

Zinc Oxide, USP

Safety Data Sheet according to Federal Register / Vol. 77, No. 58 /
March 26, 2012 / Rules and Regulation

Revision Date: 11-Feb-2021
Supersedes: 20-Dec-2017

1 PRODUCT & COMPANY IDENTIFICATION

Product Name:	Zinc Oxide, USP	Distributor:	XI'AN AOGU BIOTECH CO.,LTD
Synonyms:	Not available	Address:	Room 606,Block B3,Jinye Times,No.32,East Section of Jinye Road,Yanta District, Xi'an Shaanxi 710065 China
INCI Name:	Zinc Oxide	Phone / Fax:	0086-29-89121514 0086-18091843361
CAS Number:	1314-13-2	Web:	www.aogubio.com
Formula:	ZnO	Emergency Telephone Number:	0086-18091843361
Product Form:	Powder	(Chemtrec)	
Product Use:	Cosmetic use		

2 HAZARDS IDENTIFICATION

GHS Classification:	Not classified												
GHS Labeling:	Not a dangerous substance according to GHS												
GHS Hazard Pictograms:	None												
GHS Hazard Statements:	None												
GHS Precautionary Statements:	None												
Potential Health Hazards:	Eyes: Not expected to be irritant. Inhalation: Not expected to be irritant. Skin: Not expected to be irritant. Ingestion: Not expected to be irritant.												
NFPA Ratings (704):	<table border="0"> <tr> <td style="background-color: #0000FF; color: white;">Health</td> <td>1</td> <td>Slight</td> </tr> <tr> <td style="background-color: #FF0000; color: white;">Flammability</td> <td>0</td> <td>Minimal</td> </tr> <tr> <td style="background-color: #FFFF00; color: black;">Reactivity</td> <td>0</td> <td>Minimal</td> </tr> <tr> <td>Specific Hazard</td> <td>E</td> <td>Mask, gloves, and goggles are recommended in bulk dust concentrations</td> </tr> </table>	Health	1	Slight	Flammability	0	Minimal	Reactivity	0	Minimal	Specific Hazard	E	Mask, gloves, and goggles are recommended in bulk dust concentrations
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3 COMPOSITION/INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS No.</u>	<u>Weight %</u>	<u>Molecular Weight</u>
Zinc Oxide	1314-13-2	100%	81.38 g/mol

Other naturally occurring impurities below SDS threshold limits.
After manufacturing during handling & storage, product degrades with exposure to air acquiring some moisture and zinc carbonate (ZnCO₃) & carbonate.

4 FIRST AID MEASURES

Eyes:	In case of eye contact, rinse with plenty of water and seek medical advice.
Inhalation:	Move to fresh air. Keep warm and at rest. Seek medical attention if necessary.
Skin:	Wash with soap and water. Seek medical attention if necessary.
Ingestion:	Drink plenty of water. Do Not Induce Vomiting! Never give anything by mouth to an unconscious person. Call a physician.
Most Important Symptoms:	Acute: dry cough, headache Chronic: none (overexposure has no lasting effects) Indication of any immediate treatment needed: Bad cough or headache. In these instances, move person to fresh air. No special treatment known.

5 FIRE-FIGHTING MEASURES

<p>Suitable (and unsuitable) extinguishing media:</p> <p>Special protective equipment & precautions for firefighters:</p> <p>Flash Points:</p> <p>Specific hazards arising from the chemical:</p>	<p>Product is not flammable. Use appropriate media for adjacent fire. Cool unopened containers with water.</p> <p>Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.</p> <p>None known</p> <p>None known. Avoid release of fire control water containing zinc oxide to the environment. See also Stability and Reactivity section.</p>
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6 ACCIDENTAL RELEASE MEASURES

<p>Personal precautions:</p> <p>Environmental precautions:</p> <p>Methods and material for containment and cleaning up:</p>	<p>Wear protective clothing, dust respirator, and goggles in bulk excess dust conditions. Shovel up spills into appropriate labeled container. Dry spills, not mixed with other chemicals, may be recyclable. See section 8 for recommendations on the use of personal protective equipment.</p> <p>Avoid liquid release into sewers/public water. Notify environmental authorities in case of large leaks.</p> <p>Recover the product by vacuum. Use damp cloth for small area. Avoid sweeping to reduce creation of airborne dust. Dispose of all waste and cleanup materials in accordance with regulations</p>
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7 HANDLING & STORAGE

