

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: **Sinterlyte Alumina Kiln Products**

Chemical Name: Mixture of Vitreous Alumina Fibers

Grade(s): Sinterlyte (All Grades)

Manufacturer/Supplier: **Refractory Specialties, Inc. P.O. Box 189, OH U.S.A. 44672-0189**

Emergency: 1-330-938-2101 (Monday - Friday 8:00 a.m. - 5:00 p.m.)  
1-330-821-4051 330-692-3149 or 330-692-0247 (After Hours)

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>COMPONENTS</u>	<u>CAS NUMBER</u>	<u>% BY WEIGHT</u>
Alumina Oxide (Fibrous Forms)	1344-28-1	> 70
Alumina Oxide	1318-23-6	> 20
Silica (amorphous)	7631-86-9	0 - 5
Starch	56780-58-6	0 - 5
Cerium Oxide	1306-38-3	0 - 15
Yttrium Oxide	1314-36-9	0 - 10
Zirconium Oxide	1314-23-4	0 - 15
Hafnium Oxide	12055-23-1	0 - 5

(See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines)

## 3. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

WARNING! POSSIBLE CANCER HAZARD BY INHALATION. MAY CAUSE SKIN, EYE, AND RESPIRATORY TRACT IRRITATION. MAY BE HARMFUL IF INHALED. HAZARD DEPENDS ON DURATION AND LEVEL OF EXPOSURE. OFF-WHITE TO GRAY ODORLESS MINERAL FIBER SHAPES. SEE SECTION 11 FOR DETAILS.

### HAZARD RATINGS

**HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS) RATINGS:**  
Health: 1\*, Flammability: 0, Reactivity: 0, Personal Protection Index: X

**POTENTIAL HEALTH EFFECTS****TARGET ORGANS:**

Skin, eyes, and lungs.

**INHALATION:**

If inhaled in sufficient quantity, may cause respiratory tract irritation. Symptoms may include scratchiness of the nose or throat, cough or chest discomfort.

**EYE CONTACT:**

Slightly to moderately irritating. Fibers may be abrasive; prolonged contact may cause damage to the outer surface of the eye.

**SKIN CONTACT:**

Slightly to moderately irritating. Exposure may result in irritation, inflammation, rash or itching.

**INGESTION:**

If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include nausea, vomiting, or abdominal pain.

**CHRONIC EFFECTS:**

Toxicological studies indicates that alumina fiber showed no fibrogenic, Carcinogenic nor other significant toxicological effects when exposure occurs by relevant routes. Despite this evidence, the IARC has placed Alumina Fiber into a broad group called ceramic fibers.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**

Pre-existing medical conditions, including dermatitis, asthma or chronic lung disease may be aggravated by exposure; individuals who are atopic (with a history of allergies) may experience greater amounts of skin and respiratory irritation.

**HAZARD CLASSIFICATION:**

The Seventh Annual Report on Carcinogens (1994), prepared by the National Toxicology Program (NTP), classified respirable ceramic fiber and glasswool as substances reasonably anticipated to be carcinogens. The International Agency for Research on Cancer (IARC) has classified ceramic fiber, including alumina fiber, as possible human carcinogens (Group 2B). The classification of ceramic fiber was based on sufficient evidence of carcinogenicity in animals and no available data in humans. The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "ceramic fibers (airborne fibers of respirable size)" as a material known to the State of California to cause cancer.

Exposures to high concentrations of hafnium and yttrium compounds over prolonged periods of time may cause liver and lung damage. Zirconium compounds generally exhibit a low order of toxicity. Pre-existing lung, liver, and skin conditions may possibly be aggravated by exposure to the components of the product.

Cerium Oxide contains very low levels of Normally Occurring Radioactive Materials (NORM).

<b>4. FIRST AID MEASURES</b>
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**FIRST AID PROCEDURES****INHALATION:**

If respiratory tract irritation occurs, relocate individual to a dust free environment. Get medical attention if irritation persists. See Section 8 for additional measures to reduce or eliminate exposure.

**EYE CONTACT:**

If eyes become irritated, flush immediately with large amounts of lukewarm water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists.

**SKIN CONTACT:**

If skin becomes irritated, remove contaminated clothing. Do not rub or scratch exposed skin. Wash area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful.

