


ELECTRONIC SPACE PRODUCTS INTERNATIONAL

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MATERIAL SAFETY DATA SHEET
I PRODUCT IDENTIFICATION

Trade Name:	Hafnium Oxide	Synonym:	Hafnium Dioxide
Chemical Family:	Metal Oxide	Formula:	HfO ₂
CAS #:	12055-23-1		

II HAZARDOUS INGREDIENTS

Hazardous Components	%	OSHA/PEL	ACGIH/TLV	Sec 302	Sec
Hafnium Oxide	0-100	0.5 mg(Hf)/m ³	0.5 mg		

HMIS Rating: Health: 1 Reactivity: 0 Flammability: 0 Personal Protection: B: glasses, gloves

III PHYSICAL DATA

Boiling Point:	5400 °C	Melting Point:	2758 °C + 25 °C
Specific Gravity:	9.68 at 20 °C	Vapor Density:	N/E or N/A
Solubility in H₂O:	Insoluble	% Volatile:	N/E or N/A
Appearance and Odor:	White powder, pieces, and tablets, no odor		

IV FIRE AND EXPLOSION HAZARDS DATA

Flash Point (Method used): N/A
Flammable Limits: Upper: N/A **Lower:** N/A

Autoignition Temperature: 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 and full protective clothing to prevent contact with skin and eyes.

Unusual Fire and Explosion Hazards: Material may generate toxic fumes if involved in a fire.

V HEALTH HAZARD INFORMATION

Effects of Exposure:

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

Hafnium is a poison by unspecified route. It is poorly soluble in water and thus is not absorbed efficiently by ingestion. Many hafnium compounds are poisons. (Sax, Dangerous Properties of Industrial Materials)

Acute Effects:

Inhalation: May cause irritation to the nose, throat and mucous membranes.

Ingestion: Considered to be non-toxic due to poor absorption in the alimentary tract of mammals.

Skin: May cause irritation.

Eye: May cause irritation.

Chronic Effects: Chronic ingestion may cause damage to the liver. No other chronic health effects recorded.

Target Organs: May affect the liver.

Route(s) of Entry: Inhalation, skin, eye and ingestion.

Medical Conditions Generally Aggravated by Exposure: None

Carcinogenicity: NTP: No IARC: No OSHA: No

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 if symptoms persist.

INGESTION: Give 1-2 glasses of water and induce vomiting, seek medical attention if symptoms persist. Never give anything by mouth to an unconscious person.

SKIN: Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, seek medical attention if symptoms persist.

EYES: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

VI REACTIVITY DATA

Stability: Stable

Conditions to Avoid: None

Incompatibility (Material to Avoid): Halogens and inter-halogens, acids and strong oxidizers.

Hazardous Decomposition Products: None recorded

Hazardous Polymerization: Will not occur

VII SPILL OR LEAK PROCEDURES

Steps to Be Taken in Case Material Is Released or Spilled: Wear appropriate respiratory and protective clothing specified in section VIII. 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: Dispose of in accordance with all Federal, State and Local regulations.

VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection: NIOSH/MSHA approved dust-mist fume cartridge respirator.

Ventilation: Local exhaust ventilation may be necessary to control any air contaminants to within their PEL's or TLV's during the use of this product. Good general ventilation is recommended.

Protective Gloves: Rubber gloves

Eye Protection: Safety glasses

Other Protective Equipment: Protective gear suitable to prevent contamination.

IX SPECIAL PRECAUTIONS

Precautions to Be Taken in Handling and Storage: Store in tightly sealed containers in a cool, dry area. Wash hands and face thoroughly.

Work 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 and 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.

Transportation Requirements: Not classified by DOT.

The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. ESPI shall not be held liable for any damage resulting from handling or from contact with the above product.

Prepared by: S. Dierks
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