxide</td>
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<tr>
<td>CAS-No.</td>
<td>1314-13-2</td>
</tr>
<tr>
<td>EC-No.</td>
<td>215-222-5</td>
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<tr>
<td>Index-No.</td>
<td>030-013-00-7</td>
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc oxide</td>
<td>1314-13-2</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
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<td></td>
<td>TWA</td>
<td>2 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
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<tr>
<td>Remarks</td>
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<td></td>
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<tr>
<td>STEL</td>
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<td>10 mg/m³</td>
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<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
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</tr>
<tr>
<td>Hand protection</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immersion protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material: Nitrile rubber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum layer thickness: 0.11 mm</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Break through time: &gt; 480 min</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Material tested: Dermatri® (Aldrich Z677272, Size M)</td>
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<td></td>
<td></td>
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<tr>
<td>Splash protection</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material: Nitrile rubber</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum layer thickness: 0.11 mm</td>
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<td></td>
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<tr>
<td>Break through time: &gt; 30 min</td>
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<td>Material tested: Dermatri® (Aldrich Z677272, Size M)</td>
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</tr>
</tbody>
</table>

Personal protective equipment

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).

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.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 480 min
Material tested: Dermatri® (Aldrich Z677272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 30 min
Material tested: Dermatri® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.
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, 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Form</td>
<td>powder</td>
<td></td>
</tr>
<tr>
<td>Melting point/freezing point</td>
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<td></td>
</tr>
<tr>
<td>Flash point</td>
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</tr>
<tr>
<td>Autoignition temperature</td>
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<td></td>
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<tr>
<td>Upper explosion limit</td>
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<tr>
<td>Density</td>
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<td></td>
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<tr>
<td>Relative vapor density</td>
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<tr>
<td>Odor Threshold</td>
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<tr>
<td>Partition coefficient: n-octanol/water</td>
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<tr>
<td>pH</td>
<td>Boiling point</td>
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<tr>
<td>Ignition temperature</td>
<td>Lower explosion limit</td>
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<tr>
<td>Vapor pressure</td>
<td>Water solubility</td>
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<tr>
<td>Odor</td>
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<tr>
<td>Evaporation rate</td>
<td>no data available</td>
<td></td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions - Zinc/zinc oxides

Other decomposition products
no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
- LD50 Oral - mouse - 7,950 mg/kg
- LC50 Inhalation - mouse - 2,500 mg/m³
- Dermal LD50 - no data available

Other information on acute toxicity
no data available

Skin corrosion/irritation
- Skin - rabbit - Mild skin irritation - 24 h

Serious eye damage/eye irritation
- Eyes - rabbit - Mild eye irritation - 24 h
- Eyes - rabbit - Mild eye irritation - 24 h

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
Genotoxicity in vitro - Hamster - Embryo
 Unscheduled DNA synthesis

Genotoxicity in vitro - Hamster - Embryo
Morphological transformation.

Genotoxicity in vitro - Hamster - Embryo
Sister chromatid exchange

Genotoxicity in vivo - guinea pig - Inhalation
 Unscheduled DNA synthesis

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.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Teratogenicity
Developmental Toxicity - rat - Oral
Specific Developmental Abnormalities: Homeostasis Effects on Newborn: Stillbirth. Effects on Newborn: Growth statistics (e.g., reduced weight gain).

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

Potential health effects
Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion May be harmful if swallowed.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.

Signs and Symptoms of Exposure
Zinc oxide dust or fume can irritate the respiratory tract. Prolonged skin contact can produce a severe dermatitis called oxide pox. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain, and nausea followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a Bluish tint to the skin., prolonged or repeated exposure can cause; Reversible liver enzyme abnormalities. Diarrhea.

Synergistic effects
no data available

Additional Information
RTECS: ZH4810000

12. ECOLOGICAL INFORMATION

Toxicity
Toxicity to fish LC50 - Oncorhynchus mykiss (rainbow trout) - 1.1 mg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 0.098 mg/l - 48h

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc oxide)
Marine pollutant: Marine pollutant
UN number: 3077  Class: 9  Packing group: III  
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Zinc oxide)

**Further information**
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

### 15. REGULATORY INFORMATION

**OSHA Hazards**
No known OSHA hazards

**SARA 302 Components**
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**
The following components are subject to reporting levels established by SARA Title III, Section 313:

- **Zinc oxide**

**SARA 311/312 Hazards**
No SARA Hazards

**Massachusetts Right To Know Components**
Zinc oxide  CAS-No. 1314-13-2

**Pennsylvania Right To Know Components**
Zinc oxide  CAS-No. 1314-13-2

**New Jersey Right To Know Components**
Zinc oxide  CAS-No. 1314-13-2

**California Prop. 65 Components**
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

### 16. OTHER INFORMATION

*The above information is believed to be correct but does not purport to be complete and should be used only as a guide. The burden of safe use of this material rests entirely with the user.*

11/20/2012