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SAFETY DATA SHEET

ZINC OXIDE

SCOPE. This SDS is compliant with GHS and regulations for United States, Canada, Mexico, Brazil, Columbia, Thailand, Singapore, etc. and most global jurisdictions.
This SDS is not valid where zinc oxide is listed as transportation regulated which includes, but not limited to, European Union member states, P.R.C., and Japan.

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

1.1 Product identifier

Product Name: Zinc Oxide

Synonyms: zinc oxide – standard, Chinese white

CAS number: 1314-13-2 EC number: 215-222-5

Molecular formula: OZn Molecular weight range 81.4084

This substance is not nano. This SDS covers all grades of Zochem zinc oxide

The substance, zinc oxide, is a mono constituent substance (origin: inorganic)

1.2 Relevant identified uses of the substance

Common uses include:

- Rubber compound
- Coloring agents, pigments
- Food/feedstuff additives
- Fuels and fuel additives
- Intermediates
- Laboratory chemicals
- Lubricants and lubricant additives
- Plating agents and metal surface treating agents
- Process regulators, other than polymerization or vulcanization processes
- Component in batteries
- Corrosion inhibitors and anti-scaling agents
- Fertilizers
- Pharmaceutical substance
- Photosensitive agents and other photo-chemicals
- Process regulators, used in vulcanization or polymerization processes
- Processing aid, not otherwise listed
- Semiconductors

1.3 Uses advised against: None

1.4 Details of the supplier of the safety data sheet: (website: www.zochem.com)

Zochem LLC (South Plant) (Responsible Party) Zochem ULC (North Plant)

600 Printwood Drive, Dickson, TN 37055 U.S.A. 1 Tilbury Court, Brampton, ON, Canada, L6T 3T4
Phone: +1 615 446 8791 +1 800 324 1806

1.5 **Emergency telephone number:** (+1) 901-833-2118, (+1) 647-237-7222

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Name: zinc oxide (low level impurities, hexagonal crystalline structure)

Degree of purity: >99.0 % (w/w). All metal impurities <0.1%.

Hazard Classification: none

Precautionary classification: none

2.2 **Label elements:** none

2.3 **Other hazards:** None.

SECTION 3: Composition/information on ingredients

3.1 Substances:

<u>Constituent</u>	<u>Typical Concentration</u>	<u>Concentration range</u>	<u>Remarks</u>
zinc oxide*	ca. 99.9% (w/w)	>99.0% -- <100.0%	hexagonal crystalline structure

(*CAS no. 1314-13-2, EC no. 215-222-5)

State/form of the substance: powder

Additional information on impurities:

Contains naturally occurring inorganic impurities less than SDS reporting de minimis.

Product may contain processing aid at customer request.

After manufacturing, product absorbs minimal moisture from humidity in air during handling and storage.

3.2 **Mixtures:** not applicable

SECTION 4: First aid measures

4.1 Description of first aid measures

In case of skin contact: Wash with soap and water.

In case of eye contact: Rinse with plenty of water and seek medical advice.

In case of Ingestion: Drink plenty of water; do not induce vomiting; call a physician.

In case of Inhalation: Move to fresh air. Keep warm and at rest.

4.2 Most important symptoms and effects, both acute and delayed

Acute: Dry cough, headache. Chronic: None (overexposure has no lasting effects).

4.3 Indication of any immediate medical attention and special treatment needed

Bad cough or headache. Move person to fresh air. No special treatment known.

SECTION 5: Firefighting measures

5.1 Extinguishing media

None. Zinc oxide will not burn.

Use extinguishing media appropriate for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

None. Hazardous decomposition product(s): None.

5.3 Advice for firefighters

Avoid release of fire control water containing zinc oxide to the environment.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

In excessive dust conditions, wear protective clothing, dust respirator, and goggles.

6.2 Environmental precautions

Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Small or large spills, shovel up spills into appropriate labeled container.

Recover the product by vacuum.

If sweeping unavoidable, use soft bristles to reduce creation of airborne dust.

Dry spills, not mixed with other chemicals, may be recyclable. Contact Zochem.

6.4 Reference to other sections: none

SECTION 7: Handling and storage

7.1 Precautions for safe handling

In excessive dust conditions, wear protective clothing, dust respirator, and goggles.

7.2 Conditions for safe storage, including any incompatibilities

Keep dry.

