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## SAFETY DATA SHEET

### Section 1- IDENTIFICATION

COMPOSITION <b>ZnO</b>		PRODUCT NAME <b>Zinc Oxide</b>
SUPPLIER: <b>Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030</b>	RECOMMENDED USE: <b>Laboratory Chemicals Scientific Research</b>	EMERGENCY TELEPHONE NUMBERS <b>US: 001-800-424-9300 Europe: 001-703-527-3887</b>

### Section 2- HAZARD(S) IDENTIFICATION

**Classification:**  
 This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

**Acute Aquatic Toxicity:** Category 1 (H400)      **Chronic Aquatic Toxicity:** Category 1 (H410)

**LABEL ELEMENTS: Signal Word: Warning**



#### **HAZARD STATEMENTS**

- H400: Very toxic to aquatic life
- H410: Very toxic to aquatic life with long lasting effects

#### **PRECAUTIONARY STATEMENTS**

**Prevention:**

- P273: Avoid release to the environment
- P391: Collect spillage
- P501: Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC):**

-None identified.

### Section 3- COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS-No	Molecular Weight
Zinc Oxide	1314-13-2	81.39 g/mol

### Section 4- FIRST AID MEASURES

**GENERAL ADVICE:** Consult a physician. Show this safety data sheet to the doctor in attendance.

**INHALATION:** Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If not breathing, give artificial respiration. Consult a physician.

**SKIN CONTACT:** Wash off immediately with soap and plenty of water while removing all

contaminated clothes and shoes. Consult a physician.

**EYE CONTACT:** Flush eyes with lukewarm water, lifting upper and lower lids, for at least 15 minutes. Consult a physician.

**INGESTION:** Rinse mouth with water. Never give anything by mouth to an unconscious person. Consult a physician.

**MOST IMPORTANT SYMPTOMS/EFFECTS:** The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11.

**INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:** No data available

## Section 5- FIREFIGHTING MEASURES

**Suitable Extinguishing Media:**

Carbon Dioxide (CO<sub>2</sub>); Dry Chemical, Water Spray, alcohol-resistant foam

**Unsuitable Extinguishing Media:**

No Information Available

**Specific Hazards Arising from the Chemical:**

No data available.

**Protective Equipment & Precautions for Firefighters:**

As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.

## Section 6- ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Ensure adequate ventilation. Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist or gas. Evacuate personnel to safe areas.

**Environmental Precautions:** Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Do not let product enter drains. See Section 12 for additional ecological information.

**Methods for Containment & Clean Up:** Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal. Do not let this chemical enter the environment.

## Section 7- HANDLING AND STORAGE

**Handling:** Provide appropriate exhaust ventilation at places where dust is formed. Wear personal protective equipment. Avoid contact with eyes and skin. Avoid formation of dust and aerosols.

**Storage:**

Keep in a dry and well ventilated place. Keep container tightly closed.

## Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

**Exposure Guidelines:**

Component	CAS-No.	Value	Control Parameters	Basis
Zinc Oxide	1314-13-2	TWA	2.000000 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)
Remarks		Metal fume fever		
		STEL	10.000000 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)
Remarks		Metal fume fever		
		TWA	5.000000 mg/m <sup>3</sup>	USA.NIOSH recommended exposure limits
		ST	10.000000 mg/m <sup>3</sup>	USA.NIOSH recommended exposure limits
		C	15.000000 mg/m <sup>3</sup>	USA.NIOSH recommended exposure limits
		TWA	5.000000 mg/m <sup>3</sup>	USA Occupational exposure limits (OSHA)- Table Z-1 Limits for air contaminants
		TWA	15.000000 mg/m <sup>3</sup>	USA Occupational exposure limits (OSHA)- Table Z-1 Limits for air contaminants
		PEL	5 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8,Article 107)
		STEL	10 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8,Article 107)

**Engineering Measures:** Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

**Personal Protective Equipment:**

**Eye/Face Protection:** Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate standards such as NIOSH (US) or EN 166 (EU).

**Skin and Body Protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory Protection:** For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection, use type OV/AG/P99 (US) or ABEK-P2 (EU EN143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of Environmental Exposure:** Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**Section 9- PHYSICAL AND CHEMICAL PROPERTIES**

