

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	<b>Zinc Oxide, Depleted in Isotope Zn-64</b>
CAS No.	1314-13-2
RTECS No.	ZH4810000
Chemical Formula	ZnO
Synonyms	Actox 14, Actox 16, Actox 216, AI3-00277, Akro-zinc bar 85, Akro-zinc bar 90, Amalox, Azo-33, Azo-55, Azo-66, Azo-77, Azodox-55, Azodox-55TT, Azo-55TT, Azo-66TT, Azo-77TT, Cadox XX 78, Calamine, Chinese White, C.I. 77947, C.I. Pigment White 4, Cynku tlenek (Polish), Depleted Zinc Oxide (DZO), Electox 2500, Emanay zinc oxide, EMAR, Felling zinc oxide, Flowers of zinc, GIAP 10, Green seal-8, Hubbuck's White, Kadox 15, Kadox-25, Kadox 72, K-Zinc, Outmine, Ozide, Ozlo, Permanent White, Philosopher's wool, Powder base 900, Protox type 166, Protox type 167, Protox type 168, Protox type 169, Protox type 267, Protox type 268, Red Seal 9, Snow White, Unichem ZO, Vandem VAC, Vandem VOC, White seal-7, XX 78, XX 203, XX 601, Zinca 20, Zincite, Zincoid, Zinc White, ZN-0401 E 3/16", Zn 0701T
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac / +1 800-535-5053  *May include subsidiaries or affiliate companies/divisions
Email	<a href="mailto:iusa@isoflex.com">iusa@isoflex.com</a>
Website	<a href="http://www.isoflex.com">www.isoflex.com</a>
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

## 2. HAZARDS IDENTIFICATION

### Emergency Overview

Harmful.

Harmful by inhalation.

Slightly hazardous in case of skin contact (irritant), eye contact (irritant), or ingestion.

**NFPA Ratings:** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

**Health Hazard = 1    Flammability = 0    Reactivity = 0**



**HMS Ratings:** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

**Health Hazard = 2    Flammability = 0    Physical Hazard = 0    Personal Protection: E**

<b>HEALTH HAZARD</b>	<b>2</b>
<b>FLAMMABILITY</b>	<b>0</b>
<b>PHYSICAL HAZARD</b>	<b>0</b>
<b>PERSONAL PROTECTION</b>	<b>E</b>

### Potential Health Effects

*Principle Routes of Exposure:* Inhalation  
Eye Contact  
Skin Contact  
Ingestion

*Skin Contact* May cause skin irritation

*Skin Absorption* May be harmful if absorbed through the skin

*Eye Contact* May cause eye irritation

*Inhalation* Harmful if inhaled; material may be irritating to mucous membranes and upper respiratory tract

*Ingestion* May be harmful if swallowed

### Potential Chronic Health Effects

*Carcinogenic Effects* Not available

*Mutagenic Effects* Mutagenic for mammalian somatic cells; mutagenic for bacteria and/or yeast

*Teratogenic Effects* Not available

*Developmental Toxicity* Not available

*Affected Organ(s) or System(s)* May be toxic to kidneys

*Aggravated Medical Conditions* Repeated or prolonged exposure not known to aggravate any medical condition

*Signs and Symptoms of Exposure* Zinc oxide dust or fumes can irritate the respiratory tract. Prolonged skin contact can produce a severe dermatitis called *oxide pox*. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain and nausea, followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a bluish tint to the skin. Prolonged exposure can cause reversible liver enzyme abnormalities. Diarrhea, peptic ulceration and gastrointestinal hemorrhage may also occur.

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name:	Zinc Oxide
CAS No.:	1314-13-2
% by Weight:	100
Chemical Formula:	ZnO
Toxicological Data on Ingredients:	Zinc oxide: ORAL (LD50): Acute: 7950 mg/kg [Mouse]

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### 4. FIRST AID MEASURES

<i>Eye Contact</i>	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Cold water may be used. Get medical attention.
<i>Skin Contact</i>	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.
<i>Ingestion</i>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
<i>Inhalation</i>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

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### 5. FIREFIGHTING MEASURES

<i>Flammable Properties</i>	Not flammable
<i>Products of Combustion</i>	Not available
<i>Auto-Ignition Temperature</i>	Not available
<i>Flash Points</i>	Not available
<i>Flammable Limits</i>	Not available
<i>Fire Hazards in Presence of Various Substances</i>	Slightly flammable to flammable in presence of heat

#### Explosion Data

<i>Sensitivity to Mechanical Impact</i>	Not available
<i>Specific Hazards Arising from the Chemical</i>	Not available
<i>Firefighting Media and Instructions</i>	Not applicable
<i>Special Remarks on Fire Hazards</i>	Slow addition of zinc oxide to cover linseed oil varnish causes generation of heat and ignition
<i>Special Remarks on Explosion Hazards</i>	May explode when mixed with chlorinated rubber. Zinc oxide and magnesium can react explosively when heated.

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### 6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.
<i>Precautions in Case of Leak or Spill</i>	Evacuate area

*Methods for Cleaning Up*

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site with water after material pickup is complete. Dispose according to state and federal laws.

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**7. HANDLING AND STORAGE**

*Handling*

Do not breathe in dust. Wear suitable protective clothing. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Do not ingest.

*Storage*

Keep tightly closed. Keep in a cool, well-ventilated area. Do not store above 25 °C (77 °F).

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

*Engineering Controls*

Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protective Equipment**

*Eye/Face Protection*

Splash goggles

*Skin and Body Protection*

Lab coat and gloves, full suit, boots

*Respiratory Protection:*

Be sure to use an approved/certified dust respirator or equivalent.

