

Conforms to 2001/58/EC/15011014-1/TRGS 220, ANSI-ISO 11014-1.



MATERIAL SAFETY DATA SHEET

This MSDS is applicable for use within the European Union only

SECTION 1. Product Identity and Responsible Party

Product Name: ZINC OXIDE	Synonyms: ZINKOXID, OXYDE DE ZINC, OSSIDO DI ZINCO, ZINKOXIDE, ZINK OXID, OXIDO DEL CINC, TLENED CYNKU
Chemical Formula: ZnO CAS number: 1314-13-2 EINECS Number: 215-222-5	Product Grades: All commercial quality Product Grades
MANUFACTURER'S NAME: U. S. ZINC CORPORATION, A Votorantim Metais Company 6020 Navigation Blvd. Houston, TX 77011	Use of the substance/preparation: chemical or raw material for use in rubber compounding, polymers, plastics, zinc chemicals, paints & coatings, electronics, catalysts, lubricants, pharmaceuticals, cosmetics, animal feed, fertilizer, ceramics.
Date Revised: January 21, 2010	
Prepared By/Primary Contact: John Stourac, ESH & Tech Mgr. e-mail: reach@votorantim.com , John.Stourac@USZinc.com Telephone: (00 1) 713/924-4628 information or emergency. Alternate 24h phone answering service: (001) 888/464-2958	
EEA Responsible Party: Votorantim GmbH, Huber Sattler Gasse 01, 4th floor, 5020 Salzburg, Austria. Attn.: Savio J. Ce, +43 699 171 727 55, email: reach@votorantim.com .	

SECTION 2. Composition/Information on Ingredients

Substance/Preparation has no human health hazard.

Certain aquatic species have reduced reproduction rate under certain conditions.

Occupational Exposure Limit(s), if available, are listed in Section 8.

R-phrases (complet text) are listed in Section 16

Component	CAS, EC/EINECS No.	% Range
Zinc Oxide, as ZnO (dry)	1314-13-2, 215-222-5	99.8 – 100
Lead, as PbO (1)	1317-36-8, 215-267-8	(1) PbO and CdO are naturally occurring impurities. Trace levels vary with grade.
Cadmium, as CdO (1)	1306-19-0,	
Zinc Carbonate (2)	3684-35-9, 222-477-6	(2) ZnCO ₃ is natural degradation, varies with product age. (3) Processing aid/coating added per customer request
Zinc Propionate (3)		

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SECTION 3. Hazards	
Route(s) Of Entry:	1. Inhalation. 2. Mechanical irritation to skin and eyes.
Carcinogens:	Not a NTP/IARC carcinogen.
Signs & Symptoms of Exposure:	Dry throat, cough, dry itching skin.
Human:	Excess bulk exposure may cause acute respiratory irritant or dry skin.
Metal Fume Fever:	Excessive inhalation exposure within hours of ZnO formation may cause 'metal fume fever.' Symptoms are chills, metallic taste, severe headache. This hazard only exists at the manufacture and not in later handling or use. Symptoms often persist 24 hours. See Section 4, First Aid.
Other Human hazard reports:	Some users request ZnO with addition of processing aid additives or coatings, most commonly <0.1% content propionic acid, caprylic acid, or mineral oil. Acid content may increase exposed skin irritation. An internet search noted alleged dermatitis or oxide pox with oxides, however, this preparer finds no cases in reputable medical literature data of such conditions caused by zinc oxide products covered by this MSDS. Less than commercial quality, or tech grade, zinc oxide may contain other impurities requiring exposure consideration and is not covered by this MSDS.
Environmental:	ZnO is not water soluble. However if chemically in solution, the net Zn in certain situations is, Very Toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment. R phrases are listed in Section 16.

SECTION 4. FIRST AID PROCEDURES	
First Aid:	Remove person from exposure.
Inhalation:	Move to fresh air. Consult physician if acute symptoms persist.
Skin Contact:	Wash with soap and water. Restore oil with lotion if necessary.
Ingestion:	Drink water. Consult physician if complaints persist.
Eye Contact:	Flush with water. Consult physician if acute symptoms persist.
Protection of First Responders:	Wear suitable respirator if bulk dusty conditions exceed permissible exposure levels listed in Section 8. Wear additional protection for personal comfort as conditions warrant.

SECTION 5. FIRE, EXPLOSION AND FIRE FIGHTING DATA	
Flash Point: Product is a solid (powder form), non-combustible, and will not burn.	Extinguishing Media: Use extinguishing media based on surrounding materials. Avoid release of fire control water to environment.
	Hazardous (de)composition Product(s): None

SECTION 6. ACCIDENTAL RELEASE MEASURES	
If spilled, shovel or sweep spills into suitable labeled container. Vacuum small spills. Prevent release to sewer, storm water, or environment. Spills not mixed with other chemicals may be recyclable, contact U. S. Zinc for further information. If disposed, dispose as hazard waste marine pollutant.	

