



MATERIAL SAFETY DATA SHEET

MSDS No: 204

Date Prepared: 05/01/1987

Current Date: 4/12/2006

Last Revised: (04/10/2006)

1. PRODUCT AND COMPANY IDENTIFICATION

Material Name: Polycrystalline Alumina Fiber Product
Common Name: Polycrystalline Fiber; Man-made Alumina Fiber; Refractory Alumina Fiber; Saffil®
Intended Use: High temperature industrial thermal insulation
Trade Names: Kaowool® 3000 Paper;
 Pyro-Bloc® Grade S: Modules, Strips, Packing, Insulation, Shapes
 Saffil®: Paper, Felt
 Cer-Wool® HT Paper

Manufacturer/Supplier: Thermal Ceramics Inc.
 P. O. Box 923; Dept. 300
 Augusta, GA 30903-0923

For Product Stewardship and Emergency Information -
 Hotline: 1-800-722-5681
 Fax: 706-560-4054

For additional MSDSs and to confirm this is the most current MSDS for the product, visit our web page [www.thermalceramics.com].

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT</u> <u>CAS NUMBER</u>	<u>PERCENT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>SUPPLIER RECOMMENDED</u>
Aluminum oxide (fibrous forms) 1344-28-1	95	15 mg/m ³ (total); 5 mg/m ³ (respirable)	Not Established	0.5 f/cc *
Silica, amorphous 7631-86-9	<5	(80 mg/m ³ ÷ % SiO ₂ **) or 20 mppcf	10 mg/m ³	
Latex Proprietary	0 - 10	Not Established***	Not Established	

NOTES:

* Recommended exposure guideline (REG) for respirable fibers as an 8 hour time weighted average (TWA) exposure, based on air samples collected and analyzed using NIOSH method 7400(B).

** % SiO₂ = percent of crystalline silica

*** Trace amount of formaldehyde may release from **latex** during initial heating of this product. The current OSHA PELs for formaldehyde are: 0.75 ppm (8 hr.TWA) and 2 ppm (STEL).

(See Section 8 for Personal Protection Guidelines.)

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING!

POSSIBLE CANCER HAZARD BY INHALATION.

(See Section 11 for more information)

Possible Health Effects

Target Organs: Eyes, skin and respiratory system
Primary Entry Route: Inhalation
Acute effects: Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to the skin on prolonged contact.
Chronic effects: Toxicological studies indicates that Saffil® 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. (See Below)

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 Saffil® 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.

Signs and Symptoms of Overexposure:

Eye Contact: Physical irritation - inflammation
Skin Contact: Physical irritation - rash
Ingestion: Unlikely route of exposure
Inhalation: Irritation or soreness in throat, nose and respiratory tract

4. FIRST AID MEASURES**Respiratory Tract (nose and throat) Irritation:**

If respiratory tract irritation develops, move the person to a dust free location. See Section 8 for additional measures to reduce or eliminate exposure.

Eye Irritation:

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.

Skin Irritation:

If skin becomes irritated, remove soiled 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.

Gastrointestinal Irritation:

If gastrointestinal tract irritation develops, move the person to a dust free environment.

- If the above symptoms persist, seek medical attention. -

Notes To Physicians:

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

5. FIRE FIGHTING MEASURES

NFPA Codes: Flammability: 0 Health: 1 Reactivity: 0 Special: 0
NFPA Unusual Hazards: None
Flammable Properties: None
Flash Point: None
Hazardous Decomposition Products: None
Unusual Fire and Explosion Hazard: None
Extinguishing Media: Use extinguishing media suitable for type of surrounding fire

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures

Avoid creating airborne dust. Dust suppressing cleaning methods such as wet sweeping or vacuuming should be used to clean the work area. If vacuuming, the vacuum should be equipped with a HEPA filter. Compressed air or dry sweeping should not be used for cleaning.

7. HANDLING AND STORAGE

Storage

Store in original container in a dry area. Keep container closed when not in use.

Handling

Handle ceramic fiber carefully. Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

Empty Containers

Product packaging may contain residue. Do not reuse.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use engineering controls such as ventilation and dust collection devices to reduce airborne fiber concentrations to the lowest attainable level.

Respiratory Protection: When it is not possible or feasible to significantly reduce airborne fiber and dust levels through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should **1) monitor for airborne fibers and respirable cristobalite concentrations using NIOSH method 7400(B) and 7500 respectively and select the appropriate respiratory protection based upon the results of that monitoring, 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs.** Use NIOSH certified respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

**Recommended Respiratory Protection
When Handling Polycrystalline Alumina Fiber**

• AS PRODUCED AND AFTER SERVICE ⁽¹⁾**CONCENTRATION ⁽²⁾****RESPIRATOR**

Up to 0.5 f/cc	Disposable particulate respirator (N, R, or P, 95 rated) ^{(3) (4)}
0.5 f/cc - 5 f/cc	Half-mask, air-purifying respirator with high efficiency particulate air (HEPA) or P100 rated filter cartridges.
5 f/cc - 25 f/cc	Full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges or powered air-purifying respirator (PAPR) with HEPA or P100 rated filter cartridges.
> 25 f/cc	Full facepiece positive pressure supplied air respirator.

