SAFETY DATA SHEET

Date Issued : 5/24/2012 **MSDS No :** M-2200-335

Zinc Oxide Pieces

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Zinc Oxide Pieces

GENERAL USE: Physical vapor deposition of thin films

MANUFACTURER

Kurt J Lesker Company United States 1925 Route 51

Jefferson Hills, PA 15025 **E-Mail:** msds@lesker.com **Service Number:** 412-387-9200
Kurt J Lesker Company LTD

United Kingdom 15-16 Burgess Road

Hastings, East Sussex, TN35 4NR

England

Service Number: +44 (0) 1424 458100

24 HR. EMERGENCY TELEPHONE NUMBERS

24-Hour Emergency Response provided by 3E Global Incident Response Hotline

When calling, refer to Kurt J Lesker Company Global Response Access Code: 333594

North America [USA, Canada, Mexico]: 1-866-519-

4752

Mainland China: (+86) 4001 2001 74
Europe: {int'l call prefix}-1-760-476-3961
Asia Pacific: {int'l call prefix}-1-760-476-3960
Middle East & Africa: {int'l call prefix}-1-760-476-

3959

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Environmental:

Acute Hazards to the Aquatic Environment, Category 1 Chronic Hazards to the Aquatic Environment, Category 1

GHS LABEL



HAZARD STATEMENTS

H410: Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENT(S)

Prevention:

P273: Avoid release to the environment.

Response:

P391: Collect spillage.

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: White solid

IMMEDIATE CONCERNS: This product is not hazardous under conditions of normal use.

POTENTIAL HEALTH EFFECTS

EYES: Contact may cause eye irritation.

SKIN: May cause skin irritation.

INGESTION: May be harmful if swallowed.

INHALATION: May be harmful if inhaled. May cause respiratory irritation.

REPRODUCTIVE TOXICITY

REPRODUCTIVE EFFECTS: Not Available **TERATOGENIC EFFECTS:** Not Available

CARCINOGENICITY: Not listed as a human carcinogen

MUTAGENICITY: Not Available

ROUTES OF ENTRY: Inhalation, ingestion, eye contact, or skin contact. **IRRITANCY:** May cause irritation of skin, eyes, and respiratory tract.

PHYSICAL HAZARDS: This substance is not considered hazardous in the form supplied.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS
Zinc Oxide	100	1314-13-2

4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.

SKIN: Wash with soap and water. Get medical attention if irritation develops or persists.

INGESTION: Rinse mouth. Get medical advice/attention.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

INHALATION: Inhaling fumes of heated material may cause metal fume fever.

CHRONIC EFFECTS: Not Available

5. FIRE FIGHTING MEASURES

FLAMMABLE CLASS: Not flammable.

EXTINGUISHING MEDIA: Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.

EXPLOSION HAZARDS: Dusts at sufficient concentrations can form explosive mixtures with air.

FIRE FIGHTING PROCEDURES: As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic metal fumes

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Clean up spills immediately, observing precautions in Protective Equipment section.

LARGE SPILL: Collect spilled material in appropriate container. Spill may be reportable. Consult section 15 for Reportable Quantities.

ENVIRONMENTAL PRECAUTIONS

WATER SPILL: This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water.

GENERAL PROCEDURES: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all ignition sources if safe to do so. Avoid formation of dust. Provide appropriate exhaust ventilation where dust is formed. Avoid breathing (dust, vapor, mist, gas). Practice good chemical hygiene during and after use. Avoid release to the environment.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: To avoid risks to human health and the environment, comply with the instructions for use.

HANDLING: Keep away from heat and flame. Keep container closed when not in use. Remove contaminated clothing and wash before reuse. Wash hands before eating and wash before reuse. Wash thoroughly after handling.

STORAGE: Keep container closed when not in use. Store in a cool dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Wear safety glasses.

SKIN: Wear protective gloves.

RESPIRATORY: Not normally needed. If ventilation is inadequate and this material is handled at elevated temperatures or dusts/fumes/mists are generated a NIOSH/MSHA approved air purifying respirator with a manufacturers approved cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

WORK HYGIENIC PRACTICES: Practice good chemical hygiene during and after use.