SECTION 7. HANDLING AND STORAGE	
Storage: Keep dry. Preferred storage in cool and dry place to minimize potency degradation. Keep closed in original containers until use to also minimize degradation. Once product is opened, potency degradation accelerates due to ZnO forming ZnCO ₃ carbonate with CO ₂ from ambient air. Potency degradation does not impact human and environmental health (potency degradation effects product technical assay quality only). Once opened, minimize dusting to reduce human and environment exposure.	
Handling: Follow good practices to control and avoid exposure to nuisance dust. See Section 8.	

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SECTION 8. EXPSURE CONTROLS, PERSONAL PROTECTION	
Respiratory protection:	Recommended. Use NIOSH approved dust filter respirator.
Ventilation:	Local exhaust recommended.
Protective gloves:	Recommended. Any glove type offering comfort is suitable. Breakthrough time = not applicable
Protective clothing:	Recommended in bulk dust conditions.
Eye Protection:	Recommended.

EU Occupational Exposure Limits. (Chemical = Zinc Oxide, CAS 1314-13-2)	
Zinc Oxide (United Kingdom OEL)	TWA – 8 hour: 5 mg/m ³ (nuisance dust) STEL – 15 minutes: 10 mg/m ³ (nuisance dust)
Zinc Oxide (Germany MAK)	Einatembarer Staub (Dust) = 10 mg/m ³ Alveolengängiger Staub = 3 mg/m ³
Zinc Oxide (France INRS)	Dust: VME = 10 mg/m ³ Fume: VME = 5 mg/m ³

U. S. Occupational Exposure Limits/Recommendations				
Hazardous Component	CAS, EC No.	% Range	ACGIH TLV/OSHA PEL	
Zinc Oxide, as ZnO (dry)	1314-13-2, 215-222-5	99.8 – 100	5 mg/m ³ *	5 mg/m ³ *
Lead, as PbO (1)	1317-36-8,			50 ug/m ³
Cadmium, as CdO (1)	1306-19-0,			5 ug/m ³
Zinc Propionate (2)	557-28-8,	<0.1% (2)		
(1) PbO & CdO are naturally occurring impurities. % Range varies with grade. (2) Processing aid additive or coating added at customer request.			*Respirable fraction	

SECTION 9. PHYSICAL AND CHEMICAL CHARACTERICS			
Boiling Point:	Not applicable	Vapor Pressure:	@1500C = 12mm Hg
Melting Point:	1975 C	Evaporation Rate:	N/A (Butyl Acetate = 1)
Specific Gravity:	5.68	Solubility In Water:	Insoluble (negligible, <2mg/l)
Molecular Weight:	81.38 (ZnO)	Soluble:	In bases and acids
Oxidation qualities:	Not applicable	Fire qualities:	Will not burn
Odor, smell:	Odorless.	pH:	7 to 8 (7.37 nominal)
Vapor Density:	Not applicable	Physical State:	Powder or pellets
Typical particle size:	<=1 Micron	Appearance:	White, cream, or yellowish color
Explosive:	Not explosive	Volatile:	0.3% nominal (due to loss of H ₂ O or CO ₂)

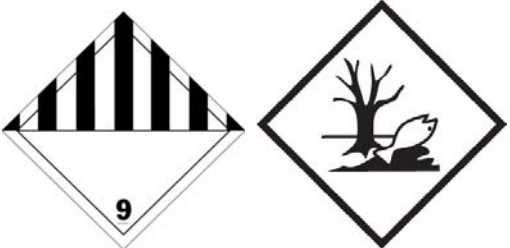
SECTION 10. STABILITY AND REACTIVITY DATA	
Stability: Stable under normal conditions.	Hazardous Polymerization: Will not occur.
Incompatibility or Material To Avoid: 1. Heated Magnesium. 2. Chlorinated Rubber Above 215C.	Decompose: Decomposes in bases & strong acids, neutralizing pH. Also will decompose in strong heated resins and polymers.
No hazardous materials are formed during thermal decomposition.	

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SECTION 11. TOXICOLOGICAL	
Acute toxicity - Oral:	LD 50 (rat, Lethal Dose (50%)): >15000 mg ZnO/kg (OECD 401)
Acute toxicity – Inhalation:	LC 50 (rat, 4 hours): > 5.7 mg ZnO (Klimisch et al. 1982).
Chronic toxicity:	NOAEL: 50 mg/ Zn/day (based on human clinical studies).
Carcinogenicity:	No evidence of carcinogenicity in laboratory animals or in man.
Mutation:	No evidence of genetic toxicity, in-vitro tests.
Reproduction toxicity:	No evidence of reproduction toxicity.
Acute toxicity – Dermal:	No data available.
Sensitization:	No sensitizing potential (guinea pig).
Skin irritation:	Not irritating (rabbit). OECD 404.
Eye irritation:	Not irritating (rabbit). OECD 405.


