

MATERIAL SAFETY DATA SHEET

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ZINC METAL/POWDER

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SECTION I. MATERIAL IDENTIFICATION				
<p>MATERIAL NAME: ZINC METAL/POWDER DESCRIPTION: Bulk metal, granular, flake, powder and dust forms. OTHER DESIGNATIONS: Zn, ASTM B6, GE Materials B10C2 and D4X7 (flake), CAS #007 440 666 MANUFACTURER: Available from several suppliers</p>				
SECTION II. INGREDIENTS AND HAZARDS		%	HAZARD DATA	
Zinc		>98	No TLV Established*	
<p>*Current OSHA standard and ACGIH (1980) TLV for zinc oxide fume is 5 mg/m³. NIOSH has proposed a 10-hr TWA of 5 mg/m³ and a ceiling level of 15 mg/m³ (15 minute sample). TLV was set at a level to prevent metal fume fever.</p>			<p>Human, Skin 300 µg/3 days - (intermittent) Mild irritation</p> <hr/> <p>Human, Inhalation TCLo 124 mg/m³/50M Pulmonary system effects</p>	
SECTION III. PHYSICAL DATA				
Boiling point, deg C (F) -----	907 (1663)	Specific gravity @ 25 C ----	7.13	
Vapor pressure at 487 C, mm Hg --	1	Melting point, deg C (F) ---	419 (787)	
Index of explosibility, Zn powder (<0,1 weak, >10 severe) -----	0.1	Brinell hardness -----	31	
		Atomic weight -----	65.37	
Appearance: Bluish white lustrous metal, also finely divided forms.				
SECTION IV. FIRE AND EXPLOSION DATA			LOWER	UPPER
Flash Point and Method	Autoignition Temp. 680 C* (cloud)	Flammability Limits In Air 460 C* (dust layer)	0.5 oz/ft ³	--
<p>Dust cloud explosion</p>				
<p>Extinguishing Media: Use special dry chemical. Do not use CO₂. Water stream can disperse dust in air, producing a fire hazard and a weak explosion hazard if exposed to heat or ignition source. In a fire zinc metal can melt, vaporize and burn to ZnO. Hydrogen is liberated by reaction with acids or strong alkalis or (when powdered) water, which is an explosion hazard in a confined space.</p> <p>Firefighters should use self-contained breathing equipment.</p> <p>*Dust 100% thru 74 µm sieve; cloud can be ignited by 0.96J spark. Ignition temperature in CO₂ is 480 C. Reaction temperature in nitrogen atmosphere is 600 C.</p>				
SECTION V. REACTIVITY DATA				
<p>Stable in dry air. In moist air bulk metal reacts to form a white coating of basic carbonate which tends to resist further corrosion, but moist zinc dust can react exothermically and ignite spontaneously in air. Zinc foil will ignite in the presence of moisture.</p> <p>Vaporized zinc burns in air with a blue-green flame above 537 C to produce ZnO fume. Zinc, especially when powdered, is incompatible with acids and strong alkalis, with oxidizing agents, and with halogenated hydrocarbons. When powdered zinc is heated with sulfur, an explosive reaction occurs.</p>				

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)
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Zinc is relatively non-toxic. Inhalation of dust may cause irritation to upper respiratory tract. Skin contact may cause a mild dermatitis. Inhalation of fumes (ZnO, MSDS #45) may lead to metal fume fever. An acute, self-limiting condition, without recognized complications, sequelae, or chronic form. Symptoms appear several hours following exposure. A degree of tolerance may occur after continued exposure which is quickly lost after a day or two of non-exposure.

FIRST AID:

- Eye Contact: Flush eyes with running water for 15 minutes, including under eyelids.
- Skin Contact: Flush with running water, wash with soap and water.
- Inhalation: Remove to fresh air. Seek medical attention.
- Ingestion: *Induce vomiting. Seek medical attention.

*Chelation therapy: Calcium disodium edetate (CaNa₂-EDTA) has been used medically to increase rate of zinc removal from the body.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES
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Notify safety personnel of powdered spills. Remove sources of heat or ignition. Clean up personnel should use protective equipment to avoid inhalation of dust or fume. Remove small spills quickly and place in appropriate containers for disposal. Keep airborne particulate at a minimum when cleaning up. Use nonsparking tools. For zinc recovery techniques, pollution abatement methods, detection, and treatment processes. (See Ref. #40)

DISPOSAL: Reclaim for salvage or reuse. Unsalvageable waste may be buried in an approved landfill. Maximum conc. in effluent to sewer or stream is 1.0 ppm. Follow Federal, State, and Local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation in the workplace to keep airborne particulate at a minimum. Respirators should be available for nonroutine or emergency use. Where dust/fumes (zinc oxide) are up to 50 mg/m³, a fume (high efficiency particulate) respirator is satisfactory; air supplied or self-contained respirator with full facepiece is used to 250 ng/m³.

Avoid eye contact by use of chemical safety goggles where dusty conditions occur. Wear protective clothing appropriate for the work situation to minimize skin contact. Change work clothing daily. Wash thoroughly before changing to street clothes.

Provide suitable training in personal hygiene and in the cause and effect of metal fume fever.

Preclude from exposure workers with respiratory problems or gastro-intestinal disorder.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in covered metal containers in a dry, well-ventilated, low fire risk area. Protect containers from physical damage. Do not store with acids, halogenated hydrocarbons, and strong alkalis. Use good housekeeping practices to prevent accumulation of dust and follow sound cleaning techniques that will keep airborne particulate at a minimum. Avoid breathing dust or fume.

Minimize skin contact by using proper gloves and aprons, and following good personal hygiene. Keep dust off clothing. Wash hands and face before eating, drinking, or smoking after handling this material.

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