*Emergency Use*

Splash goggles, full suit, dust respirator, boots, gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits, RTECS**

<b>Country</b>	<b>Source</b>	<b>Type</b>	<b>Value</b>
USA	ACGIH	TWA	5 mg/m <sup>3</sup>
		STEL	10 mg/m <sup>3</sup> (FUME)
USA	MSHA Standard-air	TWA	5 mg/m <sup>3</sup> (FUME)
USA	OSHA	PEL	8H TWA 5 mg/m <sup>3</sup> , FUME AND RESPI
New Zealand	OEL	-	-
USA	NIOSH	TWA	5 mg/m <sup>3</sup>
		STEL	10 mg/m <sup>3</sup>

**Exposure Limits**

<b>Country</b>	<b>Source</b>	<b>Type</b>	<b>Value</b>
Poland	NDS	-	5 mg/m <sup>3</sup>
Poland	NDSCh	-	10 mg/m <sup>3</sup>
Poland	NDSP	-	-

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance**

Physical State	Solid
Color	Yellow-White
Form	Powdered Solid

## Safety Data

Molecular Weight	81.39 amu	pH	Not available
Boiling Point/Range	Not available	Melting Point/Range	975°C (3587°F)
Freezing Point	Not available	Vapor Pressure	Not available
Vapor Density	Not available	Saturated Vapor Concentration	Not available
SG/Density	5.61 g/cm <sup>3</sup>	Bulk Density	Not available
Odor	Odorless	Volatile %	Not available
VOC Content	Not available	Water Content	Not available
Solvent Content	Not available	Evaporation Rate	Not available
Viscosity	Not available	Surface Tension	Not available
Partition Coefficient	Not available	Decomposition Temperature	Not available
Flash Point	Not available	Explosion Limits	Not available
Flammability	Not available	Autoignition Temperature	Not available
Refractive Index	Not available	Optical Rotation	Not available
Solubility	Practically insoluble in cold water and hot water. Soluble in dilute acetic acid, or mineral acids, ammonia, ammonium carbonate, fixed alkali hydroxide solution.		

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## 10. STABILITY AND REACTIVITY

<i>Stability</i>	Stable
<i>Instability Temperature</i>	Not available
<i>Incompatible Materials</i>	Not available
<i>Corrosivity</i>	Non-corrosive in presence of glass
<i>Hazardous Decomposition Products</i>	Zinc/zinc oxides
<i>Hazardous Polymerization</i>	Will not occur
<i>Special Remarks on Reactivity</i>	Reacts violently with magnesium, linseed oil. Reacts with hydrochloric acid to produce zinc chloride. Reacts with sulfuric acid to produce zinc sulfate. Reacts with hydrogen fluoride to produce zinc fluoride tetrahydrate. Gradually absorbs CO <sub>2</sub> on exposure to air. Sublimes at normal pressure. Zinc oxide reacts with carbon monoxide and hydrogen to produce elemental zinc.

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## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

<i>LD50 Oral</i>	No information available
<i>LD50 Dermal</i>	No information available
<i>LC50 Inhalation</i>	No information available
<i>Repeated Dose Toxicity</i>	No information available

### Chronic Toxicity

<i>Chronic Toxicity</i>	None known
<i>Carcinogenicity</i>	Contains no ingredient listed as a carcinogen.
<i>Irritation</i>	No information available
<i>Sensitization</i>	No information available
<i>Reproductive Toxicity</i>	No information available
<i>Teratogenicity</i>	No information available.
<i>Developmental Toxicity</i>	Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.
<i>Synergistic Materials</i>	None known
<i>Target Organ Effects</i>	None known

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**12. ECOLOGICAL INFORMATION**

<i>Ecotoxicity</i>	Not available
<i>BOD5 and COD</i>	Not available
<i>Products of Biodegradation</i>	Possibly hazardous short-term degradation products are not likely; however, long-term degradation products may arise.
<i>Toxicity of the Products of Biodegradation</i>	The product itself and its products of degradation are not toxic.
<i>Special Remarks</i>	Not available

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**13. DISPOSAL CONSIDERATIONS**

<i>Appropriate Method of Disposal</i>	Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state and local environmental regulations.
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**14. TRANSPORT INFORMATION**

<b>DOT</b>	This substance is considered to be non-hazardous for transport.
<b>IATA</b>	
Proper Shipping Name	Environmentally hazardous substance, solid, n.o.s
UN No.	3077
Hazard Class	9
Packing Group	III

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**15. REGULATORY INFORMATION****Federal and State Regulations**

**Illinois Toxic Substances Disclosure to Employee Act** Zinc oxide

**Rhode Island RTK Hazardous Substances** Zinc oxide

**Pennsylvania RTK** Zinc Oxide

**Minnesota RTK** Zinc oxide

**Massachusetts RTK** Zinc oxide

**New Jersey** Zinc oxide

**Director's List of Hazardous Substances** Zinc oxide

**TSCA 8(b) inventory** Zinc oxide

**Other Regulations**

**EINECS:** This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications**

**WHMIS (Canada)** Not controlled under WHMIS (Canada)

**DSCL (EEC)**

R40 Possible risks of irreversible effects

S2 Keep out of the reach of children

S36/37 Wear suitable protective clothing and gloves

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## 16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
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Revision Note	Update supplier address

### ISOFLEX USA's Commonly Used Abbreviations and Acronyms\*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
BOD5	Biochemical Oxygen Demand
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
COD	Chemical Oxygen Demand
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
ECL	Korean Existing Chemicals List
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships

MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
RTK	Right to Know
SARA	Superfund Amendments and Reauthorization Act (USA)
SNUR	Significant New Use Rule (TSCA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

\*One or more of the above-listed items may not appear in this document.

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