


MATERIAL SAFETY DATA SHEET

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	ZINC OXIDE L Revision: 03 Revised Date: November 12, 2009	FOR CHEMICAL EMERGENCY 24 Hours IN CANADA Call CANUTEC (613) 996-6666 IN the USA Call CHEMTREC (800) 424-9300 CHEMTREC – OUTSIDE USA (703) 527-3887 Chemtrade Emergency Contact: (866) 416-4404
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SECTION 01 – PRODUCT & COMPANY IDENTIFICATION

COMPANY INFORMATION:

Corporate Office CHEMTRADE LOGISTICS 155 Gordon Baker Road Suite 300 Toronto, Ontario M2H 3N5 Prepared by: Chemtrade Logistics Inc. Date Prepared: 10-30-2009 For MSDS Info: (416) 496-5856 www.chemtradelogistics.com	In USA CHEMTRADE PERFORMANCE CHEMICALS 814 Tyvola Road, Suite 126 Charlotte, NC 28217 Office: (704) 369-2480 Customer Service: (877) 205-2903	In Canada 3406 Gene-H.-Kruger Boulevard Trois-Rivières (Québec) G9A 4M3 Main Office: (819) 373-6881 Customer Service: (888) 840-4720
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HAZARD RATINGS:

WHMIS:	CONTROLLED	NFPA	RATING	HMIS	RATING
CLASS		HEALTH	1	HEALTH	1
		FLAMMABILITY	0	FLAMMABILITY	0
		REACTIVITY	0	PHYSICAL HAZARD	0
		SPECIFIC HAZARD	None	PERSONAL PROTECTION[@]	E

@ - See Section 8 for additional recommended PPE. User should determine the acceptable PPE for their employees.

PRODUCT INFORMATION:

PRODUCT NAME:	ZINC OXIDE L
CAS NUMBER:	1314-13-2 (See SECTION 2)
FORMULA:	ZnO
PRIMARY PRODUCT USE:	Specialty Chemical
SYNONYMS:	Zinc White; Flowers of Zinc; Chinese White
CHEMICAL FAMILY:	Metal Oxide
TRADE NAMES:	Zinc Oxide

SECTION 02 – COMPOSITION/INFORMATION ON INGREDIENTS

No.	COMPONENT	CAS NO.	WT. %	EXPOSURE LIMITS
1.	Zinc Oxide	1314-13-2	95 – 99.7	5 mg/m ³ TWA fume OSHA 15 mg/m ³ TWA total dust OSHA 5 mg/m ³ TWA respirable dust OSHA 2 mg/m ³ TWA respirable dust ACGIH 10 mg/m ³ STEL respirable dust ACGIH

SECTION 03 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Warning! Inhalation of high levels of zinc oxide may result in metal fume fever. Symptoms may include: tightness of chest; metallic taste in mouth; coughing; dizziness, nausea fever, chills, headache, and other flu-like symptoms. Zinc oxide may cause irritation to skin and eyes.

Read the entire MSDS for a more thorough evaluation of the hazards.

(REFER TO SECTION 11 FOR ADDITIONAL INFORMATION)

EXPECTED ROUTE OF ENTRY	
SKIN CONTACT:	X
SKIN ABSORPTION:	
EYE CONTACT:	X
INHALATION:	X
INGESTION:	X

EFFECTS OF EXPOSURE:**SKIN CONTACT:**

May cause skin irritation.

EYE CONTACT:

May cause eye irritation.

INHALATION:

Inhalation of dusts and vapors may cause irritation of the respiratory system (nose, mouth, throat and lungs).

Exposure to high levels of dust of fume can cause metal fume fever. Symptoms may include metallic taste in the mouth; marked thirst; coughing; tightness in the chest; fatigue; weakness; muscular pain (aches) and nausea followed by fever, chills and other flu-like symptoms. Symptoms may be delayed for several hours after exposure and last one or two days.

INGESTION:

Harmful if swallowed. Ingestion may cause stomach irritation resulting in nausea, diarrhea and vomiting.