<p>Precautions for safe handling:</p> <p>Conditions for safe storage, incl. any incompatibilities:</p>	<p>Wear protective clothing, dust respirator, and goggles in bulk excess dust conditions. See section 8 for recommendations on the use of personal protective equipment. Keep container closed when not in use.</p> <p>Store in cool, dry well-ventilated area. Keep away from heat and incompatible materials (see section 10 for incompatibilities).</p>
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8 EXPOSURE CONTROLS / PERSONAL PROTECTION

<u>Component</u>	<u>Exposure Limits</u>	<u>Basis</u>	<u>Entity</u>
Zinc Oxide	15 mg/m ³ (dust)	CEIL	NIOSH REL (US, 10/2013)
	5 mg/m ³ (dust)	TWA (10hr)	NIOSH REL (US, 10/2013)
	10 mg/m ³ (fume)	STEL (15 min)	ACGIH TLV (US, 4/2014)
	2 mg/m ³ (respirable fraction)	TWA (8h)	ACGIH TLV (US, 4/2014)
	5 mg/m ³ (fume)	TWA (8h)	OSHA PEL (US, 2/2013)
	5 mg/m ³ (respirable fraction)	TWA (8h)	OSHA PEL (US, 2/2013)
	15 mg/m ³ (total dust)	TWA (8h)	OSHA PEL (US, 2/2013)
	10 mg/m ³ (respirable fraction)	STEL (15 min)	OSHA PEL (US, 2/2013)
	2 mg/m ³ (respirable fraction)	TWA (8h)	US ACGIH 4/2012 (Canada)
	10 mg/m ³ (respirable fraction)	STEL (15 min)	US ACGIH 4/2012 (Canada)
	2 mg/m ³ (respirable)	TWA (8h)	AB 4/2009 (Canada)
	10 mg/m ³ (respirable)	STEL (15 min)	AB 4/2009 (Canada)
	2 mg/m ³ (respirable)	TWA (8h)	BC 7/2013 (Canada)
	10 mg/m ³ (respirable)	STEL (15 min)	BC 7/2013 (Canada)
	2 mg/m ³ (respirable fraction)	TWA (8h)	ON 1/2013 (Canada)
	10 mg/m ³ (respirable fraction)	STEL (15 min)	ON 1/2013 (Canada)
	5 mg/m ³ (fume)	TWA (8h)	QC 1/2014 (Canada)
	10 mg/m ³ (fume)	STEL (15 min)	QC 1/2014 (Canada)
	10 mg/m ³ (powder)	LMPE-PPT (8h)	NOM-010-STPS (Mexico, 9/2000)
	10 mg/m ³ (smoke)	LMPE-CT (15 min)	NOM-010-STPS (Mexico, 9/2000)
5 mg/m ³ (smokeNON-010)	LMPE-PPT (8h)	NOM-010-STPS (Mexico, 9/2000)	

TWA: Time Weighted Average over 8 hours of work.
 TLV: Threshold Limit Value over 8 hours of work.
 REL: Recommended Exposure Limit

STEL: Short Term Exposure Limit during x minutes.
 IDLH: Immediately Dangerous to Life or Health
 WEEL: Workplace Environmental Exposure Levels

PEL: Permissible Exposure Limit

CEIL: Ceiling

Personal Protection:

Eyes: Recommend safety glasses in bulk dust conditions.
Inhalation: Recommend dust filter mask in bulk dust conditions. Must wear respiratory of proper type if exposure above 8hr TWA PEL.
Skin: Recommend long sleeves in bulk dust conditions. Recommend gloves to reduce drying of skin.
Other: Use good personal hygiene practices. Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.
Routes of Entry: Inhalation; Dermal; Eyes; Digestion

