

Section 3. Composition / Information on Ingredients

Chemical name	CAS No.	Concentration
Non-Hazardous (trade secret)	Proprietary	45-60%
Zinc Oxide	1314-13-2	<15%
Manganese Sulfate Monohydrate	10034-96-5	<10%
Zinc Sulfate	7446-19-7	<5%
Sucrose	57-50-1	<5%

Section 4. First-Aid Measures

Inhalation: Remove to fresh air. If breathing is difficult, administer oxygen. Get medical attention if irritation persists.

Skin contact: No first aid should be needed. Remove contaminated clothing and launder before reuse. Wash skin with soap and water. Get medical attention if irritation develops or persists.

Eye contact: Immediately flush eyes thoroughly with large quantities of water for 20 minutes, while holding the eye lids open to be sure the material is washed out. Remove contact lenses if present and easy to do. Get immediate medical attention.

Ingestion: Rinse out mouth with water. Get medical attention.

Most important symptoms/effects, acute and delayed: Causes severe eye irritation or burns. Permanent eye damage may occur. May cause mechanical skin irritation. Inhalation of dust may cause respiratory irritation, coughing and difficulty in breathing. Prolonged overexposure by inhalation may cause brain damage.

Indication of immediate medical attention and special treatment, if necessary: If eye contact occurs, get immediate medical attention.

Section 5. Fire-Fighting Measures

Suitable (and unsuitable) extinguishing media: Use water fog or spray, alcohol-foam, universal foam, carbon dioxide or dry chemical. Do not use solid water jet as that may create a dust cloud that can present an explosion hazard.

Specific hazards arising from the chemical: Dust generated in handling this material may present a potential fire and explosion hazard if suspended in air at high concentrations. Settled dust presents a fire hazard. Resuspension of the dust into the air by vibration, traffic, material handling, etc. in high concentrations in the presence of an ignition source could result in a dust explosion. Minimize the generation and accumulation of dust. Combustion may produce oxides of carbon, zinc, sulfur, and manganese compounds.

Special protective equipment and precautions for fire-fighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Powders that become wet may cause surfaces to be extremely slippery and cause a slip hazard.

Section 6. Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures: Avoid generating air-borne dust. Remove all ignition sources such as open flames, spark producing equipment, pilot lights, etc. Wear appropriate protective clothing as described in Section 8.

Environmental precautions: Avoid release to the environment. Report spills and releases as required to appropriate authorities.

Methods and materials for containment and cleaning up: Scoop or shovel up using methods that minimize the generation of airborne dust. Non-sparking tools should be used. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentrations. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Place dry material into an appropriate container for disposal. Wipe spill area with a damp cloth. Do not flush to the sewer.

Section 7. Handling and Storage

Precautions for safe handling: Prevent contact with eyes. Avoid contact with skin and clothing. Avoid generating or breathing dust. Wear protective clothing and equipment as described in Section 8. Use with adequate ventilation and proper dust collection methods to keep exposure level below occupational exposure limits. Wash thoroughly with soap and water after use. Do not eat, drink or smoke in the work area. Keep containers closed when not in use. Possible combustible dust hazard. Minimize the generation and accumulation of dust. Keep dust away from heat, sparks, flames and all other sources of ignition. Follow good housekeeping practices to keep surfaces, including areas overhead such as piping, drop ceilings, ductwork, etc. free from settled dust. Dry powders can build static electricity charges when subjected to friction of transfer and in mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

Conditions for safe storage, including any incompatibilities: Store in a cool, well-ventilated area. Protect from physical damage.

Section 8. Exposure Controls / Personal Protection

Exposure guidelines:

Non-Hazardous (trade secret)	10 mg/m ³ TWA ACGIH TLV 5 mg/m ³ (respirable fraction), 15 mg/m ³ (Total dust) TWA OSHA PEL
Zinc Oxide	2 mg/m ³ TWA, 10 mg/m ³ STEL ACGIH TLV (Respirable) 5 mg/m ³ (respirable fraction), 15 mg/m ³ (total dust) TWA OSHA PEL
Manganese Sulfate Monohydrate (as Mn inorganic compounds)	.02 mg/m ³ TWA (respirable), 0.1 mg/m ³ TWA (inhalable) ACGIH TLV 5 mg/m ³ Ceiling OSHA PEL
Zinc Sulfate	None Established
Sucrose	10 mg/m ³ TWA ACGIH TLV 5 mg/m ³ (respirable fraction), 15 mg/m ³ (total dust) TWA OSHA PEL

Appropriate engineering controls: Use with general or adequate local exhaust ventilation to minimize exposure levels. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment. Ensure that dust handling systems (such as exhaust

ducts, dust collectors, vessels and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e. there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.

Personal Protective Equipment:

Respiratory protection: If occupational exposure limits are exceeded, a dust filtering mask, an approved respirator with a dust/mist cartridge, or a supplied air respirator may be used. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.

Skin protection: Suitable gloves are recommended as needed to avoid prolonged contact.

Eye protection: Chemical safety goggles are recommended if contact is possible.

Other: Eye wash should be available if contact may occur.

Section 9. Physical and Chemical Properties
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Appearance: Powder.

Odor: Mild odor.

