MATERIAL SAFETY DATA SHEET (MSDS)
ZINC OXIDE

SECTION 1 - PRODUCER & SUPPLIERS DETAILS

Manufacturer & Supplier: NUMINOR CHEMICAL INDUSTRIES LTD.
Address: P. O. BOX 92, MAALOT 24952, ISRAEL.
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Fax: + 972-4-9976062
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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
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 1800ºC
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). Sensitization may occur at concentrations of 100 mg/m3 or above. 

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 galvanized 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. 
- 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 (Selenastrum 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
IATA Details: IMDG-Marine Pollution YES UN #: 3077, Class 9, PG III EMS No. F-A, S-F 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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