SECTION 12. ECOLOGICAL	
Mobility:	Not applicable.
Persistence:	Not applicable.
Biological accumulation potential:	Not applicable.
Ecotoxicity:	EC 50 (Selenastrum capricornutum, 72 hours): 170 mg ZnO. LISEC 1997.


SECTION 13. DISPOSAL CONSIDERATIONS	
Recycle: Material may be recyclable, contact U. S. Zinc. If disposed, follow regulations.	
Waste material: Keep waste material and contaminated packaging separate.	
Disposal: Because of possible pollution, follow regulations. Regulations may require disposal as industrial or hazardous waste.	
Safety phrase: S60: (FR): Eliminer le produit et son recipient comme un dechet dangereux. (EN): This material and its container must be disposed of as hazardous waste. (IT) : Questo materiale e il suo contenitore devono essere smaltiti come rifiuti pericolosi. (DE): Dieses Produkt und sein Behälter sind als gefährlicher Abfall zu entsorgen.	

SECTION 14. TRANSPORT INFORMATION	
Transport within EU member nations:	
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Oxide) UN 3077.	
UN ID Number: 3077	
ADR/RID, ADN, IMDG, IATA-DGR Class: 9.	
Packing group: III	
Classification code: M7 (Formerly: Item number 12C)	
Hazard identification/reconnaissance number: 90	
Country of Origin: USA.	Responsible party: USZ, Houston, TX USA. Countries of Origin: USA, Brasil, Turkey, P.R.C.
Information on transport outside EU member nations: Not USDOT or IMO Regulated. NMFC Class 55. NAFTA Tariff Class 2817.00.0000, Sched. B.	

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SECTION 15. REGULATORY INFORMATION

EU Regulations		(Image color: black outline, with orange background)
EINECS = Yes, on Inventory. ELINCS = No. REACH = Yes. Pre-Registration numbers: U.S. A. origin: 05-2114566664-38-0000 CN P.R.C. China origin: 05-2114620034-66-0000 BR Brazil origin: 05-2114626885-37-0000 TR Turkey origin: 17-2119419924-34-0000 “ “ “ and/or 05-2114269910-45-0000		
EU Classification: (67/548/EED-1999/45/EC)	Risk phrases: R50/53. See Section 16.	
Hazard symbol(s): N (Environmentally Dangerous)	Safety phrases: S60/61 :	
<p>S60: (FR): Eliminer le produit et son recipient comme un dechet dangereux. (EN): This material and its container must be disposed of as hazardous waste. (IT) : Questo materiale e il suo contenitore devono essere smaltiti come rifiuti pericolosi. (DE): Dieses Produkt und sein Behälter sind als gefährlicher Abfall zu entsorgen.</p> <p>S61: (FR): Eviter le rejet dans l'environnement. Consulter les instructions speciales/la fiche de donnees de securite. (EN): Avoid release to the environment. Refer to special instructions/Safety data sheets. (IT) : Non disperdere nell'ambiente. Riferirsi alle istruzioni speciali/ schede informative in materia di sicurezza. (DE): Freisetzung in die Umwelt vermeiden. Besondere Anweisungen einholen/Sicherheitsdatenblatt zu Rate ziehen.</p> <p>“Preparations“ containing more than 25% of this material, under EU law, will also need to be classified as “Dangerous for the Environment.”</p>		