COMMENTS:

COMPONENT EXPOSURE LIMITS

Component	Location, Type	Value (mg/m3)		
Zinc oxide (dust)	ACGIH TLV TWA	2		
	OSHA OEL TWA	5		
	OSHA OEL STEL	10		
	NIOSH REL TWA	5		
	NIOSH REL STEL	10		
	Canada - AB, BC, ON TWA	2		
	Canada - AB, BC, ON STEL	10		
	Canada - PQ TWA	10		
	Europe TWA	10		
	Germany TWA	4		
	Germany STEL	8		
	Sweden TWA	5		
	Australia, NZ, Singapore TWA	10		

Component	Location, Type	Value (mg/m3)		
Zinc oxide (fume)	ACGIH TLV TWA	2		
	OSHA OEL TWA	5		
	NIOSH REL TWA	5		
	Canada - PQ TWA	5		
	Europe TWA	5		
	Europe STEL	10		
	Denmark TWA	4		
	Denmark STEL	8		
	Germany TWA/STEL	1		
	Hungary STEL	20		
	Spain TWA	2		
	Switzerland TWA/STEL	3		
	Australia, NZ, Singapore TWA	5		
	Australia, New Zealand STEL	10		
	UK WEL TWA	5		
	UK WEL STEL	10		

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid

ODOR: None **COLOR:** White

pH: NA = Not Applicable

PERCENT VOLATILE: NA = Not Applicable

FLASH POINT AND METHOD: NA = Not Applicable

FLAMMABLE LIMITS: NA = Not Applicable

AUTOIGNITION TEMPERATURE: NA = Not Applicable

VAPOR PRESSURE: NA = Not Applicable

VAPOR DENSITY: NA = Not Applicable

BOILING POINT: 2360°C **MELTING POINT:** 1975°C

SOLUBILITY IN WATER: .00016 g/100mL at 30°C

DENSITY: 5.606 at 25°C

MOLECULAR WEIGHT: 81.408

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

CONDITIONS TO AVOID: Avoid high temperatures.

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic metal fumes

INCOMPATIBLE MATERIALS: Strong acids, Strong bases, Oxidizing materials, Magnesium powder.

11. TOXICOLOGICAL INFORMATION

ACUTE

DERMAL LD₅₀: Not Available

SKIN ABSORPTION: Not Available

ORAL LD₅₀: > 5000 mg/kg

Notes: Rat

INHALATION LC₅₀: 5.7 mg/L

Notes: Mouse

CARCINOGENICITY

IARC: Not listed
NTP: Not listed
OSHA: Not listed

REPRODUCTIVE EFFECTS: Not Available **TERATOGENIC EFFECTS:** Not Available

MUTAGENICITY: Not Available

12. ECOLOGICAL INFORMATION

BIOACCUMULATION/ACCUMULATION: Not Available

AQUATIC TOXICITY (ACUTE)

96-HOUR LC₅₀: 1.1 mg/L (Oncorhynchus mykiss)

48-HOUR EC₅₀: 1.0 mg/L (Daphnia magna)

CHEMICAL FATE INFORMATION: Not Available

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of according to applicable federal, state, provincial, and local regulations.

PRODUCT DISPOSAL: Contact a licensed waste disposal company.

EMPTY CONTAINER: Follow all MSDS/label precautions even after container is emptied because it may retain

product residues.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Environmentally hazardous substances, solid, n.o.s.

TECHNICAL NAME: Zinc oxide

PRIMARY HAZARD CLASS/DIVISION: 9

UN/NA NUMBER: 3077
PACKING GROUP: III

MARINE POLLUTANT #1: Yes

CANADA TRANSPORT OF DANGEROUS GOODS

SHIPPING NAME: Environmentally hazardous substances, solid, n.o.s.

TECHNICAL NAME: Zinc oxide

UN/NA NUMBER: 3077

PRIMARY HAZARD CLASS/DIVISION: 9

PACKING GROUP: III

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: None **313 REPORTABLE INGREDIENTS:** Yes

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA STATUS: All components of this product are included in inventory, exempt, or notified

REGULATIONS

STATE REGULATIONS:

The following components appear in one or more of the following state hazardous substances lists

Component	CAS	CA	MA	MN	NJ	PA	RI
Zinc oxide	1314-13-2	No	Yes	No	Yes	Yes	Yes

CALIFORNIA PROPOSITION 65: This product is not known to contain any components for which the State of

California has found to cause cancer, birth defects or other reproductive harm.

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM): Not Regulated

DOMESTIC SUBSTANCE LIST (INVENTORY): All components of this product are included in inventory, exempt, or notified

16. OTHER INFORMATION

APPROVED BY: EHS DEPT PREPARED BY: E Bolton

INFORMATION CONTACT: msds@lesker.com

HMIS RATING HEALTH 1 FLAMMABILITY 0 PHYSICAL HAZARD 0 PERSONAL PROTECTION C



GENERAL STATEMENTS: The physical and toxicological properties of this material have not been thoroughly investigated.

MANUFACTURER DISCLAIMER:

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