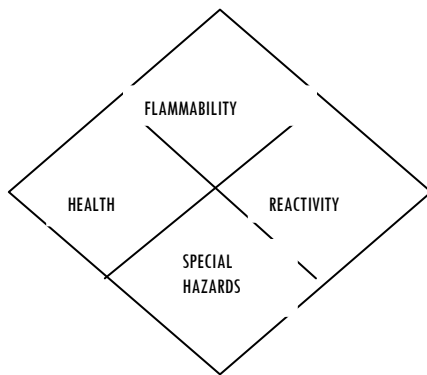
**INGESTION:**

If gastrointestinal irritation occurs, relocate individual to a dust free environment. Seek medical attention if symptoms persist.

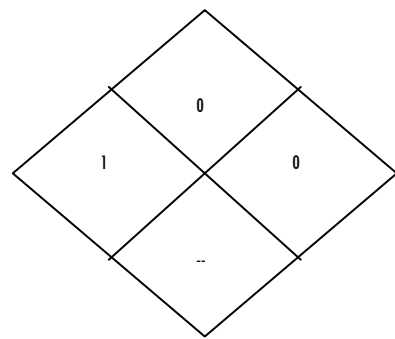
**NOTES TO PHYSICIANS:**

Skin and respiratory effects are the result of mechanical irritation; fiber exposure does not result in allergic manifestations.

**5. FIRE FIGHTING MEASURES**



4 -- EXTREME  
 3 -- HIGH  
 2 -- MODERATE  
 1 -- LIGHT  
 0 -- INSIGNIFICANT



**NFPA Unusual Hazards:** None

**Flammable Properties:**

Flashpoint: None.  
 Method: N. A.

**Flammable Limits:**

Lower Flammable Limit: N. A.  
 Upper Flammable Limit: N. A.

**Autoignition Temperature:** None.

**Hazardous Decomposition Products:**

Decomposition products may include carbon dioxide, carbon monoxide, water and smoke.

**Extinguishing Media:**

Use extinguishing media suitable for type of surrounding fire.

**Fire Fighting Instructions:**

See "Extinguishing Media" above.

**Unusual Fire and Explosion Hazard:**

None.

**6. ACCIDENTAL RELEASE MEASURES**

**SPILL PROCEDURES**

Following routine housekeeping procedures. Use vacuum suction with HEPA filters to clean up spilled material. If sweeping is necessary, use a dust suppressant and place material in closed containers. Avoid creating airborne dust. Do not use compressed air for clean up. Personnel should wear gloves, goggles and approved

## 7. HANDLING AND STORAGE

### HANDLING AND STORAGE

Handle all man-made fiber products with caution. Minimize airborne dusts by avoiding the unnecessary disturbance of materials.

Prolonged exposure to high temperatures generally increases the relative friability of all man-made fibers. See Section 16 for more details. Depending on the product's use, other contaminants may also be present. During removal, the exposed material should be frequently misted with water to minimize airborne dust. A surfactant may be added to the water to improve the wetting process. Use only enough water to wet the insulation. Do not allow water to accumulate on floors.

### Clean Up

Dust suppressing cleaning methods such as wet sweeping or vacuuming should be used to clean the work area. If vacuuming is used the vacuum must be equipped with a HEPA filter. Compressed air or dry sweeping should not be used for cleaning. Dust suppressing compounds may be used to clean up light dust.

For additional information regarding the use and handling of refractory ceramic fiber, contact Refractory Specialties, Inc. at 1-330-938-2101.

### **EMPTY CONTAINERS:**

Product packaging may contain residue. Do not reuse.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### EXPOSURE GUIDELINES

<u>Components</u>	<u>OSHA (PEL)</u>	<u>ACGIH (TLV)</u>	<u>SUPPLIER</u>
Alumina fiber	15 mg/m <sup>3</sup> total dust 5 mg/m <sup>3</sup> respirable fraction	None Established	None Established
Aluminum Oxide	10 mg/m <sup>3</sup> PEL (resp. Dust or mist)	10 mg/m <sup>3</sup> PEL (total dust; 5mg/m <sup>3</sup> RF STEL 20mg/m <sup>3</sup> )	None Established
Silica amorphous	6 mg/m <sup>3</sup> (< 1% crystalline silica)	10 mg/m <sup>3</sup> (total dust, containing < 1% crystalline silica) 3 mg/m <sup>3</sup> (respirable dust, containing < 1% crystalline silica)	None Established
Starch	5 mg/m <sup>3</sup> PEL (resp. dust) 15 mg/m <sup>3</sup> PEL (total dust)	10 mg/m <sup>3</sup> TLV (total)	None Established
Cerium Oxide	5 mg/m <sup>3</sup> PEL (resp. dust) 15 mg/m <sup>3</sup> PEL (total dust)	None Established	None Established
Yttrium Oxide	1 mg/m <sup>3</sup> PEL	1 mg/m <sup>3</sup> TLV	None Established
Hafnium Oxide	0.5 mg/m <sup>3</sup> PEL	0.5 mg/m <sup>3</sup> TLV	None Established

PNOC = Particulates Not Otherwise Classified (ACGIH – Inhalable), PNOR = Particulates Not Otherwise Regulated (OSHA – Total dust).

