SAFETY DATA SHEET

PRODUCT NAME: ZINC OXIDE
EFFECTIVE DATE: 15 AUGUST 2014
SCOPE: THIS SDS IS VALID GLOBALLY INCLUDING IN THE U.S.A. AND BRAZIL.
THIS SDS IS NOT VALID IN THE EEA MEMBER COUNTRIES OR IN OTHER COUNTRIES WHERE TRANSPORTATION OF ZINC OXIDE IS REGULATED BY LEGISLATION.

1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Trade Name: Zinc Oxide
Trade code/grade: This SDS is valid for all product grades
CAS number: 1314-13-2
EINECS number: 215-222-5
Reach Registration: 01-2119463881-32-0075 (Tonnage Band >1000 t/yr)

1.2 Common Uses

Rubber compounding, zinc chemical manufacturing, paint and coating, pharmaceuticals, agriculture, electronics, ceramics

1.3 Details of the supplier of the data sheet

Supplier Address	**Supplier Phone**	**Supplier Contact**	
U.S. Zinc Corporation	+001 713 926 1705	John Williams	
2727 Allen Parkway; Suite 800	**Supplier Fax**	**Contact Email**	**Contact Phone**
Houston TX 77019	+001 713 924 4829	HSE@USZinc.com	+001 281 840 5376

1.4 Emergency Contact

Phone Number: +001 832 723 0322
+001 888 464 2958 (24 Hour Answering Service)

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not regulated in the U. S. A.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	Identifiers	% Composition
Zinc Oxide (ZnO)	CAS: 1314-13-2 EC215-222-5	95-100

Note: all other constituents are found at trace levels, for further information please consult the individual product grade TDS.

4 FIRST AID MEASURES

4.1 Description of first aid measures

Skin Contact	Immediately wash with soap and water. Seek medical attention if irritation occurs.
Eye Contact	Immediately flush eyes with plenty of water. Get medical attention if irritation occurs.
Ingestion	Drink plenty of water. Do not induce vomiting. Seek medical attention or contact Poison Control.
Inhalation	Remove victim to fresh air. Seek medical attention if feeling unwell or experiencing respiratory distress

4.2 Most important symptoms and effects, both acute and delayed

Acute: Dry cough, headache, throat irritation

Delayed: No delayed symptoms or effects expected

4.3 Indication of any immediate medical attention and special treatment needed

Bad cough, headache, and/or nausea. Move effected individual to fresh air.

5 FIRE-FIGHTING MEASURES

5.1 Extinguishing Media

Suitable Extinguishing Media	Use an extinguishing media suitable for the surrounding fire
Unsuitable Extinguishing media	None Known

5.2 Special hazards arising from the substance or mixture

Hazards from the substance	Water contaminated with this material must be contained and prevented from being discharged to environment
Hazardous thermal decomposition products	Decomposition products may include Zinc Oxide fumes at high temperatures

5.3 Advice for fire-fighters

Special protective actions for fire-fighters	No special measures required
Special protective equipment for fire-fighters	Suitable breathing apparatus

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions

Avoid breathing dust. Refer to Section 7 and Section 8 for advice on handling/storage and PPE

6.2 Environmental Precautions

Prevent contamination of soil, drains, and surface water. Inform relevant authorities of spill where required.

6.3 Spill Cleanup Recommendation

Avoid dry sweeping or other methods which raise dust. Vacuum or wet-sweep and place into a suitable closable, labeled container for disposal. Dispose of waste via licensed waste disposal contractor.

7 HANDLING AND STORAGE

7.1 Precautions for Safe Handling

This product should be used in accordance with good industrial safety practices and industrial hygiene standards and all local, state, federal, and international regulations. Avoid creating airborne dust. Ensure adequate exhaust ventilation. Workers who handle material should wear gloves and thoroughly wash hands/forearms after exposure. See Section 8.2 if exposure exceeds limits.

7.2 Conditions for Safe Storage/Instabilities

This product should be stored in accordance with all local, state, federal and international regulations. Store in a cool, dry, well-ventilated space sealed tightly in the original containers. Protect containers from damage and repair if damage occurs. Use all product within 1 year.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Occupational Exposure Limits

Product/Ingredient Name	**Exposure limit values (**8 hour TWA**)**
Zinc Oxide (U.S.A. OSHA PEL)	5 mg/m^3 (fumes) 15mg/m^3 (dust; total) 5 mg/m^3 (dust; respirable)
Zinc Oxide (U.S.A. NIOSH IDLH)	500 mg/m^3

8.2 Exposure Controls

Respiratory Protection	Avoid creating dust. If exposure levels exceed limits, respiratory protection approved for the work being performed must be worn.
Hand Protection	Always wear glove approved for the work being performed when handling Zinc Oxide.
Skin Protection	Wear normal chemical work clothing.
Eye Protection	Always wear approved protective eyewear if there is a potential for dust being created while handling the material.
General Protective Hygiene Measures	Use local exhaust ventilation to pro-actively reduce dust levels.

