

## HAFNIUM

### SAFETY DATA SHEET

DATE OF LAST REVISION: 06/26/15

#### Section 1: Identification

**Product Name:** Hafnium

**Company:** Angstrom Sciences, Inc.  
40 South Linden Street  
Duquesne, PA 15110

For more information call: 412-469-8466  
(Monday - Friday 9:00-5:00 EST)

#### Section 2: HAZARD IDENTIFICATION

**Signal Word:** Danger



**Hazard Statements:** H251: Self-heating; may catch fire (as powder)

**Precautionary Statements:** P280: Wear protective gloves/protective clothing/eye protection/face protection  
P235 + P410: Keep cool. Protect from sunlight  
P420: Store away from other materials  
P407: Maintain air gap between stacks/pellets

<b>HMIS Health Ratings (0-4):</b>	<b>Powder</b>	<b>Bulk</b>
Health:	1	0
Flammability:	4	0
Physical	2	0

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#### Section 3: Composition/Information on Ingredients

**Chemical characterization:** Metal

**Additional Names:** None

**Percentage:** 100 wt%

**CAS# Description:** 7440-58-6

**EC number:** 231-166-4

Note: Hafnium is naturally found with traces of Zirconium as the separation of the two is difficult.

#### Section 4: FIRST AID MEASURES

**General Treatment:** Seek medical attention if symptoms persist.

**Special Treatment:** None

**Important Symptoms:** None

**Eye Contact:** Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

**Skin Contact:** Wash affected area with mild soap and water. Remove any contaminated clothing.

**Inhalation:** Remove to fresh air. If required, give artificial respiration. Seek medical advice.

**Ingestion:** Seek medical attention.

#### Section 5: FIRE FIGHTING MEASURES

**Flammability:** Non-flammable, except as powder

**Special Fire Fighting Procedure:** Use full-face, self contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

**Extinguishing Media:** Do not use water for metal fires - use CO<sub>2</sub>, sand, extinguishing powder.

#### Section 6: ACCIDENTAL RELEASE MEASURES

**If material is Released/Spilled:** Wear appropriate respiratory and protective equipment specified in special protection information. 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 disposal.

**Environmental Precautions:** Isolate runoff to prevent environmental pollution.

#### Section 7: HANDLING AND STORAGE

**Handling Precautions for safe handling:** Wash thoroughly after handling.

**Conditions for safe storage, including any incompatibilities** Store in a cool dry place in a tightly sealed container. Store apart from materials and conditions listed in Section 10.

**Work/Hygienic Maintenance:** 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.

**Ventilation:** Provide sufficient ventilation to maintain concentration at or below threshold limit.

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**Section 8: EXPOSURE CONTROL/PERSONAL PROTECTION**

**Permissible Exposure Limits:** 0.5 mg/m<sup>3</sup> as Hf, long-term value  
**Threshold Limit Value:** 0.5 mg/m<sup>3</sup> as Hf, long-term value  
**Special Equipment:** None  
**Respiratory Protection:** Use a respirator with type P100 (USA) or P3 (EN143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.  
**Protective Gloves:** Nitrile rubber, NBR 0.11 mm thick  
**Penetration time of glove material:** 480 minutes  
**Eye Protection:** Safety glasses or goggles  
**Body Protection:** Protective work clothing. Wear close-toed shoes and long sleeves/pants.

**Section 9: PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance:**

**Form:** Powder, Granules, Pellets, Sputtering target, Custom parts  
**Color:** Silver/grey  
**Odor:** Odorless  
**Water Solubility:** Insoluble  
**Boiling Point:** 2222° C  
**Melting Point:** 5400° C  
**Flash Point:** N/A  
**Autoignition Temperature:** N/A  
**Density:** 13.09 g/cc  
**Molecular Weight:** 178.49 g/mol

**Section 10: STABILITY AND REACTIVITY**

**Reactivity:** Oxidizing agents  
**Chemical Stability:** Stable under recommended storage conditions  
**Incompatible Conditions:** Air  
**Hazardous Decomposition Products:** Hafnium Oxide

**Section 11: TOXICOLOGICAL INFORMATION**

**Potential Health Effects:**  
**Eyes:** May cause irritation  
**Skin:** May cause irritation  
**Ingestion:** May cause irritation

**Inhalation:** May cause irritation

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**Chronic:** N/A

**Signs & Symptoms:** N/A  
**Aggravated Medical Conditions:** N/A  
**Median Lethal Dose:** N/A  
**Carcinogen:** N/A

**Section 12: ECOLOGICAL INFORMATION**

**Aquatic Toxicity:** Low

**Persistence Bioaccumulation Toxicity:** No

**Very Persistent, Very Bioaccumulative:** No

**Notes:** N/A

**Section 13: DISPOSAL CONSIDERATIONS**

Dispose of in accordance with local, state, national, and international regulations

**Section 14: TRANSPORT INFORMATION**

**Hazardous:** Hazardous as powder only



**Hazard Class:** 4.2 Flammable solids, self-reactive substances and solid desensitized explosives.  
**Packing Group:** II  
**UN Number:** UN2545  
**Proper Shipping Name:** Hafnium powder, dry

**Section 15: REGULATORY INFORMATION**

**Sec 302 Extremely Hazardous:** No  
**Sec 304 Reportable Quantities:** N/A

**Sec 313 Toxic Chemicals:**

No

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**Section 16: OTHER INFORMATION**

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.