**ENGINEERING CONTROLS**

Dust suppressing control technologies such as local exhaust ventilation, point of generation dust collection, down draft work stations, emission controlling tool designs, and materials handling equipment are effective means of minimizing airborne fiber emissions. For additional information, contact Refractory Specialties, Inc. at 1-330-938-2101.

**PERSONAL PROTECTION EQUIPMENT****RESPIRATORY PROTECTION:**

Wear NIOSH certified respirator or equivalent for airborne dust.

**SKIN PROTECTION:**

Wear gloves, head coverings and full body clothing as necessary to prevent skin irritation. Washable or disposable clothing may be used. If possible, do not take unwashed clothing home. Work clothes should be washed separately from other clothing and the washing machine rinsed thoroughly following use. Inform the launderer of the proper procedures. Store work clothes and street clothes separately to prevent contamination.

**EYE PROTECTION:**

Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses unless chemical goggles are also worn. Do not touch eyes with contaminated body parts or materials. Have eye-washing facilities readily available where eye contact can occur.

<b>9. PHYSICAL AND CHEMICAL PROPERTIES</b>
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Odor and Appearance: White, odorless ceramic shape.  
 Boiling Point: N. A.  
 Melting Point: 3000F minimum  
 Vapor Pressure: N. A.  
 Vapor Density (Air = 1): N. A.  
 Molecular Weight: N. A.

Chemical Family: Vitreous Alumina fibers  
 % Solubility in Water: N. A.  
 Specific Gravity: 2.73 – 3.2  
 pH: N. A.  
 % Volatile: N. A.  
 Molecular Formula: N. A.

<b>10. STABILITY AND REACTIVITY</b>
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<b>CHEMICAL STABILITY:</b>	Stable under conditions of normal use.
<b>INCOMPATIBILITY:</b>	Soluble in hydrofluoric acid, phosphoric acid, and concentrated alkali.
<b>CONDITIONS TO AVOID:</b>	None.
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	Decomposition products may include carbon monoxide, carbon dioxide, and smoke.
<b>HAZARDOUS POLYMERIZATION:</b>	Not Applicable.

<b>11. TOXICOLOGICAL INFORMATION</b>
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**TOXICOLOGY**

Alumina fiber was administered to rats in intraperitoneal, intratracheal and intrapleural studies and all showed negative results. An international reference standard asbestos was used as a positive control and behaved as predicted in all of these studies. This comprehensive group of toxicological studies indicates that Alumina fiber showed no fibrogenic, carcinogenic nor other significant toxicological effects when exposure occurs by relevant routes (i.e., by inhalation or oral ingestion) or when introduced artificially into the lung in large quantities by injection. Despite this evidence, the IARC has placed Alumina Fiber into a broad group called ceramic fibers. The International Agency for Research on Cancer (IARC) reviewed the carcinogenicity data on man-made mineral fibers in 1987. IARC classified ceramic fiber (including polycrystalline alumina fiber) as possible human carcinogens (Group 2B). IARC's classification of ceramic fiber was based on sufficient evidence of carcinogenicity in experimental animals and inadequate evidence (no data) of the carcinogenicity in humans.

Zirconium compounds generally have a low order of toxicity. There are reports in the literature where zirconium compounds in topical poison ivy medications and in anti-perspirants has caused allergic granulomas in axillary tissue.

*Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition, 1991, American Conference of Governmental Industrial Hygienists, Cincinnati, OH. pp. 719-720, 1746-47, and 1758-60.*

Hafnium oxide is nontoxic. No industrial disease has been evident with up to 20 years exposure to hafnium compounds.

Ref's: Casarett and Doull's *Toxicology*, 2<sup>nd</sup> Ed. OSHA 29CFR 1910 Table Z-1-A, Jan. 1989. ILO-Encycloppedia of Occupational Health and Safety, 3<sup>rd</sup> Ed.

To the best of our knowledge, the toxicological properties of yttrium oxide have not been thoroughly investigated.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicological Information:

No data available.

### Distribution:

No data available.

### Chemical Fate Information:

No data available.