CHRONIC:

Severe exposures may result in bronchitis or pneumonia with bluish tint to the skin.

Prolonged skin contact can produce severe Dermatitis called Oxide Pox.

KNOWN EFFECTS ON OTHER ILLNESSES:

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

LISTED CARCINOGEN (REFER TO SECTION 11 FOR ADDITIONAL INFORMATION):

Agency	Listed	Ranking
NONE	X	Not listed
OSHA:		
NTP:		
IARC:		
ACGIH		

SECTION 04 – FIRST AID MEASURES**FIRST AID FOR EYES:**

Immediately flush eyes with running water for a minimum of 15 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. If redness or irritation persists, seek medical attention.

FIRST AID FOR SKIN:

Wash affected skin area thoroughly with soap and water for 15 minutes. Remove contaminated clothing. Wash contaminated clothing before reuse. If redness or irritation persists, seek medical attention.

FIRST AID FOR INHALATION:

Remove subject to fresh air. Give artificial respiration if breathing has stopped. Seek medical attention if lung irritation persists or if breathing becomes difficult.

FIRST AID FOR INGESTION:

If ingested, contact physician or local Poison Control Center. Seek medical attention if directed and bring copy of MSDS to physician.

NOTE TO PHYSICIAN:

Treat in accordance with nature of exposure and consistent with emergency and first-aid procedures.

SECTION 05 - FIRE FIGHTING MEASURES**EXTINGUISHING MEDIA:**

WATER:	X
ALCOHOL FOAM:	X
CARBON DIOXIDE (CO ₂):	X
DRY CHEMICAL:	X
WATER/FOG SPRAY:	X
NO EXTINGUISHING MEDIA:	

FLASH POINT (°F):

Not applicable – product is solid material

*** FLAMMABLE LIMITS:**

Not determined

Lower Explosive Limit (LEL): Not determined

Upper Explosive Limit (UEL): Not determined

AUTOIGNITION TEMPERATURE (°F):

Not applicable

*** HAZARDOUS COMBUSTION PRODUCTS:**

In addition to typical combustion products, thermal decomposition products may include zinc oxide fumes and potentially low levels of sulfur dioxide and hydrogen sulfide.

SPECIAL FIRE FIGHTING PROCEDURES:

Exercise **CAUTION** when fighting any chemical fire. Evacuate non-essential personnel to a safe area. Prevent unauthorized entry to fire area.

Use NIOSH approved positive pressure self-contained breathing apparatus and full protective clothing.

Dike area to contain runoff and prevent contamination of water sources.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Product is not flammable and is not known to present any unusual fire or explosion hazards.

SECTION 06 - ACCIDENTAL RELEASE MEASURES**STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:**

Contain spill to minimize contaminated area.

Wear proper personal protective equipment. Avoid inhalation of dust and direct contact with eyes and skin.

Clean up small spills by vacuuming or wet sweeping.

Collect large spills with scoops or shovels and place in suitable containers. If possible moisten with small amount of water to prevent generation of dust. Avoid creating runoff.

Decontaminate tools and equipment by scrubbing with soap and water. Remove any cleaning wastes and contaminated soil with collected material.

SECTION 07 - HANDLING AND STORAGE**HANDLING PROCEDURES:**

Avoid dust formation. Keep containers closed when not in use.

Avoid contact with eyes and skin when handling

Avoid inhalation of dust.

STORAGE INFORMATION:

Store in cool, dry place with adequate ventilation.

SECTION 08 – EXPOSURE CONTROLS/PERSONAL PROTECTION*** PERSONAL PROTECTIVE EQUIPMENT:**

RECOMMENDED: Work gloves and safety glasses with side shields. Respiratory protection should be utilized when there is potential exposure to high levels of dust.

RESPIRATORY PROTECTION:

Use NIOSH approved dust air-purifying respirator equipped with N95 or higher particulate filter where exposure levels exceed regulatory limits and/or for nuisance dust.

For higher or unknown concentrations, as well as fire-fighting and other emergencies, use NIOSH approved positive pressure, self-contained breathing apparatus.