EN English. ZINC OXIDE. Signal word: Warning. H410: Very toxic to aquatic life with long lasting effects. P273: Avoid release to the environment. P391: Collect spillage. P501: Dispose of contents/container as hazardous or special waste in accordance with applicable law.		Image: red boarder diamond, with black distressed tree and fish inside diamond
DE Deutsch (German). ZINKOXID. Signalwort: Achtung. H410: Sehr giftig für Wasserorganismen mit langfristiger Wirkung. P273: Freisetzung in die Umwelt vermeiden. P391: Verschüttete Mengen aufnehmen. P501: Diesen Stoff und seine(n) Behälter entsprechend geltendem Recht der Problemabfallentsorgung zuführen.		
FR Français. OXYDE DE ZINC. Mention d'avertissement: Attention. H410: Très toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme. P273: Éviter le rejet dans l'environnement. P391: Recueillir le produit répandu. P501: Éliminer le contenu/récipient dans des déchets dangereux ou spéciaux conformément à la loi qui s'applique.		
IT Italiano. OSSIDO DI ZINCO. Avvertenza: Attenzione. H410: Molto tossico per gli organismi acquatici con effetti di lunga durata. P273: Non disperdere nell'ambiente. P391: Raccogliere il materiale fuoriuscito. P501: Smaltire il prodotto/recipiente in conformità alla normativa vigente sui rifiuti speciali e pericolosi.		
NL Dutch, Flemish (Nederland's). ZINKOXIDE. Signaalwoord: Waarschuwing. H410: Zeer giftig voor in het water levende organismen, met langdurige gevolgen. P273: Voorkom lozing in het milieu. P391: Gelekte/gemorste stof opruimen. P501: Verwijder inhoud/container als gevaarlijk of bijzonder afval in overeenstemming met de geldende wetgeving.		
ES Español. OXIDO DEL CINCO. Palabra de advertencia: Atención. H410: Muy tóxico para los organismos acuáticos, con efectos nocivos duraderos. P273: Evitar su liberación al medio ambiente. P391: Recoger el vertido. P501: Disponga del contenido/envase como basura peligrosa o especial de acuerdo con la ley aplicable.		
DA Dansih, Dansk (Denmark). ZINK OXID. Signord: Advarsel. H410: Meget giftig med langvarige virkninger for vandlevende organismer. P273: Undgå udledning til miljøet. P391: Udslip opsaml. P501: Indholdet/holderen bortskaffes som farligt affald i overensstemmelse med gældende regler.		
PL Polish, Polska. TLENED CYNKU. Hasło ostrzegawcze: Uwaga. H410: Działa bardzo toksycznie na organizmy wodne, powodując długotrwałe skutki. P273: Unikać uwolnienia do środowiska. P391: Zebrać wyciek. P501: Wyzuwać pojemniki zawierające toksyczne i niebezpieczne substancje zgodnie z instrukcją		

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USA Regulations	
SARA 302: RQ=None, TPQ=None. SARA 311/312: Yes (Acute). SARA 313: Zn & Pb Compounds. Prop. 65: Yes (Pb, Cd). CAA 112, 61 HAP: No. FIFRA 152 et seq.: No.	RCRA 261: TCLP Determination (Pb, Cd). CERCLA 102/103: Name List, RQ=None. NSF 60/61: Submitted: NSF, UL. FCC: Listed. CONEG: Compliant. TSCA: Yes, on Inventory, Compliant with TSCA. ODS/ODC 82: No.
FDA: Listed as GRAS at 21CFR182.8991 (GRAS=Generally Recognized as Safe). Rubber 177.2600(c)(1). Food can linings: 175.300(b)(2). Food Color: 73.1991, 2991.	

Regulations outside the EU and USA:	
AICS = Yes SWISS = YES PICCS = Yes	DSL = Yes NDSL = No ASIA-PAC = Yes

FDA: Listed as GRAS at 21CFR182.8991 (GRAS=Generally Recognized as Safe). Rubber 177.2600(c)(1). Food can linings: 175.300(b)(2). Food Color: 73.1991, 2991.

SECTION 16. OTHER INFORMATION

Risk phrases R50/53: (EN): Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. (FR): Tres toxique pour les organismes aquatiques, peut entrainer des effets nefastes a long terme pour l'environnement aquatique. (DE) : Sehr giftig für Wasserorganismen, kann in Gewässern längerfristig schädliche Wirkungen haben. (IT): Altamente tossico per gli organismi acquatici, può provocare a lungo termine effetti negativi per l'ambiente acquatico

HMIS Hazard Rating: (Paint & Coating Industry)	Health 1 Flammability 0 Reactivity 0 Personal Protection E	Rating Definitions 0 = Minimal 3 = Serious 1 = Slight 4 = Severe 2 = Moderate
	Personal Protective Index: E (recommended with bulk dust only) = Gloves + Mask + Goggles.	

Label Precautions (Compliant with 29CFR1910.1200).
Caution, may cause irritation to lungs, throat, nose, eyes or skin.
Wear gloves, dust mask and safety glasses when handling dusty product in bulk.

DISCLAIMER

The Material Safety Data listed on this sheet provides information on the hazards when working with this material, and is required by the Control of Substances Hazardous to Health (COSHH), and USOSHA Hazardous Communication (29CFR1919.1200). It does not cover risks associated with risks associated with specific actual uses of this material, which can only be carried out by the end-user.

The data listed on this sheet is be believed to be accurate, complete, and up to date by the preparer utilizing reasonably available published studies or other publications. We are not responsible for any inadvertent error or omission.

End use of this product will include many factors beyond our control, and we cannot accept liability for any accident, injury or damage caused by its use.