7.3 Specific end use(s): not applicable (no specific end use)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters and exposure limits

United States (Ingredient name: Zinc oxide)

NIOSH REL (United States, 10/2013). CEIL: 15 mg/m ³ Form: Dust TWA: 5 mg/m ³ 10 hours. Form: Dust & fumes	OSHA PEL (United States, 2/2013). TWA: 5 mg/m ³ 8 hours. Form: Fume TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust STEL: 10 mg/m ³ 15 minutes. Form: Respirable fraction
ACGIH TLV (United States, 4/2014). STEL: 10 mg/m ³ 15 minutes. Form: Fume TWA: 2 mg/m ³ 8 hours. Form: Respirable fraction	

Canada (Ingredient name: Zinc oxide)

	TWA (8 hr) mg/m3	STEL (15 min) mg/m3	Note
US ACGIH 4/2014	2	10	Respirable fraction
AB 4/2009	2	10	Respirable
BC 7/2013	2	10	Respirable
ON 1/2013	2	10	Respirable fraction
QC 1/2014	5	10	fume

Mexico (Ingredient name: Zinc oxide)

NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 10 mg/m ³ 8 hours. Form: powder LMPE-CT: 10 mg/m ³ 15 minutes. Form: smoke LMPE-PPT: 5 mg/m ³ 8 hours. Form: smokeNON-010
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8.2 Exposure controls/Personal protection:

Route(s) Of Entry: 1. Inhalation. 2. Dermal. 3. Eyes. 4. Digestion.

Eye protection: Recommend safety glasses in bulk excess dusk conditions.

Protection for skin: Recommend long sleeves in bulk excess dust conditions.

Protection for hands: Recommend gloves to reduce drying of skin

Respiratory protection: Recommend dust filter mask in bulk dust conditions.

(Must wear respirator of proper type if exposure above 8 hour TWA)

8.2.1 Appropriate engineering controls: Use exhaust filter ventilation.

8.2.3. Environmental exposure control: Avoid release to water

SECTION 9: Physical and chemical properties

- 9.1 **Information on basic physical and chemical properties** (N/A = not applicable)
- A. Physical state: Solid, powder or granular
 - B. Color: White, off white, cream, grayish, or yellowish
 - C. Odor: Odorless
 - D. Melting point/freezing point: Will not melt. Will not freeze. Malleable > 300°C/572°F
Sublimation 1975°C. No observable exothermic, endothermic, oxidation, or decomposition.
 - E. Boiling point: N/A (substance decomposes before boiling)
 - F. Flammability: Not flammable. Will not burn
 - G. Lower and upper explosion limit: N/A (does not apply to solids)
 - H. Flash point: N/A (does not apply to inorganic solids)
 - I. Auto-ignition temperature: The substance is not auto-ignitable or explosive
 - J. Decomposition temperature: N/A
 - K. pH: Neutral, 6.8 to 8 (7.37 nominal), in DiH₂O
 - L. Kinematic viscosity: N/A (does not apply to solids)
 - M. Solubility: Negligible (solubility of Zn in ZnO is 2.9 mg/l in water)
 - N. Partition coefficient n-octanol/water: N/A (does not apply to inorganic substances)
 - O. Vapor pressure: N/A (melting point above 300°C)
 - P. Density: 5.68 g/cm³
 - Q. Relative vapor density: N/A (does not apply to solids)
 - R. Particle characteristics: typical D50 <10 um, D80 <20 um, by laser diffraction
 - S. Surface area: 2-9 m²/g typical
 - T. Nano: This product is not nano (over 50% of substance particles by number are over 100 nm size).

SECTION 10: Stability and reactivity

- 10.1 **Reactivity:** Stable under normal dry air conditions
- 10.2 **Chemical stability:** Product is stable
- 10.3 **Possibility of hazardous reactions:** None
- 10.4 **Conditions to avoid:** Keep from getting wet, moisture will damage substance*
- 10.5 **Incompatible materials:** Heated magnesium. Chlorinated rubber above 215C
- 10.6 **Hazardous decomposition products:** None
- 10.7 **Decomposition:** Product decomposes in acids and bases
- 10.8 **Degradation/shelf life:** Slow degrade to zinc carbonate (not hazardous)*

*ZnO testing expiration is 12 months from date of manufacturing (DOM) for >= 8.0 m²/g surface area, rubber applications, and product stored under roof only. Testing expiration is 18 months from DOM for <8 m²/g in other applications and stored inside a building. Product should be consumed within one month after bag opening. Bags stored in >65% RH (relative humidity) should be used within six months. Processes sensitive to clumping should use within 6 months or pre-screen product before use. ZnO slowly degrades to zinc carbonate (ZnCO₃) by reacting with CO₂ in ambient air accelerated by moisture or higher m²/g surface area. Degraded product may have hard particulates.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

a) **Acute Toxicity – classification criteria not met:** Not acute toxic

<u>Values provided for ZnO</u>	<u>Effect dose/ concentration</u>	<u>Species</u>	<u>Method</u>
Acute oral toxicity	LD50 >2000 mg/kg bw	Rat	OECD 401 & OECD 423

Acute inhalation toxicity	LC50 >5.7 mg/L	Rat	OECD 403
Acute dermal toxicity	LD50 >2000 mg/kg bw	Rat	OECD 402

- b) Skin corrosion / irritation - classification criteria not met:** Not skin irritant
- c) Serious eye damage/irritation - classification criteria not met:** Not eye irritant
- d) Respiratory or skin Sensitization - classification criteria not met:** Not sensitizing
- e) Germ cell mutagenicity – classification criteria not met:** Not germ cell mutagen.
- f) Carcinogenicity:** Not a NTP/IARC carcinogen.
- g) Reproductive toxicity – classification criteria not met:** Not reproductive toxic
- h) Specific Target Organ Toxicity – STOT-single exposure:** Zochem’s ZnO product has no STOT Metal fume fever is N/A, will not occur using Zochem zinc oxide substance.
- i) Specific Target Organ Toxicity- STOT-repeated exposure- Animal data:** classification criteria not met.
- j) Aspiration/respiratory tract hazard:** Not irritant, not classified.