SKIN PROTECTION:

Wear suitable gloves and clothing to prevent direct contact.

EYE PROTECTION:

Safety glasses with side shields or chemical goggles.

OTHER PROTECTIVE EQUIPMENT:

Wear suitable clothing to prevent skin contact.

Eyewash and safety shower recommended in the work area.

ENGINEERING CONTROLS:

Local ventilation recommended – mechanical ventilation may be used to keep airborne contaminants below recommended exposure limits.

EXPOSURE LIMITS:

Refer to **SECTION 2** for Recommended Exposure Limits.

IDLH (IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION):

500 mg/m³

SECTION 09 – PHYSICAL AND CHEMICAL PROPERTIES

CHEMICAL FORMULA:	ZnO
MOLECULAR WEIGHT:	81.4
PHYSICAL STATE:	Solid
APPEARANCE AND ODOR:	White or Yellowish-white powder
ODOR THRESHOLD:	Odorless
pH:	6.5 – 7.0 (estimated)
SOLUBILITY IN WATER (% IN WATER):	Practically insoluble
SPECIFIC GRAVITY:	Approximately 5.61 @ 68°F (20°C)
BULK DENSITY:	35 – 45 lb/ft ³
BOILING POINT (°F):	Not determined
MELTING POINT/FREEZING POINT (°F):	3587 °F (1975°C)
VAPOR PRESSURE (MM HG):	Not determined

EVAPORATION RATE: Not applicable
PERCENT VOLATILES BY VOLUME: 2% (due to loss of water)
OCTANOL/WATER PARTITION COEFFICIENT: Not determined

SECTION 10 – STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Heat and exposure to incompatibles.

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITY: Reacts vigorously with strong acids and bases.

An explosion may result if heated with magnesium.

Has exploded when mixed with chlorinated rubber at 419° F (215° C).

Reacts violently with aluminum and linseed oil.

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY:

Toxic by inhalation. Symptoms may be delayed by several hours after exposure.

Slightly toxic orally. May cause gastrointestinal disturbances.

Practically non-toxic by skin absorption.

This product is not known or reported to be carcinogenic by any reference including IARC, NTP, OSHA, or EPA.

No evidence of reproductive toxicity in humans. Some evidence based on animal studies.

REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) NUMBER:

ZH4810000 (for zinc oxide).

TOXICITY:

TOXICITY	DESCRIPTION	RESULTS	TESTED ON
ACUTE ORAL			
LD₅₀ (ORAL):	Lethal Dose (50%)	> 5000 - 15000 mg/kg	Rat
LD₅₀ (ORAL):	Lethal Dose (50%)	7950 mg/kg	Mouse
ACUTE INHALATION			
LC₅₀ (INHALATION):	Lethal Concentration (50%)	2500 mg/m ³	Mouse
OTHER			
LC₅₀ (INTRAPERITONEAL):	Lethal Dose (50%)	240 mg/kg	Rat

IRRITATION			
SKIN IRRITATION:	Mildly irritating	500 mg/24 hr.	Rabbit
EYE IRRITATION:	Highly irritation	500 mg/24 hr.	Rabbit

NOTE: This product shows a low degree of oral toxicity in laboratory animals

SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICITY:

Not available at this time

ENVIRONMENTAL TOXICITY:

SPECIES	TEST TYPE	ENDPOINT	DURATION (hours)	DESCRIPTION	RESULT (mg/L)
ACUTE TOXICITY					
<i>BUFO BUFO JAPONICUS</i>	Static	Not Specified	48	EC50	3.2
Toad tadpole					
<i>CYPRINUS CARPIO</i>	Oral	Mortality	52	LD0	228 - 262
Carp					
CHRONIC TOXICITY					
No data available					

NOTE: Results reported above are based on research studies conducted on zinc oxide. Actual products have not been tested.

