

Safety Data Sheet (SDS / MSDS)

Nano Zinc Oxide

Prepared in accordance with GHS Rev. 8 / OSHA HazCom 2012

SECTION 1: Identification

Product Name	Nano Zinc Oxide
Recommended Use	Raw material ingredient for cosmetic UV-filter (sunscreen) formulation, coatings, rubber/plastics compounding, and antimicrobial textile treatment.
Manufacturer/ Supplier	Ochnology Solution Pvt. Ltd.
Address	B-153, Sector-4, Defence Colony, Dehradun, Uttarakhand, India – 248001
Contact	projects@ochnology.com, bd@ochnology.com +91 9286823642/43

SECTION 2: Hazards Identification

Nano Zinc Oxide is an inorganic metal oxide. It is not acutely toxic to humans at typical handling exposure, but zinc oxide is classified as hazardous to aquatic life, and fine/nano-scale dust warrants respiratory precaution.

GHS Classification:

- Aquatic Acute 1 (H400) and Aquatic Chronic 1 (H410) — very toxic to aquatic life, very toxic to aquatic life with long-lasting effects

Signal Word: **WARNING**

Hazard Statements:

- H400 – Very toxic to aquatic life
- H410 – Very toxic to aquatic life with long-lasting effects
- May cause respiratory irritation as a fine particulate

Precautionary Statements:

- P273 – Avoid release to the environment
- P271 – Use only in well-ventilated areas or with local exhaust ventilation
- P260 – Do not breathe dust

SECTION 3: Composition / Information on Ingredients

Component	CAS No.	Approx. %
Zinc Oxide (ZnO), nanoparticle form	1314-13-2	≥ 99%

SECTION 4: First-Aid Measures

- Eye contact: Flush with water for several minutes; seek medical attention if irritation persists.
- Skin contact: Wash with soap and water.
- Inhalation: Move to fresh air; seek medical attention if respiratory discomfort persists.
- Ingestion: Rinse mouth with water; seek medical attention if large quantities are swallowed.

SECTION 5: Fire-Fighting Measures

- Non-combustible inorganic powder.

- Note: heating zinc oxide to fume (e.g., in welding/high-heat processes involving zinc-coated materials) can generate zinc oxide fume, associated with metal fume fever — not applicable to normal handling of this powder, but relevant if the material is subjected to high-heat secondary processing.

SECTION 6: Accidental Release Measures

- Avoid dry sweeping; use HEPA-filtered vacuum or wet methods to minimise dust generation.
- Contain to prevent discharge into drains, waterways, or soil due to aquatic toxicity.

SECTION 7: Handling and Storage

- Store in a dry, sealed container away from moisture.
- Avoid dust generation; handle with adequate ventilation or local exhaust.
- Keep away from drains and water sources.

SECTION 8: Exposure Controls / Personal Protection

As an engineered nanomaterial, precautionary exposure controls are recommended in addition to standard particulate guidance.

- Zinc Oxide (bulk, as reference): OSHA PEL 5 mg/m³ (respirable fraction), ACGIH TLV 2 mg/m³ — nano-specific limits not yet established; treat as a precautionary lower-bound guide
- Respiratory protection: N95/P100 respirator during powder handling
- Eye protection: Safety glasses
- Hand protection: Standard work gloves

SECTION 9: Physical and Chemical Properties

Appearance	White powder
Odour	None
Particle Size	20 – 80 nm (typical, UV-transparent grade)
Specific Surface Area	15 – 50 m ² /g (grade-dependent)
Solubility in Water	Insoluble; soluble in acids and strong alkalis

SECTION 10: Stability and Reactivity

- Stable under normal conditions of storage and use.
- Reacts with strong acids and strong alkalis.
- Avoid conditions generating zinc oxide fume (high-heat processing).

SECTION 11: Toxicological Information

- Low acute toxicity via typical handling routes.
- Fine/nano particulate may cause respiratory irritation; inhalation of zinc oxide fume (from high-heat processes, not applicable to normal powder handling) is associated with metal fume fever.

SECTION 12: Ecological Information

- Very toxic to aquatic life with long-lasting effects (H410) — zinc compounds are well-documented as harmful to aquatic organisms.
- Avoid any discharge to waterways, drains, or soil.

SECTION 13: Disposal Considerations

- Dispose of per local hazardous/metal-containing waste regulations; do not discharge to drains.

SECTION 14: Transport Information

Not classified as dangerous goods for transport in solid powder form; confirm against destination-country aquatic-hazard transport rules for bulk quantities.

SECTION 15: Regulatory Information

- Supplied as a raw material ingredient. Buyers are responsible for confirming compliance with applicable cosmetic/UV-filter regulations (including nano-material disclosure and approval requirements) in their destination market before use in a finished cosmetic or consumer product.

SECTION 16: Other Information

This SDS reflects the product as supplied in raw-material form. Finished-product (cosmetic, coatings, or polymer) safety assessment and regulatory clearance is the responsibility of the formulator/buyer.

Disclaimer: Information is provided as a general guide based on available data and is subject to revision without notice. Buyers/users should conduct their own risk assessment and confirm suitability for their specific process and application.