

# Ceramsource, Inc.

## Material Safety Data Sheet

### **1. PRODUCT NAME**

**Trade Name:** TaoFibre® PSTE Expandable Paper

**Product Name:** Vitreous Aluminosilicate Fiber Paper

**Material Name:** Ceramic Fiber, Aluminosilicate Refractory Fiber, Refractory Ceramic Fiber (RCF)  
Man-made Vitreous, Man-made Mineral Fiber

**General Use:** High temperature insulation

Manufactured and supplied by  
Ceramsource Inc.  
PO BOX 6026  
East Brunswick, NJ 08816  
Tel: 732-257-5002 Fax: 732-257-5003

### **2. COMPOSITION AND INGREDIENTS**

<u>Ingredient Name</u>	<u>CAS Number</u>	<u>Percent</u>
Aluminosilicate fiber	142844-00-6	75-80
Graphite	7782-42-5	15-20
Latex binder	None	5-10

### **3. HAZARDS IDENTIFICATION**

**Warnings!** Dust from this product generated by handling may cause skin, eye, and respiratory tract irritation. Possible cancer hazards depend on duration and level of exposure.

#### **Hazard Ratings**

**Hazardous Materials Information System (HMIS) Ratings:**

Health: 1 Flammability: 0 Reactivity: 0 Personal Protection Index: X

**Possible effects on health:** Prolonged and repeated inhalation of aluminosilicate dust may cause chronic effects on respiratory system such as bronchitis, asthma, and emphysema.

**Signs and symptoms of excessive exposure:**

**Eye contact:** Physical irritation

**Skin contact:** Physical irritation

**Ingestion:** Temporary irritation to gastrointestinal tract

**Inhalation:** Pulmonary dysfunction

**Hazard Classification:**

Although studies, involving occupationally exposed workers, have not identified any increased incidence of respiratory disease, results from animal testing have been used as the basis for hazard classification. In each of the following cases, the conclusions are qualitative only and do not rest upon any quantitative analysis suggesting that the hazard actually may occur at current occupational exposure levels.

The **International Agency for Research on Cancer (IARC)** confirmed in October 2001 that Group 2B (possible human carcinogen based on sufficient evidence of carcinogenicity in animals but inadequate evidence in humans) continues to be the appropriate classification for refractory ceramic fiber.

The Seventh Annual Report on Carcinogens (1994), prepared by the **National Toxicology Program (NTP)**, classified respirable RCF and glasswool as substances reasonably anticipated to be carcinogens.

The **American Conference of Governmental Industrial Hygienists (ACGIH)** has classified RCF as "A2-Suspected Human Carcinogen."

The **Commission of The European Communities (DG XI)** has classified RCF as a substance "that should be regarded as if it is carcinogenic to man."

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 chemical known to the State of California to cause cancer.

The **Canadian Environmental Protection Agency (CEPA)** has classified RCF as "probably carcinogenic" (Group 2).

The **Canadian Workplace Hazardous Materials Information System (WHMIS)** – RCF is classified as Class D2A - Materials Causing Other Toxic Effects.

The **Hazardous Materials Identification System (HMIS)** –

Health 1\* Flammability 0 Reactivity 0 Personal Protection Index: X (Employer Determined)

(\* denotes potential for chronic effects)

**4. FIRST AID**

**Eye contact:** Flush immediately with large amounts of water for at least 15 minutes. Do not rub eyes. Get medical help if irritation persists.

**Skin contact:** Do not rub or scratch affected skin. Wash affected area gently with soap and water. Skin cream or lotion can also help after washing.

**Ingestion:** Relocate affected individual to an environment of clean and fresh air. Drink plenty of water. Seek medical help if symptoms persist.

**Inhalation:** Remove affected individual to a dust free place. Seek medical help if irritation persists.

**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**

**NFPA Unusual Hazards:** None

**Flash Point:** None.

**Auto-ignition Temperature:** None.

**Extinguishing Media:** Use proper extinguishing media for the surrounding fire.

**Unusual Fire and Explosion Hazards:** None.

**Fire Fighting Protective Equipment:** Wear full bunker gear including positive pressure self-contained breathing apparatus.

