

SUPPLIER



MATERIAL SAFETY DATA SHEET

GENERATED 03/15/2011, **REVISION** 03/05/2007, **SUPERCEDES REVISION** 04/08/2004,
DATE CREATED 08/28/1990

SECTION I - PRODUCT IDENTIFICATION

Hafnium oxide, powder and pieces

PRODUCT NAME: Hafnium oxide, powder and pieces

PRODUCT CODE: H-MSDS0004

REFERENCE #: 12055-23-1

MANUFACTURER INFORMATION

COMPANY NAME: Materion Advanced Chemicals Inc.
 1316 W. St. Paul Avenue
 Milwaukee, WI 53233

EMERGENCY CONTACT: CHEMTREC (800)424-9300

ALTERNATE EMERGENCY CONTACT: Materion Advanced Chemicals Inc. (414)289-9800

CHEMICAL FAMILY: Metal oxide

CAS NUMBER: 12055-23-1

FORMULA: HfO₂

MOLECULAR WEIGHT: 210.49

SYNONYMS

Hafnium oxide, hafnia, hafnium dioxide

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hafnium oxide, powder and pieces

Hazardous Components (Chemical Name)	CAS #	Concentration	OSHA PEL	ACGIH TLV	Other Limits

Hafnium oxide	12055-23-1	0.0 -100.0 %	0.5 mg/m3 Hafnium & compounds as Hf	0.5 mg/m3 Hafnium & compounds as Hf	NE
See SECTION IX- ADDITIONAL COMMENTS FOR COSH Regulations	NA	0.0 -100.0 %			

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Hafnium oxide, powder and pieces

<u>PHYSICAL STATES:</u>	<input type="checkbox"/> Gas	<input type="checkbox"/> Liquid	<input checked="" type="checkbox"/> Solid
<u>MELTING POINT:</u>	2758.00 C		
<u>BOILING POINT:</u>	5400.00 C		
<u>SPECIFIC GRAVITY (WATER = 1):</u>	9.68 at 20.0 C		
<u>VAPOR PRESSURE (VS. AIR OR MM HG):</u>			
<u>VAPOR DENSITY (VS. AIR = 1):</u>			
<u>EVAPORATION RATE (VS BUTYL ACETATE=1):</u>			
<u>SOLUBILITY IN WATER:</u>	insoluble		
<u>SOLUBILITY NOTES</u>			
<u>PERCENT VOLATILE:</u>	N.A.		
<u>APPEARANCE AND ODOR</u>			

White or black powder, pieces and tablets, no odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Hafnium oxide, powder and pieces

<u>FLASH PT:</u>	N.A.	Method Used:	Unknown
<u>EXPLOSIVE LIMITS:</u>	LEL: NA	UEL:	NA
<u>EXTINGUISHING MEDIA</u>			

USE: Not Applicable. Use suitable extinguishing agent for surrounding materials 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

No data

HAZARDOUS COMBUSTION PRODUCTS

SECTION V - REACTIVITY DATA

Hafnium oxide, powder and pieces

STABILITY:

Unstable [☐]

Stable [☒]

CONDITIONS TO AVOID - INSTABILITY

No data

INCOMPATIBILITY - MATERIALS TO AVOID

No data

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

No data

HAZARDOUS POLYMERIZATION:

Will occur [☐]

Will not occur [☒]

CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION

No data

SECTION VI - HEALTH HAZARD DATA

Hafnium oxide, powder and pieces

HEALTH HAZARDS (ACUTE AND CHRONIC)

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, eighth edition)

INHALATION:

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

Chronic: No chronic health effects recorded.

INGESTION:

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

Chronic: May cause damage to the liver.

SKIN: Acute: May cause irritation.

Chronic: No chronic health effects recorded.

EYE:

Acute: May cause irritation.

Chronic: No chronic health effects recorded.

TARGET ORGANS: May affect the liver.

CARCINOGENICITY:

NTP? No IARC Monographs? No
OSHA Regulated? No

RECOMMENDED EXPOSURE LIMITS

See "Section II"

LD 50 / LC 50

No toxicity data recorded.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: May cause a red, dry throat and coughing.

INGESTION: May cause some discomfort.

SKIN: May cause redness and itching.

EYE: May cause redness, itching and watering.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

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.

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

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE
Hafnium oxide, powder and pieces

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear appropriate respiratory and protective equipment specified in section VIII-control measures. 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 local, state and federal regulations.

HAZARD LABEL INFORMATION:

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

PRECAUTIONS TO BE TAKEN IN HANDLING

No data

PRECAUTIONS TO BE TAKEN IN STORING

No data

OTHER PRECAUTIONS

No data

SECTION VIII - CONTROL MEASURES

Hafnium oxide, powder and pieces

PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION:

NIOSH approved respirator Impervious gloves Safety glasses Clothes to prevent skin contact

RESPIRATORY EQUIPMENT (SPECIFY TYPE)

NIOSH approved respirator

EYE PROTECTION

Safety glasses

PROTECTIVE GLOVES

Rubber gloves

OTHER PROTECTIVE CLOTHING

Protective gear suitable to prevent contamination

VENTILATION

Local Exhaust: Local exhaust ventilation may be necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

Special: None

Mechanical (Gen): Good general ventilation is recommended.

Other: None

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 and smoking. Do not blow dust off clothing or skin with compressed air.

SECTION IX - ADDITIONAL COMMENTS

Hafnium oxide, powder and pieces

Control of Substances Hazardous to Health Regulations
EH40 Occupational Exposure Limits

Maximum Exposure Limit: NE
Occupational Exposure Standard: NE

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