**Physical State:** Solid

**Appearance:** yellow

**Odor:** No information available

**Odor Threshold:** No information available

**pH:** No information available

**Melting Point/Range:** No information available

**Boiling Point/Range:** No information available

**Flash Point:** Not applicable

**Evaporation Rate:** No information available

**Flammability (solid,gas):** No information available

**Flammability or Exposure Limits:**

**Upper:** No data available

**Lower:** No data available

**Vapor Pressure:** No information available

**Vapor Density:** No information available

**Relative Density:** 5.610 g/cm<sup>3</sup>

**Solubility:** No information available

**Partition coefficient; n-octanol/water:** No information available

**Auto Ignition Temperature:** No information available

**Decomposition Temperature:** No information available

**Viscosity:** No information available

**Explosive Properties:** No information available

**Oxidizing Properties:** No information available

**Section 10- STABILITY AND REACTIVITY**

**Reactive Hazard:** No data available.

**Stability:** Stable under recommended storage conditions.

**Conditions to Avoid:** No information available

**Incompatible Materials:** Strong oxidizing agents

**Hazardous Decomposition Products:**

Hazardous decomposition products formed under fire conditions-Zinc/Zinc Oxide

Other decomposition products-No information available

**Hazardous Reactions:** No information available

## Section 11- TOXICOLOGICAL INFORMATION

### Acute Toxicity:

#### Product Information/Component Information:

Component	LD50 Oral (Mouse)	Dermal	LC50 Inhalation (Mouse)
Zinc Oxide	7,950 mg/kg	No Data Available	2,500 mg/m <sup>3</sup>

### Delayed and immediate effects as well as chronic effects from short and long term exposure:

**Skin Corrosion/Irritation:** (Rabbit) - Mild skin irritation – 24 h

**Serious eye damage/irritation:** (Rabbit) - Mild eye irritation – 24 h

**Respiratory or Skin Sensitization:** No information available

**Carcinogenicity:** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	OSHA
ZnO	1314-13-2	Not Listed	Not Listed	Not Listed

**Mutagenic Effects:** (Hamster) Embryo – Unscheduled DNA synthesis; Morphological transformation; Sister chromatid exchange/ Guinea Pig – Unscheduled DNA synthesis

**Reproductive Effects:** No information available

**Development Effects:** No information available

**STOT – single exposure:** No information available

**STOT – repeated exposure:** No information available

**Aspiration Hazard:** No information available

**Symptoms/effects, both acute & delayed:** Stomach irregularities-Based on Human evidence

**Additional Information: (RTECS: Not available):** Zinc oxide dust or fume 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 or repeated exposure can cause reversible liver enzyme abnormalities, diarrhea.

To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

## Section 12- ECOLOGICAL INFORMATION

### Toxicity:

**Toxicity to fish:** LC50-Oncorhynchus mykiss (rainbow trout) – 1.1 mg/l – 96.0 h

**Toxicity to daphnia and other aquatic invertebrates:** EC50-Daphnia magna (water flea) – 0.098 mg/l – 48 h

**Persistence and Degradability:** No information available

**Bioaccumulation/Accumulation:** No information available

**Mobility in Soil:** No information available

**Results of PBT and vPvB assessment:** PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

**Other Adverse Effects:** Very toxic to aquatic life. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

## Section 13- DISPOSAL CONSIDERATIONS

**Waste Disposal Methods:** Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dispose of contaminated packaging as unused product.

## Section 14- TRANSPORT INFORMATION

**DOT:** Not dangerous goods

### IATA:

**UN-No:** 3077

**Proper Shipping Name:** Environmentally Hazardous Substance, Solid, N.O.S. (Zinc Oxide)

**Hazard Class:** 9

**Packing Group:** III

### IMDG/IMO:

**UN-No:** 3077

**Proper Shipping Name:** Environmentally Hazardous Substance, Solid, N.O.S. (Zinc Oxide)

**Hazard Class:** 9

**Packing Group:** III

**EMS-No:** F-A, S-F

**Marine Pollutant:** Yes

**Further Information:** EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods >5L for liquids or >5kg for solids.

## Section 15- REGULATORY INFORMATION

### US Federal Regulations:

**SARA 302:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

**SARA 313:** The following components are subject to reporting levels established by SARA Title III, Section 313:

Component	CAS No.	Revision Date
Zinc Oxide	1314-13-2	2007-03-01

**SARA 311/312 Hazards:** No SARA Hazards

### HMIS (USA):

**Health Hazard:** 0

**Flammability:** 0

**Physical Hazard:** 0

### National Fire Protection Association (USA):

**Health Hazard:** 0

**Fire Hazard:** 0

**Reactivity Hazard:** 0

**US California Proposition 65:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

### US Massachusetts RTK – Substance List:

Component	CAS No.	Revision Date
Zinc Oxide	1314-13-2	2007-03-01

### US New Jersey Right-to-Know Act:

Component	CAS No.	Revision Date
Zinc Oxide	1314-13-2	2007-03-01

### US Pennsylvania RTK – Hazardous Substances:

Component	CAS No.	Revision Date
Zinc Oxide	1314-13-2	2007-03-01

## **Section 16- OTHER INFORMATION**

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change, the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

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