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|  | Zircar Zirconia, Inc. P.O. Box 287 Florida, NY 10921-0287 (845)651-3040 Emergency (845)258-9148 www.zircarzirconia.com | Safety Data Sheet HfBF, HfF, HfK, HfW | Document #: | Rev.: | Date: |
| | | | SDS-306 | 00 | 6/9/2015 |

1. Product Identification

Product Types: HfBF, HfF, HfK, HfW
Synonym: Hafnia Ceramic Fiber

2. Hazards Identification

Classification of Substance or Mixture
Classification (GHS-US): H315, H319, H335

Label Elements

GHS Labeling
Hazard Pictograms (GHS-US)



Signal Word (GHS-US): **Warning**

Hazard Statements:
 H315 Causes skin irritation
 H319 Causes serious eye irritation
 H335 May cause respiratory irritation

Precautionary Statements

P264 Wash hands, forearms, and other exposed areas thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P280 Wear protective gloves, protective clothing, and eye protection.
 P304/340 If inhaled dust may cause irritation or soreness of throat and nose. Remove person to fresh air and keep at rest in a position for comfortable breathing.
 P308/313 If exposed or concerned: Get medical advice/ attention.
 P501 Dispose of contents/ container in accordance with local, regional, national, and international regulations.

Hazards not otherwise classified: None

3. Composition

| Component | Synonyms | CAS Number | % by Weight | Classification (GHS-US) |
|---------------|------------------|------------|-------------|------------------------------------|
| Hafnium Oxide | HfO ₂ | 7440-58-6 | 100 | H315, H319, H335 for ceramic fiber |

4. First Aid Measures

Inhalation: Remove to fresh air. Rinse mouth to clear throat and expel liquid. Blow nose to evacuate dust. Consult a physician if irritation persists.
Eye Contact: Do not rub eyes. Keep hands or contaminated body parts away from eyes. Remove contact lenses. Flush with water. If irritation persists, consult a physician.
Skin Contact: Wash with soap and water. For dryness, a skin cream may be helpful. Do not apply anything to a rash. Consult a physician if irritation persists.
Ingestion: Do not induce vomiting without advice of a physician. Seek medical attention.

5. Fire-Fighting Measures: Product is not flammable.

Special Hazards arising from the substance: None
Advice for firefighters: None

6. Accidental Release Measures: Clean up procedures should minimize formation of airborne dusts. Remove dust by vacuuming using HEPA filtration where possible.

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid contact with skin, eyes, or clothing. Avoid breathing dust.
For Non-Emergency Personnel: Use appropriate personal protection equipment (PPE), gloves, glasses, dust mask.
For Emergency Responders: Equip cleanup crew with proper protection. Ventilate area.
Environmental Precautions: None.

References to Other Sections: See section 8. Exposure Controls/ Personal Protection. For waste disposal refer to section 13.

7. Handling and Storage

Precautions for Safe Handling

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Machining and cutting: These materials may produce nuisance dust when machined or cut.

Conditions for Safe Storage, Including any Incompatibilities

Storage conditions: These materials are stable and may be stored indefinitely.
Incompatible Products: Strong acids
Specific End Use: Insulation

8. Exposure Controls/ Personal Protection

Control Parameters

Hafnia is not classified as hazardous. Exposure controls are based on nuisance dust.

| | | | |
|----------------------|--|-----------------------|--------------------------------|
| OSHA PEL as 8 hr TWA | 15mg/m ³ Total Dust, 5mg/m ³ Respirable Fraction | ACGIH PEL as 8 hr TWA | 10mg/m ³ Total Dust |
|----------------------|--|-----------------------|--------------------------------|

Exposure Controls

Appropriate Engineering Controls: Ensure adequate ventilation. Emergency eye wash should be available. Ensure regulations are observed.

Personal Protective Equipment: Protective goggles, gloves, protective clothing. Dust formation: dust mask type N95.

Environmental Exposure Controls: Do not allow the product to be released into the environment.

Consumer Exposure Controls: Do not eat, drink or smoke during use.

9. Physical and Chemical Properties

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|--------------------------------|-------------------------------|--|-------------------|
| Physical State | Solid: cloth, felt, or fibers | Auto ignition Temperature | No data available |
| Color | White | Decomposition Temperature | |
| Odor | Odorless | Flammability (solid, gas) | |
| Odor Threshold | No data available | Vapor Pressure | |
| pH | | Relative Vapor Density at 20C | |
| Evaporation Rate | | Relative Density | |
| Melting/ Freezing Point | | Solubility | |
| Boiling Point | No data available | Partition Coefficient: N-Octanol/ Water | |
| Flash Point | | Viscosity | |

10. Stability and Reactivity

Reactivity: Hazardous reactions will not occur under normal conditions.

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Incompatible Materials: Strong acids

Hazardous Decomposition Products: None.

11. Toxicological Information: No Information available

Epidemiology: No Information Available

Distribution: Hafnium Oxide occurs naturally with zirconium oxide in concentrations of 1-2% and is widely distributed in this form.

Chemical Fate Information: The relative inertness of this material indicates that it may be highly persistent in the environment. No information regarding any negative effects of this persistence has been noted

12. Ecological Information: Ecological data are not available.

13. Disposal Considerations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

14. Transportation Information: Not regulated hazardous substances, no specific regulations apply.

15. Regulatory Information

WHMIS Status: This is a Class D2 controlled product based on an IARC 2B Classification for ceramic fibers.

California Proposition 65: On July 1, 1990 the state of California added "ceramic fibers (airborne particles of respirable size)" to the list of Proposition 65 chemicals which are "known to cause cancer" by the state. Proposition 65 lists all substances classified by the IARC as a Category 1, 2A or 2B carcinogen.

SARA Section 313 Supplier Notification: This product does not contain toxic chemicals subject to the reporting requirements of the Superfund Amendments and Reauthorization Act of 1986 Section 313 (40 CFR 372).

16. Other Information: The information contained herein is based on data considered to be accurate as of the preparation or revision date. It is provided in good faith and in compliance with state and federal regulations. No warranty or representation, express or implied is made as to the accuracy or completeness of this information. Other national, state and/or local regulations may apply.