8.3 Other

Route(s) of entry	Inhalation and mechanical irritation of eyes and skin
Carcinogen Status	Not a NTP/IARC carcinogen
Signs and symptoms of exposure	Dry throat, cough, and dry itchy skin
Notes	Excess bulk exposure may cause acute respiratory irritation or dry skin

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance: White, cream, or yellowish color
Description: Fine powder or pelletized powder
Typical Particle Size: 0.1 µm – 5 µm
Flammability Limits: Zinc Oxide is not flammable
Explosive Limits: Zinc Oxide is not explosive
Odor: Odorless
Vapor Pressure: @1500C = 12 mm HG
Odor Threshold: Odorless
Vapor Density: n/a
pH: Neutral
Relative Density: Varies
Melting point: 1975 °C
Solubility in water: Negligible
Boiling Point: n/a
Flash Point: Not flammable
Evaporation Rate n/a
Specific Gravity: 5.68
Molecular Weight: 81.38
Suggested Solvents: Acids and bases
Fire qualities: Will not burn
Explosive Qualities: Not explosive
Volatile: 0.3% nominal

10 STABILITY AND REACTIVITY

Reactivity	Stable under normal, dry conditions
Chemical stability	This product is stable
Possibility of hazardous reactions	None
Conditions to avoid or incompatible materials	Heated magnesium. Chlorinated rubbers above 215C
Hazardous decomposition products	Potential for ZnO fumes at elevated temperatures

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Routes of Entry	Oral, Inhalation
Acute Toxicity	LD_{50}(rat, Inhalation): 7,950 mg/kg (Encyclopedia of Toxicology: Reference Book 2005)
Chronic Toxicity	NOAEL: 50 mg/day (based on human clinical studies)
Mutagenicity	No data available
Carcinogenicity	No data available. Not listed as an IARC Carcinogen. Not listed in the NTP report on carcinogens.

11.2 Acute Exposure Symptoms

Eye Contact	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.
Inhalation	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the respiratory tract
Skin Contact	No known significant effects or critical hazards
Ingestion	No known significant effects or critical hazards

12 ECOLOGICAL INFORMATION

12.1 Toxicity

Tested Species	Result	Exposure
Algae- Pseudokirchneriella subcapitata	Acute EC50 0.042 mg/L Fresh water	72 hours
Daphnia magna	Acute LC50 98 ug/L Fresh Water	48 hours
Lepomis Macrochirus	Acute LC50 320 ppm Fresh water	96 hours
Algae- Pseudokirchneriella subcapitata	Chronis COEC 0.017 mg/L Fresh Water	72 hours

12.2 Persistence and degradability

Not rapidly degradable

12.3 Bioaccumulative potential

No evidence to indicate significant bioaccumulative potential

12.4 Mobility in soil

No evidence to indicate significant mobility in soil

12.5 Results of PBT and vPvB assessment

ZnO is not PBT or vPvB.

12.6 Other adverse effects

None

---

13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Generation of product waste should be minimized wherever possible. Disposal of product, solutions, and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional or local authority requirements. Dispose of surplus and non-recyclable products via licensed waste disposal contractor. Waste should not be released into sewer system unless regulations permit such release

Containers/Packaging

Generation of packaging waste should be minimized wherever possible. Waste packaging should be recycled when possible. Incineration and/or landfill dumping should only be considered when recycling isn't feasible. Make sure to follow all local, state, federal, and international regulations when disposing of packaging materials.

---

14 TRANSPORTATION INFORMATION

NAFTA Tariff Class	2817.00.0000, Sched. B.
Country of Origin	U.S.A.
Responsible party	U.S. Zinc, Houston Texas USA
Classification code	M7 (Formerly: Item Number 12C)
Hazard identification/reconnaissance #	90
NMFC Class	55
USDOT Information	This material is not regulated

---

15 REGULATORY INFORMATION

15.1 U.S.A. Regulations

USDOT	Not Transport regulated, 49CFR172
SARA 302	Yes, name listed (Zinc). RQ= None, TPQ= None
SARA311/312	Yes, acute hazard, 29CFR1200
SARA313	Yes, Zn & Pb compounds
CA Prop.65	Yes, Pb & Cd
CAA 112, 61 HAP	No, not regulated, no HAP's
FIFRA 152 et seq.	No (product is not subject to FIFRA)
CERCLA 102/103	Name List, RQ=None
NSF 60/61	Submitted NSF, UL
FCC	Listed
CONEG	Compliant
ODS/ODC 82	No
TSCA	Yes, on Inventory, Compliant with TSCA, Notification not required
RCRA 261	If governing spec is >1000 ppm Pb or >20 ppm Cd, product must be TCLP tested for Pb and Cd to determine if waste product is subject to RCRA
USFDA	Listed as GRAS at 21CRF182.8991

15.2 TSCA Equivalent 'inventory' regulations

AICS	Yes
SWISS	Yes
PICCS	Yes
DSL	Yes
NDSL	No
ASIA-PAC	Yes
EINECS	Yes, on inventory
ELINCS	No, notification/reporting not required

15.3 EU REACH Information

Product Origin	01-2119463881-32-0075 (Tonnage >1000 t/year)
P.R.C. Pre-Registration #	05-2114620034-66-0000
Brazil Pre-Registration #	05-2114626885-37-0000

16 OTHER INFORMATION

16.1 HMIS Hazard Rating (Paint and Coating Industry)

Health	1 (Slight)
Flammability	0
Reactivity	0
Personal Protection	E (in bulk dust conditions only. Gloves, mask, and googles are recommended.

16.2 CMS Hazard Rating (GHS)

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.

16.3 Notes

This Safety Data Sheet (SDS) provides information on the safety requirements for working with this material. This SDS is not a guarantee of the product's properties. The information presented here is believed to be accurate by the preparer utilizing reasonably available published data. We are not responsible for any inadvertent error or omission. Use of this product will include many factors beyond our control and we cannot accept liability for any accident, injury or damage cause by its use.