CHEMICAL OXYGEN DEMAND: Not determined

BIOLOGICAL OXYGEN DEMAND (BOD5): Not determined

BIOLOGICAL ELIMINATION: Not determined

SECTION 13 – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL INFORMATION:

Dispose in accordance with all local, State, Provincial and Federal regulations at approved waste management site.

Product not anticipated to become a RCRA hazardous waste.

SECTION 14 - TRANSPORT INFORMATION

U.S. DOT REGULATED:

NOT REGULATED

SHIPPING NAME:

CHEMICALS N.O.I. (Not Otherwise Identified)

UN/NA NUMBER:

NOT APPLICABLE

CANADIAN TRANSPORT REGULATION: NOT REGULATED
SHIPPING NAME: NOT APPLICABLE
UN/NA NUMBER: NOT APPLICABLE

INTERNATIONAL AIR TRANSPORTATION REGULATIONS: NOT REGULATED
SHIPPING NAME: NOT APPLICABLE
UN/NA NUMBER: NOT APPLICABLE

INTERNATIONAL MARITIME DANGEROUS GOODS REGULATION: NOT REGULATED
SHIPPING NAME: NOT APPLICABLE
UN/NA NUMBER: NOT APPLICABLE

SECTION 15 - REGULATORY INFORMATION

OSHA:
 Meets criteria for hazardous material as defined by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.1200.

TSCA:
 We certify that all components of this product are registered under the regulations of the Toxic Substances Control Act (TSCA).

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

SARA (SECTION 311/312):		SARA (SECTION 302):		RQ
REACTIVE HAZARD:	N	EXTREMELY HAZARDOUS SUBSTANCE:	N	
PRESSURE HAZARD:	N	CERCLA HAZARDOUS SUBSTANCE:	Y	
FIRE HAZARD:	N			
IMMEDIATE/ACUTE:	Y	SARA (SECTION 304):		
DELAYED/CHRONIC:	N	RELEASE NOTIFICATION	N	

SARA (SECTION 313 - TOXIC CHEMICAL): This product contains the following chemical(s) listed under section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

COMPONENT	CAS NO.	WT. %	COMMENTS
Zinc compounds	ZNCMPD	95 - 99.7	Majority of zinc is in the form of Zinc Oxide.

CLEAN WATER ACT – PRIORITY POLLUTANTS: May contain Zinc at concentrations less than 1%.

CLEAN AIR ACT:
VOLATILE ORGANIC COMPOUNDS (VOC)
 (EPA METHOD 24/24a): None expected – inorganic compound

LOSS ON DRYING (%): 0 – 2% (Due to loss of water)

CERCLA – COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT:**(FOR COMPONENTS LISTED IN SECTION 2)**

Zinc Compounds

No RQ established – CERCLA Hazardous Substance

RCRA (RESOURCE CONSERVATION & RECOVERY ACT):

Product not anticipated to become Hazardous Waste unless contaminated or mixed with other materials. Generator is responsible for proper characterization and disposal of waste.

RCRA #:

Not available

FDA:This product is **NOT** registered with the Food and Drug Administration (FDA).**USDA:**This product is **NOT** registered with the U.S. Department of Agriculture (USDA).**CANADIAN REGULATORY INFORMATION:****CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):**

This product conforms to the CEPA regulations.

LISTED ON DOMESTIC SUBSTANCE LIST (DSL):

Listed

LISTED AS PRIORITY SUBSTANCE:Components may contain respirable particulate matter \leq 10 microns.**LISTED AS TOXIC SUBSTANCE:**Components are **NOT** listed.**EXPORT CONTROL LIST:**Components are **NOT** listed.**LISTED ON NON-DOMESTIC SUBSTANCES LIST (NDSL):**Components are **NOT** listed.**NATIONAL POLLUTANT RELEASE INVENTORY (NPRI):**

Product is subject to NPRI reporting (zinc & its compounds).

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.