## 13. DISPOSAL CONSIDERATIONS

### DISPOSAL:

Fibers contained in Sinterlyte products are not classified as a hazardous waste according to Federal regulations (40 CFR 261). Check local, regional, state or provincial regulations for applicable requirements for disposal. Any processing, use, alteration or chemical additions to the product, as purchased, may alter the disposal requirements. Under Federal regulations, it is the waste generator's responsibility to properly characterize a waste material, to determine if it is a "hazardous" waste.

### EMPTY CONTAINERS:

Product packaging may contain product residue. Do not reuse.

## 14. TRANSPORT INFORMATION

### U.S. DEPARTMENT OF TRANSPORTATION (DOT)

**BILL OF LADING DESCRIPTION (49 CFR 172.202):** SINTERLYTE ALUMINA FIBER PRODUCTS (NON-REGULATED)

**UNITED NATIONS (UN) NUMBER:** NOT APPLICABLE

**NORTH AMERICA (NA) NUMBER:** NOT APPLICABLE

## 15. REGULATORY INFORMATION

**Key statutory and regulatory classifications or listings for the product, as manufactured, which may impact product storage, use, handling or disposal:**

**U.S. FEDERAL REGULATIONS****Toxic Substances Control Act (TSCA):**

All substances contained in this product are listed in the TSCA Chemical Inventory [Section 8(b)].

**Superfund Amendments and Reauthorization Act (SARA) Title III Information: SARA Hazard Category:**

Listed below are the hazard categories for the Superfund Amendments and Reauthorization Act (SARA) Section 311/312 (40 CFR 370):

Immediate Hazard: --  
Delayed Hazard: X

Fire Hazard: --  
Pressure Hazard: --

Reactivity Hazard: --

**SARA Title III:**

This product contains aluminum oxide (fibrous forms) which is reportable under Section 313 (40 CFR 372). Sections 311 and 312 apply.

**STATE REGULATIONS****California:**

Listed as "Ceramic Fibers (airborne particles of respirable size)" Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986: Known to the State of California to cause cancer.

This material has a component with a very low level of Naturally Occurring Radioactive Material known to the state of California to cause cancer.

**Other States:**

Ceramic fiber products are not known to be regulated by states other than California; however, state and local OSHA and EPA regulations may apply to these products. Contact your local agency if in doubt.

**INTERNATIONAL REGULATIONS****Canadian WHMIS:**

Class D-2A Materials Causing Other Toxic Effects

**Canadian EPA:**

All substances in this product are listed, as required, on the Domestic Substance List (DSL).

**16. OTHER INFORMATION****Product Stewardship Program of The Unifrax Corporation**

The Unifrax Corporation – a manufacturer of bulk Refractory Ceramic Fiber and a supplier to Refractory Specialties, Inc., has established a program to provide customers with up-to-date information regarding the proper use and handling of refractory ceramic fiber. In addition, Unifrax Corporation has also established a program to monitor airborne fiber concentrations at customer facilities. If you would like more information about this program, please call Refractory Specialties, Inc. or the Unifrax Corporation Product Stewardship Information Hotline at 1-800-322-2293.

**Definitions:**

**ACGIH:** American Conference of Governmental Industrial Hygienists

**CAS:** Chemical Abstracts Service

**EPA:** Environmental Protection Agency

**Fibers/cc:** Fibers per cubic centimeter

**HEPA:** High Efficiency Particulate Air

**HMIS:** Hazardous Materials Information System

**mg/m<sup>3</sup>:** Milligrams per cubic meter of air

**NFPA:** National Fire Protection Association

**NIOSH:** National Institute for Occupational Safety and Health

**OSHA:** Occupational Safety and Health Administration

**29 CFR 1910.134 & 1926.103:** OSHA Respiratory Protection Standard

**29 CFR 1910.1200 & 1926.59:** OSHA Hazard Communication Standard

**PEL:** Permissible Exposure Limit

**RCRA:** Resource Conservation and Recovery Act

**RCF:** Refractory Ceramic Fiber  
**SARA:** Superfund Amendments and Reauthorization Act  
**Title III:** Emergency Planning and Community Right to Know Act  
**Section 302:** Extremely Hazardous Substances  
**Section 304:** Emergency Release  
**Section 311:** MSDS/List of Chemicals and Hazardous Inventory  
**Section 312:** Emergency and Hazardous Inventory  
**Section 313:** Toxic Chemicals and Release Reporting  
**SVF:** Synthetic Vitreous Fiber  
**TLV:** Threshold Limit Value (ACGIH)  
**TSCA:** Toxic Substances Control Act

**DISCLAIMER**

The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.