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Current Version: 1.0  
Revision Date: Apr 19, 2016

## Material Safety Data Sheet

Identity: Indium Gallium Zinc Oxide Sputtering Targets

Formula: IGZO

### 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

CAS #	OSHA PEL	ACGIH TLV	%
N.A.	NE	NE	0.0-100.0%

### SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: N/A

Specific Gravity: No data

Melting Point: N/A

Flash Point: N/A

Evaporation Rate: N/A

Solubility in water: Insoluble

*Appearance and odor:* Grey solid, no odor

### SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

*Method Used:* Unknown

*Explosive Limits:* LEL: N/A

UEL: N/A

*Extinguishing Media:* Use suitable extinguishing agent for surrounding material and type of fire

*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:* N/A



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## SECTION V- HEALTH HAZARD DATA

Routes of entry: Inhalation? Yes      Skin? Yes      Eyes? Yes  
                                  Ingestion? Yes      Other? No

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

IGZO : Industrially, this element does not constitute an important health hazard. Exposure is related chiefly to the dust arising from the crushing and milling of the two chief ores. Large overdoses cause central nervous system disturbances, diarrhea, respiratory failure and death in experimental animals. (Sax, Dangerous Properties of Industrial Materials eighth edition)

### Health Hazards (Acute and Chronic):

#### Inhalation:

Acute: Powder may cause irritation to the lungs and respiratory tract.  
Chronic: No chronic health effects recorded.

#### Ingestion:

Acute: No acute health effects recorded. Relatively non-toxic, poorly absorbed from the alimentary tract.  
Chronic: Large overdoses may cause nervous system disturbances, and diarrhea.

#### Skin:

Acute: Powder may cause abrasive irritation.  
Chronic: No chronic health effects recorded.

#### Eye:

Acute: Powder may cause abrasive irritation.  
Chronic: No chronic health effects recorded.

Target Organs: May affect the respiratory and central nervous system.

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; give oxygen if breathing is difficult and seek medical attention.

Ingestion: Not applicable.

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. Seek medical attention if symptoms persist.



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## SECTION VI - PRECAUTIONS FOR SAFE HANDLING AND USE

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

Wear appropriate respiratory and protective equipment. Isolate spill area and provide ventilation. 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:*

Disposal must be made in accordance with Federal, State and Local regulations.

### *Hazard Label Information:*

Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

## SECTION VII - CONTROL MEASURES

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

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

### *Ventilation:*

Use local exhaust to limit personal exposure to levels which do not exceed the TLV. General exhaust is 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. Maintain eyewash capable of sustained flushing, safety drench shower and facilities for washing.

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