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## Material Safety Data Sheet

Identity: Zirconium Sputtering Target

Formula: Zr

### Section I - General Information

Manufacturer: Advanced Engineering Materials Limited (AEM)

The information below is believed to be accurate and represents the best information available to AEM. However, AEM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

### Section II - Hazardous Ingredients/Identity Information

Molecular weight: 91.22

CAS #	OSHA PEL	ACGIH TLV	%
7440-67-7	5.0 mg/m <sup>3</sup>	5.0mg/m <sup>3</sup>	0.0-100

### Section III - Physical/Chemical Characteristics

Physical States: Solid

Boiling Point: 4377.00°C

Specific Gravity (water=1): 6.506

Melting Point: 1850.00°C

Vapor Pressure: N/A

Solubility in water: Insoluble

*Appearance and odor:* Silver to grey metallic powder and pieces, no odor

### Section IV - Fire and Explosion Hazard Data:

*Method Used:* SPONTANEOUSLY COMBUSTIBLE *Explosive Limits:* LEL: N/A UEL: N/A

*Flash Point:* N/A

*Auto ignition Temp:* 200°C

*Extinguishing Media:* Use class D or other metal extinguishers, DO NOT USE WATER

#### *Special Fire Fighting Procedures:*

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

#### *Unusual Fire and Explosion Hazards:*

Spontaneously combustible in dry powder form. Flammable and explosive as dust or powder, also in the form of boring and shavings. Zr metal is a very dangerous fire hazard when exposed to heat, flame or by chemical reaction with oxidizing agents.

### Section V - Reactivity Data

*Stability:* Unstable

*Conditions to Avoid (stability):* Shock, and static electricity molybdates, sulfates, tungstates, borax, CCL<sub>4</sub>, copper oxide, lead, lead oxide, phosphorous, KClO<sub>3</sub>, KNO<sub>3</sub>, nitryl fluoride and acids

*Hazardous Decomposition or Byproducts:* None recorded



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*Hazardous Polymerization:* Will not occur  
*Conditions to avoid (hazardous polymerization):* none

## Section VI - Health Hazard Data

### Health Hazards (Acute and Chronic):

*Inhalation:* May cause a red, dry throat, coughing and shortness of breath;  
*Ingestion:* May cause irritation to gastrointestinal tract, including but not limited to a burning sensation  
*Skin:* May cause redness, itching, and/or burning  
*Eye:* May cause redness, itching, burning and/or watering

*Target Organs:* May affect the respiratory system and skin  
*Carcinogenicity:* NTP? No IARC Monographs? No OSHA Regulated? No  
*Medical Conditions Aggravated by Exposure:* Pre-existing respiratory disorders

### Emergency and First Aid Procedures:

*Inhalation:* Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention  
*Ingestion:* Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person  
*Skin:* Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist  
*Eye:* Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention.

## Section VII - Precautions for Safe Handling and Use

### *Steps to be taken in case material is released or spilled:*

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

*Waste disposal method:* Dispose of in accordance with state, local, and federal regulations.

*Hazard Label Information:* Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

### *Handling:*

If particle size is less than 9 microns, handle and store under 30% water  
If particle size is greater than 9 microns but less than 250 microns, handle and store under argon

## Section VIII - Control Measures

### *Protective Equipment Summary (Hazard Label Information):*

NIOSH approved respirator, impervious rubber gloves, safety glasses, clothes to prevent skin contact.

### *Ventilation:*

Local Exhaust: To maintain concentration at low exposure levels.  
Mechanical (General): NOT Recommended.

### *Work/Hygienic/Maintenance Practices:*

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established



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