## **6. ACCIDENTAL RELEASE MEASURES**

Avoid creating airborne dust. Maintain routine housecleaning procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and keep material in closed containers. Do not use compressed air for clean-up. Workers should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could cause water pollution.

## **7. HANDLING AND STORAGE**

**Handling:** Minimize use of power tools to handle the material. Use hand tools whenever possible. Frequently clean work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

**Storage:** Store the material in factory container in a dry area. Keep container closed when not in use.

**Empty Containers:** Product packaging may contain residue. Do not reuse.

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

### **Exposure Guidelines:**

<b>Components</b>	<b>OSHA (PEL)</b>	<b>ACGIH (TLV)</b>	<b>Supplier</b>
Alumino-silicate fiber (vitreous)	Non-established	0.2 f/cc	0.5 fiber/cc 8-hr TWA (RCFC)*

\*Pending the results of long-term health effects studies, airborne exposures should be controlled at or below the Refractory Ceramic Fiber Coalition (RCFC) Recommended Exposure Guidelines listed above.

### **Other Occupational Exposure Levels (OEL):**

RCF-related occupational exposure limits vary from country to country. Listed here are a few regulatory OEL examples: Australia – 0.5 f/cc; Austria – 0.5 f/cc; Canada – 0.5 to 1 f/cc; Denmark – 1 f/cc; France – 0.6 f/cc; Germany – 0.5 f/cc; Netherlands – 1 f/cc; New Zealand – 1 f/cc; Norway – 2 f/cc; Poland – 2 f/cc; Sweden – 1 f/cc; United Kingdom – 2 f/cc. Non-regulatory OEL

example is: RCFC REG 0.5 f/cc. The objectives and criteria underlying each of these OEL decisions also vary. The evaluation of occupational exposure limits and determining their relative applicability to the workplace is best performed, on a case-by-case basis, by a qualified industrial hygienist.

**Engineering controls:** Use engineering controls such as ventilation and dust collection devices to limit airborne fiber concentrations to the minimum attainable level.

**Protective clothing:** Workers should wear full body clothing, gloves, hat and eye protection when handling the material. Wash work clothes separately from normal clothing. Rinse washer after use. It is recommended workers do not take work clothing out of the work area. If they must, they should vacuum their clothes with a HEPA filtered vacuum before leaving the work area.

**Eye protection:** Wear goggles / safety glasses with side-shields.

**Respiratory protection:** Other than or before availability of engineering controls to reduce airborne aluminosilicate dust below the PEL, workers should use good work practices together with respiratory protection. Before providing respirators to workers, employers should 1) monitor for airborne aluminosilicate dust concentrations using proper NIOSH analytical methods and select the respiratory protection according to the results of that monitoring, 2) have physician determine if the workers are able to wear respirators, 3) make training programs available to workers for respiratory protection. Use NIOSH/MSHA approved respirators, in accordance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 DFR 1926.103, for the particular hazard or airborne concentrations in the work place.

**Recommended Respiratory Protections (When Handling Aluminosilicate Fiber Products):**

<u>Dust Concentration</u>	<u>Recommended Respirator</u>
Less than 0.5 f/cc	No specific recommendation. Use preference based upon conditions present.
0.5 f/cc to 5.0 f/cc	Disposable dust/mist respirator (e.g. 3M 9900) or half-face, air-purifying respirator equipped with high efficiency particulate air (HEPA) filter cartridges (e.g. 3M 6000 Series)
5.0 f/cc to 25 f/cc	Full-face air-purifying respirator equipped with high-efficiency particulate air (HEPA) filter cartridges (e.g. 3M 7800 with 7255 filters) or powered with air-purifying respirator (PARR) equipped with HEPA filter cartridges (e.g. 3M W3265S with W3267 filters)
More than 25 f/cc	Full-face positive pressure supplied air respirator (e.g. 3M7800 with W9435 hose and W3196 regulator)

**Other Information:**

- (1) Concentrations based upon an eight hour time weighted average (TWA) as determined by air samples collected and analyzed pursuant to NIOSH method 7400 (B) for airborne fibers.
- (2) During furnace tear-out activities/after service RCF removals, the manufacturer recommends, at a minimum, the use of full-face-piece air purifying respirator equipped with a high-efficiency particulate air (HEPA) filter cartridge to control fiber and potential crystalline silicate exposure.
- (3) In the absence of other objective data or when concentrations are unknown, the manufacturer recommends the use of half-face, air purifying respirator equipped with a high-efficiency particulate air (HEPA) filter cartridge.
- (4) Situations involving a potential exposure to airborne contaminants should be evaluated by a qualified industrial hygienist for the selection of appropriate respiratory protection and air monitoring.

