



Titanium, Mineral & Chemicals

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MSDS (Material Safety Data Sheet)

ZINC OXIDE (ZnO)

1. Product Identification

Synonyms: Chinese white; zinc white; flowers of zinc; calamine

CAS No.: 1314-13-2

Molecular Weight: 81.38

Chemical Formula: ZnO

Product Codes:

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Zinc Oxide	1314-13-2	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

CAUTION! MAY IRRITATE RESPIRATORY TRACT.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:

May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath. Inhalation can cause a flu-like illness (metal fume fever). This 24- to 48-hour illness is characterized by chills, fever, aching muscles, dryness in the mouth and throat and headache.

Ingestion:

Large oral doses may cause irritation to the gastrointestinal tract.

Skin Contact:

Not expected to be a health hazard from skin exposure.

Eye Contact:

Not expected to be a health hazard.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

Persons with a pre-existing heart condition or impaired respiratory function may be more susceptible to the effects of this substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

Not expected to require first aid measures. If large amounts were swallowed, give water to drink and get medical advice.

Skin Contact:

Not expected to require first aid measures. Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Not expected to require first aid measures. Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard.

Explosion:

Finely divided powder presents an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Zinc oxide fume may be released when heated.

6. Accidental Release Measures

Clean-up personnel require protective clothing and respiratory protection from dust. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

Zinc oxide:

-OSHA Permissible Exposure Limit (PEL):

fume: 5 mg/m³ (TWA)

respirable fraction: 5 mg/m³ (TWA)

total dusts: 15 mg/m³ (TWA)

-ACGIH Threshold Limit Value (TLV):

2 mg/m³ (TWA), 10 mg/m³ (STEL), Respirable fraction

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White to yellowish-white amorphous powder.

Odor:

Odorless.

Solubility:

Insoluble in water, alcohol; soluble in dilute acids.

Specific Gravity:

5.67

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Sublimes.

Melting Point:

1975C (3587F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Absorbs carbon dioxide from air.

Hazardous Decomposition Products:

When heated to very high temperatures, zinc oxide sublimes to produce toxic fumes.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Has exploded when mixed with chlorinated rubber. Reacts violently with magnesium, linseed oil. Zinc oxide and magnesium can react explosively when heated.

Conditions to Avoid:

Heat, incompatibles.

11. Toxicological Information

Investigated as a mutagen, reproductive effector.

-----\Cancer Lists\-----

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Zinc Oxide (1314-13-2)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
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Zinc Oxide (1314-13-2)	Yes	Yes	Yes	Yes
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-----\Chemical Inventory Status - Part 2\-----

--Canada--

Ingredient	Korea	DSL	NDSL	Phil.
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Zinc Oxide (1314-13-2)	Yes	Yes	No	Yes
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-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.

Zinc Oxide (1314-13-2)	No	No	No	Zinc compoun
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-----\Federal, State & International Regulations - Part 2\-----

Ingredient	-RCRA-		-TSCA-	
	CERCLA	261.33	8(d)	

Zinc Oxide (1314-13-2)	No	No	No	
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Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 0 Reactivity: 0

Label Hazard Warning:

CAUTION! MAY IRRITATE RESPIRATORY TRACT.

Label Precautions:

Avoid breathing dust.

Keep container closed.

Use with adequate ventilation.

Label First Aid:

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty.

Product Use:

Laboratory Reagent.

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