Odor threshold: Not available	pH: Not applicable
Melting point/freezing point: Not available	Boiling Point: Not applicable
Flash point: Not applicable	Evaporation rate: Not applicable
Flammability (solid, gas): Combustible dust	
Flammable limits: LEL: Not applicable	UEL: Not applicable
Vapor pressure: Not applicable	Vapor density: Not applicable
Relative density: Not available	Solubility(ies): Not available
Partition coefficient: n-octanol/water: Not applicable	Auto-ignition temperature: Not available
Decomposition temperature: Not available	Viscosity: Not applicable

Section 10. Stability and Reactivity

Reactivity: Not reactive under normal conditions of use.

Chemical stability: Stable

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Keep away from heat, sparks, flames and other sources of ignition. Avoid hygroscopic conditions and dust formation.

Incompatible materials: None known.

Hazardous decomposition products: Thermal decomposition may release oxides of carbon, zinc, sulfur, and manganese compounds.

Section 11. Toxicological Information
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Acute effects of exposure:

Inhalation: Dust may cause upper respiratory irritation with sneezing and coughing.

Ingestion: Swallowing large amounts may cause gastrointestinal irritation, nausea and diarrhea.

Skin contact: No adverse effects expected. May cause mechanical skin irritation.

Eye contact: Contact may cause severe irritation, redness and tearing. May cause permanent eye damage.

Chronic effects: Prolonged overexposure to manganese have been shown to cause permanent neurological damage in humans.

Germ Cell Mutagenicity: None of the components have been shown to cause germ cell mutagenicity.

Reproductive Toxicity: None of the components have been shown to cause reproductive or developmental toxicity.

Carcinogenicity: None of the components of this product are listed as carcinogens or suspected carcinogens by IARC, NTP, OSHA or ACGIH.

Acute toxicity values: Product Acute Toxicity Value:

Non-Hazardous (trade secret): Not toxic

Zinc Oxide: Oral rat LD50: >5000 mg/kg, Inhalation rat LC50: >5700 mg/m³/4hr (no mortality), Skin rat LD50: >2000 mg/kg

Manganese Sulfate Monohydrate: Oral rat LD50: 2150 mg/kg, inhalation rat LC50: > 4.45 mg/L/4 hr (no mortality)

Zinc Sulfate: Oral rat LD50 1710 mg/L, Dermal rat LD50 >2000 mg/kg

Sucrose: Not toxic

Section 12. Ecological Information

Ecotoxicity Data:

Zinc Oxide: 96 hr LC50 Oncorhynchus kisutch 727 ug/L, 48 hr EC50 daphnia magna 860 ug/L, 72 hr NOEC

Pseudokirchneriella subcapitata 5.4 ug/L

Manganese Sulfate Monohydrate: 96 hr LC50 Oncorhynchus mykiss 3.17 mg,

Zinc Sulfate: 96 hr LC50 Oncorhynchus kisutch 727 ug/L, 48 hr EC50 daphnia magna 860 ug/L, 72 hr NOEC

Pseudokirchneriella subcapitata 5.4 ug/L

This product is classified as toxic to aquatic life with long lasting effects. Releases to the environment should be avoided.

Persistence and degradability: Biodegradation is not applicable to inorganic compounds.

Bioaccumulative potential: Not data available.

Mobility in soil: No data available.

Other adverse effects: None known.

Section 13. Disposal Considerations

Dispose in accordance with all local, state and federal regulations.

Section 14. Transport Information

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
US DOT		Not Regulated			
Canadian TDG		Not Regulated			
EU ADR/RID	UN3077	Environmentally hazardous substance, solid, n.o.s (Zinc Oxide, zinc sulfate)	9	PG III	Yes
IMDG*	UN3077	Environmentally hazardous substance, solid, n.o.s (Zinc	9	PG III	Yes

		Oxide, zinc sulfate)			
IATA/ICAO *	UN3077	Environmentally hazardous substance, solid, n.o.s (Zinc Oxide, zinc sulfate)	9	PG III	Yes

*This product is classified as a Marine Pollutant (Environmentally Hazardous Substance) in accordance with the IMDG Code and the UN Model Regulations. However, if it is packaged in either single packages or inner packagings in combination packages containing net quantities of less than 5 kg/5 L, the Marine Pollutant does not apply (IMDG Code 2.10.2.7).

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable

Special precautions: None known

Section 15. Regulatory Information

CERCLA Hazardous Substances (Section 103)/RQ: This product is not subject to CERCLA reporting requirements as it is sold. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA Hazard Category (311/312): Refer to Section 2 for OSHA Hazard Classification

SARA 313 Information: This product contains the following chemicals subject to Annual Release Reporting Requirements Under SARA Title III, Section 313 (40 CFR 372):

Zinc Oxide	1314-13-2	<15%
Manganese Sulfate Monohydrate	10034-96-5	<10%
Zinc Sulfate	7446-19-7	<5%

California Proposition 65

This product contains the following chemicals known to the State of California to cause cancer or reproductive toxicity (birth defects):

Naphthalene	91-20-3	<14.4 ppm	cancer
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US EPA TSCA Inventory: All of the ingredients in this product are listed on the EPA TSCA Inventory.

Section 16. Other Information

SDS Revision History: New SDS

Date of preparation: July 9, 2018

Date of last revision: New SDS