



Hafnium Oxide (Pieces, Evaporation Slugs, Sputtering Targets)

1. Product Identification

Trade Name: Hafnium oxide (Pieces, Evaporation Slugs, Sputtering Targets)
Chemical Formula: HfO₂
Recommended Use: Scientific research and development

2. Hazards Identification

Signal Word: None
Hazard Statements: None
Precautionary Statements: None
HMIS Ratings (0-4):
Health: 1
Flammability: 0
Physical: 0

3. Composition

Chemical Family: Metal Oxide
Ceramic Additional Names: Hafnium dioxide
Hafnium oxide (HfO₂):
Percentage: 100 wt%
CAS #: 12055-23-1
EC #: 235-013-2

4. First Aid Procedures

General Treatment: Seek medical attention if symptoms persist.
Special Treatment: None
Important Symptoms: None
Inhalation: Remove victim to fresh air. Supply oxygen if breathing is difficult.
Ingestion: Seek Medical Attention.
Skin: Wash affected area with mild soap and water. Remove any contaminated clothing.
Eyes: Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

5. Firefighting Measures

Flammability: Non-flammable
Extinguishing Media: No special restrictions – use suitable extinguishing agent for surrounding material and type of fire.
Spec. Fire Fighting Procedure: Use full-face, self-contained breathing apparatus with full protective

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clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

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. Take care not to raise dust.
Environmental Precautions:	Isolate runoff to prevent environmental pollution.

7. Handling and Storage

Handling Conditions:	Wash thoroughly after handling.
Storage Conditions:	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.

8. Exposure Controls and Personal Protection

Permissible Exposure Limits:	0.5 mg/m ³ as Hf, long-term value
Threshold Limit Value:	0.5 mg/m ³ as Hf, long-term value
Special Equipment:	None
Respiratory Protection:	Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.
Protective Gloves:	Nitrile rubber, NBR 0.11mm thick.
Eye Protection:	Safety glasses or goggles
Body Protection:	Protective work clothing. Wear close-toed shoes and long sleeves/pants.

8. Physical and Chemical Characteristics

Color	Off-white
Form:	Granules, Pellets, Evaporation Slugs, Sputtering target, Custom parts
Odor:	Odorless
Water Solubility:	Insoluble
Boiling Point:	N/A
Melting Point:	°C
Flash Point:	N/A

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Autoignition Temperature:	N/A
Density:	9.68 g/cc
Molecular weight:	210.49 g/mol

10. Reactivity

Stability:	Stable under recommended storage conditions
Reacts With:	Oxidizing agents
Incompatible Conditions:	None
Hazardous Decomposition Products:	Metal oxide fume

11. Toxicological Information

Potential Health Effects:	
Eyes:	May cause irritation
Skin:	May cause irritation
Ingestion:	May cause irritation
Inhalation:	May cause irritation
Chronic:	N/A

Signs & Symptoms:	N/A
Aggravated Medical Conditions:	N/A

Median Lethal Dose: N/A

Carcinogen: N/A

12. Ecological Information

Aquatic Toxicity:	Low
Persistent Bioaccumulation Toxicity:	No
Very Persistent, Very Bio accumulative:	No
Notes:	N/A

13. Disposal Considerations

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

14. Transportation Data

Hazardous: The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, DOT).

Hazard Class: Not classified. No transport warning sign required.

Packing Group: Not applicable

UN Number: Not applicable

Proper Shipping Name: Not applicable

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15. Regulatory Information

Sec 302 Extremely Hazardous:	No
Sec 304 Reportable Quantities:	N/A
Sec 313 Toxic Chemicals:	No

16. Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. **No warranty, guarantee or representation is made to its accuracy, reliability or completeness.** These materials should only be handled by, or under the direct supervision of a “technically qualified individual”, as defined in TSCA regulations 40 CFR 710.3(ee). 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.

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