- (5) The American Conference of Governmental Industrial Hygienists (ACGIH) has not adopted a threshold limit value (TLV) recommendation for RCF.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** White and odorless.  
**Chemical family:** Aluminosilicate fibers.  
**Chemical Indexes:**  $\text{Al}_2\text{O}_3+\text{SiO}_2$ :  $\geq 97-99\%$   
 $\text{Al}_2\text{O}_3$ :  $>46\%$   
 $\text{Fe}_2\text{O}_3$ :  $<1.0\%$   
 $\text{Na}_2\text{O}+\text{K}_2\text{O}$ :  $\leq 0.5$   
**Melting point:** 3200 °F

**Vapor pressure:** Not applicable  
**Vapor density:** Not applicable  
**% Volatile:** Not applicable  
**Water solubility (%):** Not Soluble in water  
**PH:** Not applicable  
**Boiling point:** Not applicable  
**Molecular Formula:** Not applicable

## 10. STABILITY AND REACTIVITY

**Chemical stability:** Stable under conditions of normal use.  
**Incompatibility:** Soluble in hydrofluoric acid, phosphoric acid, and concentrated alkali.  
**Hazardous decomposition products:** Thermal decomposition of binder from fires or from first heat of product may release smoke, carbon monoxide, carbon dioxide, oxides of nitrogen and small amounts of aromatic and aliphatic hydrocarbons. Use adequate ventilation or other precautions to eliminate exposure to vapors resulting from thermal decomposition of binder. Exposure to thermal decomposition fumes may cause respiratory tract irritation, bronchial hyper-reactivity or an asthmatic-type response.  
**Hazardous polymerization:** Not applicable.

## 11. TOXICOLOGICAL INFORMATION

Epidemiological studies conducted by Institution of Human Environment Protection in China has provided no evidence that there is a direct cause-and-effect relationship between cumulative exposure to aluminosilicate fibers and lung cancers or particular pulmonary diseases.

However, recent toxicological experiments using physiological exposure method (inhalation) have produced findings of respiratory disease in rodents. Aluminosilicate refractory fiber has found to be a rodent carcinogen under the conditions that the rodents are exposed to high levels of the material (75 – 115 fibers/cc) on a basis of lifetime duration.

## 12. ECOLOGICAL INFORMATION

No data is available on adverse effects of the material on the environment.

## 13. DISPOSAL CONCERNS

This material is not classified as a hazardous waste under Federal regulations (40 CFR 261). It is the product users' responsibility to comply with local, regional, state or provincial regulations concerning specific requirements for disposal. Any processing, alteration or chemical additions to the material, as purchased, may make the information provided in this MSDS incomplete, inaccurate, or inappropriate. Original product boxes may contain material residue. Do not reuse them for other packaging purposes.

#### **14. TRANSPORT CONSIDERATIONS**

##### **U.S. Department of Transportation (DOT)**

**Bill of lading description:** Ceramic Fiber Paper

**Hazard class:** Not classified

**Labels:** Not applicable

**Placards:** Not applicable

**United Nations (UN) Number:** Not applicable

**North America (NA) Number:** Not applicable

#### **15. REGULATORY INFORMATION**

**CERCLA:** The aluminosilicate fibers of this product have an average diameter of 2-4  $\mu\text{m}$  and are not considered CERCLA hazardous substances (CERCLA 40 CFR 302).

**Clean Air Act (CAA):** Substances regulated as hazardous air pollution under Section 112 of the Clean Air Act Amendments of 1990:

Chemical Name

None

Most RCF products, including aluminosilicate fibers, are composed of RCF with an average diameter greater than 1 micron, and therefore are not considered hazardous air pollutants.