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid, powder or pellet, granular	Vapor Pressure:	Not applicable (melting point above 300°C)
Odor:	Odorless	Vapor Density:	Not applicable
Odor Threshold:	No data available	Evaporation Rate:	No data available
Color:	White, off-white, cream, grayish, or yellowish	Flammability:	Not flammable. Will not burn
Molecular Weight:	81.38 (ZnO)	Upper/lower Explosive Limit:	Not applicable
pH:	Neutral, 6.8-8 (7.37 nominal)	Flash Point:	Not applicable to inorganic substances
Boiling Point:	Not applicable; substance decomposes before boiling	Specific Gravity:	5.68 g/cm ³
Melting Point:	Will not melt. Malleable above 300°C/57°F. Sublimation temp 1975°C.	Solubility:	In bases and acids
Relative Density:	5.68 g/cm ³	Auto-Ignition Temperature:	Not auto-flammable
Partition Coefficient: n-octanol/water:	Not applicable to inorganic substances	Decomposition Temperature:	Not applicable
Viscosity:	No data available	Explosive Properties:	No data available. Will not freeze.
Oxidizing Properties:	No data available	Freezing Point:	Malleable above 300°C/57°F. Sublimation temp 1975°C.
Granulometry:	D50 1.05µm, D80 <20µm		

10 STABILITY AND REACTIVITY

Reactivity:	Stable under normal dry air conditions.
Chemical Stability:	Product is stable
Possibility of Hazardous Reactions:	None.
Conditions to Avoid:	Keep from getting wet (will damage substance usefulness)
Hazardous Decomposition Products:	None
Incompatible Materials:	Heated magnesium. Chlorinated rubber above 25°C.
Decomposition:	Product decomposes in acids and bases.
Degradation:	Slow degrade to zinc carbonate (not hazardous)*

*ZnO + CO₂ in ambient air -> ZnCO₃ zinc carbonate. Rate accelerated with higher m²/g surface area or damp storage conditions. Shelf life: One year from date of manufacturing for rubber applications (due to potential dispersion problems with ZnCO₃ hard particulate formation), eighteen months for USP, EP, and most other applications.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity:	With LD50 values consistently exceeding 2000 mg/kg bw, slightly soluble compounds such as, zinc oxide (LD50 ranges between 5000-15000 mg/kg bw) show low level of acute oral toxicity, not leading to classification for acute oral toxicity. Zinc oxide is shown to be of low acute inhalation toxicity (i.e., LC50 values of >5.7 mg/L/4hrs), not leading to classification for acute inhalation toxicity.
Skin:	Not irritant (Löser, 1977; Lansdown, 1991)
Eyes:	Not irritant (Van Huygevoort, 1999e; Thijssen, 1978; Löser, 1977)
Respiratory:	Not irritant (Klimi-sh et al, 1982) LC50 (Inhalation): >5.7 mg/L (4h) (Klimisch and Freisberg (1982)) LC50 (dusts and mists): >5700 mg/m ³ (4h) (Klimisch and Freisberg (1982))
Ingestion:	Not irritant (zinc oxide is used as a human vitamin supplement) LD50:15000 mg/kg (Löser (1972)) LD50: >5000 mg/kg (Löser (1977))
Carcinogenicity:	Not a NTP/IARC Carcinogen
Teratogenicity:	No data available
Germ Cell Mutagenicity:	No biologically relevant genotoxic activity.
Embryotoxicity:	No data available
Specific Target Organ Toxicity:	Repeated exposure: None (Lam et al., 1985, 1988; Conner et al., 1988) Single exposure: None (Heydon and Kagan, 1990; Gordon et al., 1992; Mueller and Seger, 1985)
Reproductive Toxicity:	No evidence of reproductive toxicity
Respiratory/Skin Sensitization:	No data available
Corrosivity:	No data available
Sensitization:	No sensitizing effects known (Van Huygevoort, 1999g, h)
Irritation:	No data available
Repeated Dose Toxicity:	No data available

12 ECOLOGICAL INFORMATION

Ecotoxicity:	
Aquatic Vertebrate:	Acute EC50: 0.413 mg/L Zn (48h) (<i>Ceriodaphnia dubia</i>)
Aquatic Invertebrate:	Acute EC50: 0.136 mg/L Zn (72h) (<i>Selenastrum capricornutum</i>) 62% solubilization capacity at 1mg/L at pH 8: For pH <7: 0.67 mg Zn/L (based on 48h <i>Ceriodaphnia dubia</i> test cf. above) For pH >7-8.5: 0.21 mg Zn/L (based on 72h <i>Selenastrum capricornutum</i> test cf. above)
Terrestrial:	No data available
Persistence and Degradability:	N/A, zinc is an element
Bioaccumulative Potential:	N/A, ZnO does not bioaccumulate or biomagnify
Mobility in Soil:	N/A
PBT and vPvB Assessment:	N/A, zinc oxide is not a PBT or vPvB.
Other Adverse Effects:	None

