

Hafnium Powder



SAFETY DATA SHEET

1 PRODUCT AND SUPPLIER IDENTIFICATION

Product Name: Hafnium Powder

Formula: Hf

Supplier: ESPI Metals
1050 Benson Way
Ashland, OR 97520

Telephone: 800-638-2581

Fax: 541-488-8313

Email: sales@espimetals.com

Emergency: Infotrac 800-535-5053 (US) or 352-323-3500 (24 hour)

Recommended Uses: Scientific Research

2 HAZARDS IDENTIFICATION

GHS Classification (29 CFR 1910.1200): Flammable solids, category 1.

GHS Label Elements:



Signal Word: Danger

Hazard Statements: H228 Flammable solid.

Precautionary Statements: P210 Keep away from heat/sparks/open flames/hot surfaces - No smoking, P280 Wear protective gloves/protective clothing/eye protection/face protection, P370+P378 In case of fire: Use Class D dry chemical extinguishing agent for extinction.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient: Hafnium

CAS#: 7440-58-6

%: 97-99.8

EC#: 231-166-4

Ingredient: Zirconium

CAS#: 7440-67-7

%: 0.02-3

EC#: 231-176-9

4 FIRST AID MEASURES

General Measures: Remove patient from area of exposure.

INHALATION: Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek medical attention.

INGESTION: Rinse mouth with water. Do not 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 soap and water. Seek medical attention if irritation develops or persists.

EYES: Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention if irritation develops or persists.

Most Important Symptoms/Effects, Acute and Delayed: May cause irritation. See section 11 for more information.

Indication of Immediate Medical Attention and Special Treatment: No other relevant information available.

5 FIREFIGHTING MEASURES

Extinguishing Media: Use Class D dry powder extinguishing agent or dry table salt.

Unsuitable Extinguishing Media: Do not use water, carbon dioxide or halocarbon extinguishing agents.

Specific Hazards Arising from the Material: Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source, is a potential dust explosion hazard. May release hafnium oxide fume if involved in a fire.

Special Protective Equipment and Precautions for Firefighters: Wear full face, self-contained breathing apparatus and full protective clothing.

Additional Information: Control small fires by smothering with dry table salt or using a type D extinguisher. Separate burning material from larger mass, and allow it to burn out. Do not spray water on burning hafnium. Carbon dioxide is not effective in extinguishing burning hafnium either. If a fire starts in a mass of wet metal fines, an explosion may follow due to rapidly expanding gases. The explosive characteristic of such material is caused by the steam and hydrogen generated within the burning mass.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Wear appropriate respiratory and protective equipment specified in section 8. Isolate spill area and provide ventilation. Avoid breathing dust or fume. Avoid contact with skin and eyes. Eliminate all sources of ignition.

Methods and Materials for Containment and Cleaning Up: Avoid dust formation. Use only non-sparking tools and natural bristle brushes. Do not push powder for long distances across the floor. Keep in small piles away from each other. Place in non-sparking or anti-static containers.

Environmental Precautions: Do not allow to enter drains or to be released to the environment.

7 HANDLING AND STORAGE

Precautions for Safe Handling: Handle in an enclosed, controlled process. Use non-sparking tools. Protect from sources of ignition. Avoid creating dust. Avoid breathing dust or fumes. Provide adequate ventilation if dusts are created. Avoid contact with skin and eyes. Wash thoroughly before eating or smoking. See section 8 for information on personal protection equipment.

Conditions for Safe Storage: Store in a cool, dry area. Store material tightly sealed in properly labeled containers. Storage area should be free of combustibles and ignition sources. See section 10 for more information on incompatible materials.

8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: Hafnium

OSHA/PEL: 0.5 mg/m³

ACGIH/TLV: 0.5 mg/m³

Engineering Controls: When working with finely divided powders, handle in a controlled, enclosed environment. Ensure adequate ventilation to maintain exposures below occupational limits. Whenever possible the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. 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.