**SARA Title III:** This material does not contain substances reportable under Section 302, 304, 313 (40 CFR 372). Section 311 and 312 apply.

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

##### **State Regulations**

###### **California:**

Substances listed by the State of California on Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986:

Chemical Name

Ceramic fibers (airborne particles of respirable size)

CAS Number

142844-00-6

###### **New Jersey:**

Chemicals which are listed as a special health hazard substances as defined in New Jersey Worker and Community Right to Know Act, New Jersey Administrative Code, Title 8, Department of Health, Chapter 59, Subchapter 10:

Chemical Name

CAS Number

NONE

**Pennsylvania:**

Chemicals which are listed as a special health hazard substance as defined in Pennsylvania Right-to-Know Law, Section 3800:

<u>Chemical Name</u>	<u>CAS Number</u>
NONE	

**International Regulations:**

**Canadian Workplace Hazardous Material Information System (WHMIS)** categories apply to this material as follows:

Acutely Toxic: --	Biohazardous: --	Compressed Gas: --
Corrosive: --	Dangerously Reactive: --	Flammable/Combustible: --
Oxidizer: --	Other Toxic Effects: X	

**Canadian Environment Protection Act (CEPA):**

All substances in this product are listed, as required, on the Domestic Substances List (DSL). Chemicals which are listed on the Non-Domestic Substances List:

<u>Chemical Name</u>	<u>CAS Number</u>
NONE	

**OTHER OCCUPATIONAL EXPOSURE LEVELS (OEL):**

RCF-related occupational exposure limits vary internationally. Regulatory OEL examples include: Australia – 0.5 f/cc; Austria – 0.5 f/cc; Canada – 0.5 to 1.0 f/cc; Denmark – 1.0 f/cc; France – 0.6 f/cc; Germany – 0.5 f/cc (0.25 f/cc for new installations); Netherlands – 1.0 f/cc; New Zealand – 1.0 f/cc; Norway – 2.0 f/cc; Poland – 2.0 f/cc; Sweden – 1.0 f/cc; United Kingdom – 2.0 f/cc. Non-regulatory OEL examples include: ACGIH TLV – 0.2 f/cc; RCFC REG – 0.5 f/cc. The objectives and criteria underlying each of these OEL decisions also vary. The evaluation of occupational exposure limits and their relative applicability to the workplace is best performed, on a case-by-case basis, by a qualified Industrial Hygienist.

<i>OTHER COMPONENTS</i>	<i>OSHA PEL</i>	<i>MANUFACTURER'S REG.</i>
Graphite	2.5 mg/m <sup>3</sup> (respirable)	None Established
Latex	None Established	None Established

**OTHER OCCUPATIONAL EXPOSURE LEVELS (OEL)**

International occupational exposure levels (OELs), both regulatory and non-regulatory, for the other ingredients in this product may vary. Contact the appropriate, local regulatory authority for current limits. The evaluation of occupational exposure limits and the determination of their relative applicability to the workplace are best performed, on a case-by-case basis, by a qualified Industrial Hygienist.

Non-regulatory OEL examples include: ACGIH TLVs (8 hr., TWA): Graphite – 15 mppcf.

**16. OTHER INFORMATION**

**Removal after Service:** Under sustained and steady high temperature over 1800 °F, this material will possibly transform to crystalline silica (cristobalite) in exposed portions. Prolonged or repeated exposure to respirable crystalline silica dust may lead to lung diseases. IARC has listed crystalline silica in Category 2A, a probable carcinogen ("Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans." IARC Monograph 68, June 1997, p. 210-211). The permissible exposure limit (PEL) set by OSHA for respirable cristobalite is 0.05 mg/m<sup>3</sup>. Whenever possible, follow Section 8 procedures for exposure controls and personal protection.

**Abbreviations:**

CERCLA :	Comprehensive Environmental Response Compensation and Liability Act of 1980
CAS:	Chemical Abstracts Service
f/cc:	Fibers per cubic centimeter
HMIS:	Hazardous Material Information System
mg/m <sup>3</sup> :	Milligrams per cubic meter of air
NIOSH:	National Institute for Occupational Safety and Health
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit
SARA:	Super Amendments and Reauthorization Act
TSCA:	Toxic Substances Control Act

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