

MATERIAL SAFETY DATA SHEET (MSDS)

ZINC OXIDE

SECTION 1 - PRODUCER & SUPPLIERS DETAILS

Manufacturer & Supplier: NUMINOR CHEMICAL INDUSTRIES LTD.

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SECTION 2 - CHEMICAL NAME & INFORMATION ON INGREDIENTS

Chemical Name: Zinc Oxide (CAS : 1314 - 13 - 2) (EINECS: 215-222-5)

Symbol: N   Dangerous for the Environment

R-Phrases: R50/53- Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.

Formula: ZnO

Synonyms: Chinese White, Zinkweiss, Zinc monoxide, Zinc Flowers

% Range: 99 - 100%

Trace materials normally not exceeding 0.5%

There are no physically added chemical substances. The impurities are inherent to the raw materials used in the production of Zinc Oxide

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Melting Point: Above 1800°C

Specific Gravity: 5.61

Solubility in water: None or very low.

Mol Wt. 81.37

Appearance & Odour: White, light gray or pale yellow powder, odourless

SECTION 4 - HAZARDS IDENTIFICATION

Physical / chemical hazards :	The data available does not support any physical or chemical hazard.
Environmental hazard :	R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Adverse human health effects	
- Inhalation :	May cause irritation to the respiratory tract.
- Skin contact :	Repeated or prolonged skin contact may cause irritation.
- Eye contact :	Excessive dust exposure may cause minor eyes irritation.
- Ingestion :	Health hazard if ingested in large quantities, can cause abdominal pain, nausea, cramps.

SECTION 5 - FIRE, FIGHTING & EXPLOSION DATA

Fire:	Non Combustible.
Flammability:	Non Flammable
Flash point:	Not combustible
Extinguishing media:	In case of fire in immediate vicinity use any extinguishing agent.
Protection of fire-fighters:	Use breathing apparatus (self-contained breathing apparatus with full face shield). Wear suitable protective clothing.
Hazardous combustion and decomposition products	None.

SECTION 6 - STABILITY & REACTIVITY DATA

Stability:	Stable under ordinary conditions
Hazardous Reactions:	None

Incompatibility (materials to avoid):

1. Heated Magnesium
2. Chlorinated Rubber above 215c
3. Acids and Bases

SECTION 7 - Toxicological Information

Acute toxicity	
- Inhalation:	(rat) 4 hours LC50 > 5.7 mg ZnO/l Klimisch et al. 1982
- Dermal:	No data available.
- Ingestion:	(rat) LD50 >15000 mg ZnO/kg OECD 401
Dermal irritation (rabbit):	Not irritant. OECD 404
Eyes irritation (rabbit):	Not irritant. OECD 405
Chronic toxicity:	50 mg ZnO/ day

- Sensitization:** (guinea-pig) This product has been reported not to cause skin sensitization (Magnusson & Kligman)
- Carcinogenicity:** No evidence of carcinogenicity in laboratory animals. No evidence of carcinogenicity in man.
- Mutagenicity:** In vitro and in vivo test of short-term genotoxicity : no evidence of genotoxicity.
- Reproductive toxicity:** No experimental or epidemiological evidence of reproduction toxicity. Teratogenicity
- Other toxicological information:** Zinc fume fever is attributable to exposure to ultra-fine zinc oxide particles (generated for example during welding and cutting of galvanised steel), but is not experienced in inhalation exposure to commercially traded Zinc Oxide.
- Rat inhalation LC50 [mg/l/4h]:** > 5.7 ZnO

SECTION 8 - FIRST AID MEASURES

- Effects and symptoms:** No specific effects and/or symptoms have been reported or known.
- First aid**
- **Skin contact:** Rinse immediately with plenty of water
 - **Inhalation:** Remove victim to fresh air.
If feeling unwell, immediately seek medical attention.
 - **Eye contact:** Rinse immediately with clean water for 15 minutes.
If feeling unwell, immediately seek medical attention.
 - **Ingestion:** Immediately rinse mouth with water.
Do not induce vomiting. Give water to drink.
If feeling unwell, immediately seek medical attention.
- Protection of rescue personnel:** Avoid all unnecessary exposure. Use appropriate protection (see Section 9).

SECTION 9 - PERSONAL PROTECTION & EXPOSURE CONTROLS

- **Respiratory protection:** Respiratory protection equipment not absolutely necessary.
 - **Hand protection:** Gloves.
Material: leather gloves, cotton gloves, rubber gloves.
 - **Skin protection:** Work clothes.
 - **Eye protection:** Chemical goggles or safety glasses.
- Occupational Exposure Limits**
- 8 Hour TLV-TWA [mg/m³] :** 10 (Dust)
5 (fume)
- Engineering measures:** Mechanical ventilation is recommended.
- Belgium 2002:**
- 15 minutes TLV-STEL [mg/m³/]:** 10 (fume)

SECTION 10 - ACCIDENTAL RELEASE MEASURES & SPILL LEAK PROCEDURES

Personal precautions:	Wear suitable gloves and eye/face protection. Avoid dust creation.
Environmental precautions:	Do not let product enter drains, sewage system, ground water.
Methods for cleaning up:	Sweep up and shovel into suitable containers for disposal. Re-use or recycle waste.

SECTION 11 - HANDLING AND STORAGE

Handling & storing:	Good housekeeping - store in a cool dry place - keep containers shut. Avoid making dust.
Packing Materials:	All materials suitable.

SECTION 12 - ECOLOGICAL INFORMATION

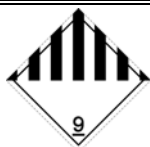
Persistence and degradability:	Not applicable.
Bioaccumulative potential:	Not applicable.
WGK (Germany):	2
Ecotoxicity:	EC50 (Senastrum capricornutum, 72 H): 170 µg ZnO/I (LISEC 1997)
Mobility:	Not applicable.

SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal:	Comply with local regulations for disposal.
Waste of residues:	S60 - This material and its container must be disposed of as hazardous waste. Because of possible pollution, remove as industrial waste or hazardous waste.
Contaminated packaging:	Keep waste packaging separate. Because of possible pollution, remove as industrial waste or hazardous waste.

SECTION 14 - TRANSPORT INFORMATION

Hazard Labels:



H.S. Code:	2833.00	
UN - No:	3077	
ADR/RID/ADNR/IMO-IMDG:	Class 9	
H.I. No.:	90	
Shipping Name:	3077 Environmentally Hazardous Substance, Solid,	N.O.S.,
	9, III, ADR	
Packaging Group:	III	
IMDG-Marine Pollution	YES	
EMS No.	F-A, S-F	
MFAG Table	1	

IATA Details:

UN #: 3077, Class 9, PG III
Proper Shipping Name: Environmentally Hazardous
Substance, Solid, N.O.S.,
Inhalation Packing Group I: No

SECTION 15 - REGULATORY INFORMATION

Symbol:



N



N Dangerous for the Environment

R Phrase(s): R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S Phrase(s): S60 - This material and its container must be disposed of as hazardous waste.
S61 - Avoid release to the environment. Refer to special instructions/Safety datasheets.

SECTION 16 - OTHER INFORMATION

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MSDS prepared by: AVK

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