Individual Protection Measures, Such as Personal Protective Equipment:

Respiratory Protection: Use suitable respirator when high concentrations are present.

Eye Protection: Safety glasses

Skin Protection: Impermeable gloves, protective work clothing as necessary.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Form: Powder

Color: Gray

Odor: Odorless

Odor Threshold: Not determined

pH: N/A

Melting Point: 2227 ± 20 °C

Boiling Point: 4602 °C

Flash Point: N/A

Evaporation Rate: N/A

Flammability:	Flammable solid
Upper Flammable Limit:	No data
Lower Flammable Limit:	No data
Vapor Pressure:	No data
Vapor Density:	N/A
Relative Density (Specific Gravity):	13.31 g/cc @ 20 °C
Solubility in H₂O:	Insoluble
Partition Coefficient (n-octanol/water):	Not determined
Autoignition Temperature:	No data
Decomposition Temperature:	No data
Viscosity:	N/A

10 STABILITY AND REACTIVITY

Reactivity: No data

Chemical Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Dust dispersed in air may be explosive. Keep fine turnings completely dry, or very wet. If wet, the water content should be more than 25% by weight for maximum safety in handling. Severe explosions can result from ignition of hafnium powder or machining fines containing moisture in the concentration range of 5 to 10%.

Conditions to Avoid: All sources of ignition. Dusting conditions.

Incompatible Materials: Hydrofluoric acid, hydrofluoric-nitric acid mixture, fluorine, chlorine, bromine, iodine, halocarbons, carbon tetrachloride, carbon tetrafluoride, freons, nitryl-fluoride.

Hazardous Decomposition Products: Hafnium oxide fume.

11 TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, skin and eyes.

Symptoms of Exposure: May cause irritation if dusts or fumes are inhaled or swallowed. Fines/dusts may irritate skin and eyes.

Acute and Chronic Effects:

Hafnium: Hafnium metal is a mild irritant of the eyes, skin, and mucous membranes. No industrial poisonings involving hafnium have been reported.

Zirconium: Zirconium is generally considered to be physiologically inert.

Acute Toxicity: No data

Carcinogenicity: **NTP:** Not identified as carcinogenic **IARC:** Not identified as carcinogenic

To the best of our knowledge the chemical, physical and toxicological characteristics of the substance are not fully known.

12 ECOLOGICAL INFORMATION

Ecotoxicity: No data

Persistence and Degradability: No data

Bioaccumulative Potential: No data

Mobility in Soil: No data

Other Adverse Effects: Do not allow material to be released to the environment. No further relevant information available.

13 DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Product: Reuse or recycle material whenever possible. Dispose of in accordance with Federal, State and Local regulations.

Packaging: Dispose of in accordance with Federal, State and Local regulations.

14 TRANSPORT INFORMATION

UN Number: UN2545

UN Proper Shipping Name: Hafnium powder, dry

Transport Hazard Class: 4.2

Packing Group: II

Marine Pollutant: No

Special Precautions: Warning: Flammable solid.

15 REGULATORY INFORMATION

TSCA Listed: All components are listed.

Regulation (EC) No 1272/2008 (CLP): Flammable solids, category 1.

Canada WHMIS Classification (CPR, SOR/88-66): Flammable solids.

HMIS Ratings: Health: 1 Flammability: 3 Physical: 1

NFPA Ratings: Health: 1 Flammability: 3 Instability: 1

Chemical Safety Assessment: A chemical safety assessment has not been carried out.

16 OTHER INFORMATION

The information contained in this document is based on the state of our knowledge at the time of publication and is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. ESPI Metals makes no representation, warranty, or guarantee of any kind with respect to the information contained in this document or any use of the product based on this information. ESPI Metals shall not be held liable for any damages resulting from handling or from contact with the above product. Users should satisfy themselves that they have all current data relevant to their particular use.

Prepared by: ESPI Metals

Revised/Reviewed: July 2015