11.2 Information on other hazards

11.2.1. Endocrine disrupting properties: Substance is not classified as an endocrine disruptor. Zinc is essential and has no known endocrine disrupting properties.

Section 12: ECOLOGICAL INFORMATION

For the zinc substances, Ecotoxicity Reference Values (ERVs) are based on the soluble ion, Zn²⁺.

12.1 Toxicity:

Zinc Ecotoxicity Reference Values for aquatic toxicity

	Endpoint		Zn ⁺⁺ ion concentration	Species
Acute ecotoxicity	NOEC	pH 6	154 µg Zn/l	Daphnia magna
	NOEC	pH 8	41 µg Zn/l	Pseudokirchneriella subcapitata
Chronic ecotoxicity	NOEC	pH 6	99 µg Zn/l	Pseudokirchneriella subcapitata
	NOEC	pH 8	11 µg Zn/l	Pseudokirchneriella subcapitata

- 12.2 Persistence and degradability:** N/A, zinc is an element
- 12.3 Bioaccumulative potential:** N/A, ZnO does not bioaccumulate or biomagnify
- 12.4 Mobility in soil:** N/A
- 12.5 Results of PBT and vPvB assessment:** N/A, zinc oxide is not PBT or vPvB.
- 12.6 Other adverse effects:** None

SECTION 13: Disposal considerations

13.1 Waste treatment methods

- 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 co-mingled with other substances may be recyclable. Contact Zochem for further information. This material, if sent for recycling, is exempt from U.S. Federal, State, and local waste regulations and TRI transfer reporting.
- Empty used packaging is not regulated waste.

Section 14. TRANSPORT INFORMATION

Zinc Oxide is not classified or hazardous for the jurisdictions covered by this SDS (see above scope). GHS markings are not required.

Section 15. REGULATORY INFORMATION

15.1 U.S. Regulations:

Transportation: Not transport regulated in the U.S. (USDOT 49CFR172), Canada, or Mexico.
HS Tarriff 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 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 at 21CFR182.8991 (GRAS=Generally Recognized as Safe) and may be used in any FDA regulation where use of a GRAS substances is authorized including an ingredient in food and in food contact in rubber articles at 21CFR177.2600(c)(1); Food can linings and coatings at 21CFR175.300(b)(2), and Plastics at 21CFR170.30(d).

15.2 TSCA and equivalent inventories/lists:

TSCA (U.S.): Yes, listed, active, notification not required.

DSL (Canada): Yes, listed. NDSL: (Canada): No, not listed, notification not required.

EINECS (Europe): Yes, on Inventory. ELINCS (Europe): No, notification/reporting not required.

Listed on other inventories which include: ASIA-PAC, SWISS, PICCS (Philippines), ENCS (Japan), AICS (Australia), KECI (Korea), IECSC (China), New Zealand, Taiwan.

15.3 European Economic Area (EEA) Regulations:

EU REACH OR: Reach Only Representative (Ireland) Ltd. EU Registration numbers:
01-2119463881-32-0065 (Zochem ULC, Canada), 01-2119463881-32-0201 (Zochem LLC, USA).

SVHC: Zinc oxide is not an SVHC. Impurities are below SVHC or candidate SVHC thresholds.

Nano: This product is not nano (per definition of nano as 50% particles <=100nm).

Transportation: This product is listed by EU/EEA regulation as transport regulated.

15.4 UK REACH: OR: Reach Only Representative (U.K.), UK Registration Numbers:

UK-01-2666131289-7-0002 (Zochem ULC, Canada), UK-20-9198436791-1-0000 (Zochem LLC, USA)

SECTION 16: Other information

16.1 Date of revision: 12December2025. Revised to comply with updated regulations Canada WHMIS Canada HPR, USOSHA Hazard Communication, and EU Regulation 2020/878.

16.2 HMIS Hazard Rating (Paint and Coating Industry)

Health 1 (slight)	Reactivity 0
Flammability 0	Personal Protection E (mask, gloves, goggles are recommended in bulk dust)

16.3 Error or Omission: This SDS provides information to work safety with ZnO substance. It is not a performance or property guarantee. The information is believed accurate utilizing reasonably available published data. We are not responsible for any inadvertent error or omission.