WORKPLACE HAZARDOUS INFORMATION SYSTEM (WHMIS):**WHMIS STATUS:**

Non-controlled

CLASS:

Not applicable

EUROPEAN/INTERNATIONAL REGULATIONS:**EUROPEAN INVENTORY OF EXISTING COMMERCIAL SUBSTANCES (EINECS) NUMBER:** 215-222-5 (for zinc oxide)**EUROPEAN PRIORITY LISTS:**

This chemical substance is listed in a priority list (as foreseen under Council Regulation (EEC) NO. 793/93 on the evaluation and control of the risks of existing substances). Priority List #2 European Chemical Bureau #07.3.

HAZARD SYMBOLS:	N (ENVIRONMENTALLY DANGEROUS)
RISK PHRASES:	R50/53 -Very toxic to aquatic organisms. May cause long term adverse effects in the aquatic environment.
SAFETY PHRASES:	S60 -This material and its container must be disposed of as hazardous waste. S61 -Avoid release to the environment. Refer to special instructions/safety data sheets.

SECTION 16 – OTHER INFORMATION

OTHER PRECAUTIONS:	None Known
STATE REGULATORY INFORMATION:	
NEW JERSEY RIGHT TO KNOW (RTK) SUBSTANCE NUMBER:	2037 (Zinc Oxide)
PENNSYLVANIA HAZARDOUS SUBSTANCE LIST:	Environmentally Hazardous Substance
CALIFORNIA PROPOSITION 65:	Product components are not listed.
LABEL INFORMATION:	
LABEL HAZARDS:	
CAUTION!	May cause eye and skin irritation.
CAUTION!	May irritate upper respiratory tract.
LABEL PRECAUTIONS:	Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Wear proper protective equipment. Avoid breathing dust. Use with adequate ventilation. Maintain good housekeeping for dust control. Keep containers closed when not in use

***MAIN REFERENCES:**

1. “2009 Threshold Limit Values and Biological Exposure Indices”, American Conference of Government Industrial Hygienists, 2009.
2. “Dangerous Properties of Industrial Materials”, Sax, N.I, .8th Edition, 1992.
3. NIOSH POCKET GUIDE TO CHEMICAL HAZARDS, U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, June 1997.

* - Indicates sections that were revised from previous versions of this document.

ACRONYMS:

ACGIH – American Conference of Governmental Industrial Hygienists
CAS – Chemical Abstract Service
CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
DOT – Department of Transportation (U.S.)
EC – Effective Concentration (where desired endpoint observed)
EEC – European Economic Community
EPA – Environmental Protection Agency
g/m³ – grams per cubic meter
HMIS - Hazardous Materials Identification System
IARC - International Agency for Research on Cancer
LC – Lethal Concentration
LD – Lethal Dose
mg/m³ – milligrams per cubic meter
mg/kg – milligrams per kilogram
mg/L – milligrams per liter
NIOSH – National Institute for Occupational Safety and Health
MSDS – Material Safety Data Sheet
NOAEL – No Observed Adverse Effect Level
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OSHA – Occupational Safety and Health Administration
RCRA – Resource Conservation and Recovery Act
RQ – Reportable Quantity
SARA – Superfund Amendments and Reauthorization Act
TWA – Time weighted average (8-hour)
UN/NA – United Nations/North America
WHMIS – Workplace Hazardous Materials Information System (Canada)
WT. % - Weight Percent

IN ACCORDANCE WITH GOOD PRACTICES OF PERSONAL CLEANLINESS AND HYGIENE, HANDLE WITH DUE CARE AND AVOID UNNECESSARY CONTACT WITH THIS PRODUCT. THIS INFORMATION IS BEING SUPPLIED TO YOU UNDER U.S. OSHA'S "RIGHT TO KNOW" (29 CFR 1910.1200) AND CANADA'S WHMIS REGULATIONS. THE INFORMATION IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US AND IS BELIEVED TO BE TRUE AND ACCURATE. NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THIS DATA, THE HAZARDS CONNECTED WITH THE USE OF THE MATERIAL, OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, IS MADE. CHEMTRADE LOGISTICS ASSUMES NO RESPONSIBILITY. CHEMTRADE ADHERES TO THE CODES OF RESPONSIBLE CARE.