13 DISPOSAL CONSIDERATIONS

Waste Residues:	USEPA Law: waste zinc oxide must be TCLP testing to determine proper disposal classification. Substance will generally pass TCLP. State Law: Material may be regulated locally as industrial or special waste. Recyclable: Waste material not commingles with other substances may be recyclable. Contact Zinc Oxide LLC for further information. This material, if sent for recycling, is exempt from US Federal, State, and local waste regulations and TRI transfer reporting.
Product Containers:	Empty used packaging is not regulated waste.

The information in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods

14 TRANSPORT INFORMATION

DOT (Dept. of Transportation, USA):	Not regulated
TDG (Transportation of Dangerous Goods, Canada):	No data available
IMDG (International Maritime Dangerous Goods):	No data available
IATA (International Air Transport Association):	No data available
ICAO (International Civil Aviation Organization):	No data available

15 REGULATORY INFORMATION

TSCA Inventory Status:	Yes, listed, notification not required.
DSCL (EEC):	Yes, listed.
NDSL (Canada):	No, not listed, notification not required.
EU EINECS/ELINCS/NLP:	EINECS: Yes, on inventory. ELINCS: No, notification/reporting not required.
China IECSC:	Yes, listed.
China IECIC (06.30.2014):	No data available
Australia AICS:	Yes, listed.
ASIA-PAC:	Yes, listed.
SWISS:	Yes, listed.
Philippines PICCS:	Yes, listed.
Japan ENCS:	Yes, listed.
Korea KECI:	Yes, listed.
New Zealand:	Yes, listed.
Taiwan:	Yes, listed.
US Regulations:	Not transport regulated in the US (USDOT 49CFR172), Canada, or Mexico.
Transportation:	HS Tariff Class#: 2817.00.0000, preference B
SARA 302:	Name listed (zinc). RQ = None, TPQ = None.
SARA 312:	Yes, acute hazard, EPCRA Tier 2 must be filed with state and local agencies.
SARA 313:	Yes, TRI on Form R must be filed for Zn & Pb Compounds if usage is above threshold.
CA. Prop 65:	No, ZnO is not a Prop 65 listed substance. Impurities Pb & Cd listed.
CAA 112, 61 HAP:	No, not regulated, no Hazardous Air Pollutants (HAP's)
FIFRA 152 et seq:	No, product is not subject to FIFRA registration.
CERCLA 102/103:	Zinc is on Name List, RQ = None.
CONEG:	Compliant.
ODS/ODC 82:	No ozone depleting substances.
USFDA:	Approved by FDA. Substance is listed as GRAS as 21CFR182.8991 (GRAS = Generally Recognized as Safe) and may be used in any FDA regulation where use of a GRAS substance is authorized including an ingredient in food and in food contact in rubber articles ad 21CFR177.2600(c)(1); Food can linings and coatings at 21CFR175.300(b)(2), and Plastics at 21CFR170.30(d).
REACH (EEA):	17-2120064320-70-0000 REACH Pre-Registration valid for tonnage band till June 1, 2018. OR Information: ROR, UK, +44(0) 1565 724241, email: alerts@RORltd.com
Transportation:	This product tis listed by EU regulation as transport regulated in EU/EEA member countries by EU regulations.
SVHC:	Zinc oxide is not an SVHC. Impurities are below SVHC or candidate SVHC thresholds.
Nano:	This product is not nano (per EU definition of nano as 50% particles <0.1um)

16 OTHER INFORMATION

Revision Date:	11-Feb-2021
Compliance:	This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200
Disclaimer:	This 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 other process. Such information is to be the best of the company's knowledge and believed accurate and reliable as of the date indicated. However, no representation, warranty or guarantee of any kind, express or implied, is made as to its



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