⁽¹⁾ Unless air monitoring data indicates a lower exposure, as a minimum, use a full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges during furnace tear out or when conducting removal in a confined area.

⁽²⁾ Eight hour time weighted average (TWA) exposures determined by air samples collected and analyzed using NIOSH method 7400(B) for airborne fibers.

⁽³⁾ Not recommended for fiber chopping, blanket/module folding, cutting, installation or other tasks using power tools and machinery (e.g. band sawing, lathing, grinding, drilling, die cutting) unless effective engineering controls reduce fiber exposures.

⁽⁴⁾ If oil present, use only R or P rated filters.

NOTE: For unknown exposures or when working with other contaminants, consult an industrial hygienist for air monitoring and respirator selection.

Protective Clothing: Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Eye Protection: Goggles/safety glasses with sideshields should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White odorless wool-like fibrous material		
Chemical Family:	Polycrystalline Alumina		
Vapor Pressure:	Not applicable	Vapor Density:	Not applicable
Boiling Point:	Not applicable	Specific Gravity Range:	3.0 - 3.5
Melting Point:	>3600°F (2032°C)	Volatile by Volume (%):	0
Water Solubility (%):	Not soluble in water	pH:	Not applicable

10. STABILITY AND REACTIVITY

Hazardous Polymerization:	Will not occur
Chemical Incompatibilities:	None known
Hazardous Decomposition Products:	Carbon monoxide, carbon dioxide, oxides of nitrogen and trace amounts of aromatic and aliphatic hydrocarbons may be released from burning of latex polymer

11. TOXICOLOGICAL INFORMATION

Saffil® 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 Saffil® 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 Saffil 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.

12. ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

13. DISPOSAL INFORMATION

Waste Management: To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

14. TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard Class: Not regulated
 Labels: Not applicable
 Placards: Not applicable
 Bill of Lading: Product name

United Nations (UN) Number: Not applicable
 North America (NA) Number: Not applicable

15. REGULATORY INFORMATION

United States Regulations

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

OSHA: Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication Standard.

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

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.

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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

Trace amounts of formaldehyde, acrylonitrile may be released from latex polymer during initial heating. Under normal conditions of handling, processing and use it is reasonable to expect the amount of acrylonitrile released to be below 1.0 ppm. Consult OSHA Standards on acrylonitrile and formaldehyde (29 CFR 1910.1045 and 29 CFR 1910.1048 respectively) for specific requirements if the exposure level is beyond the threshold levels.

DEFINITIONS:

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ACGIH:	American Conference of Governmental Industrial Hygienists
ADR:	Carriage of Dangerous Goods by Road (International Regulation)
CAA:	Clean Air Act
CAS:	Chemical Abstracts Service
CERCLA:	Comprehensive Environmental Response, Compensation and Liability Act
DSL:	Domestic Substances List
EPA:	Environmental Protection Agency
EU:	European Union
f/cc:	Fibers per cubic centimeter
HEPA:	High Efficiency Particulate Air
HMIS:	Hazardous Materials Identification System
IARC:	International Agency for Research on Cancer
IATA:	International Air Transport Association
IMDG:	International Maritime Dangerous Goods Code
mg/m³:	Milligrams per cubic meter of air
mmpcf:	Million particles per cubic meter
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 Standards
29 CFR 1910.1200 & 1926.59:	OSHA Hazard Communication Standards
PEL:	Permissible Exposure Limit (OSHA)
PIN:	Product Identification Number
PNOC:	Particulates Not Otherwise Classified
PNOR:	Particulates Not Otherwise Regulated
PSP:	Product Stewardship Program
RCFC:	Refractory Ceramic Fibers Coalition
RCRA:	Resource Conservation and Recovery Act
REG:	Recommended Exposure Guideline (RCFC)
REL:	Recommended Exposure Limit (NIOSH)
RID:	Carriage of Dangerous Goods by Rail (International Regulations)
SARA:	Superfund Amendments and Reauthorization Act
SARA Title III:	Emergency Planning and Community Right to Know Act
SARA Section 302:	Extremely Hazardous Substances
SARA Section 304:	Emergency Release
SARA Section 311:	MSDS/List of Chemicals and Hazardous Inventory
SARA Section 312:	Emergency and Hazardous Inventory
SARA Section 313:	Toxic Chemicals and Release Reporting
STEL:	Short Term Exposure Limit
SVF:	Synthetic Vitreous Fiber
TDG:	Transportation of Dangerous Goods
TLV:	Threshold Limit Value (ACGIH)
TSCA:	Toxic Substances Control Act
TWA:	Time Weighted Average
WHMIS:	Workplace Hazardous Materials Information System (Canada)

Revision Summary:

Section 1: Product Cer-Wool® HT Paper added.

MSDS Prepared By:

THERMAL CERAMICS ENVIRONMENTAL, HEALTH & SAFETY DEPARTMENT

DISCLAIMER

The information presented herein is presented in good faith and believed to be accurate as of the effective date of this Material Safety Data Sheet. Employers may use this MSDS to supplement other information gathered by them in their efforts to assure the health and safety of their employees and the proper use of the product. This summary of the relevant data reflects professional judgment; employers should note that information perceived to be less relevant has not been included in this MSDS. Therefore, given the summary nature of this document, Thermal Ceramics does not extend any warranty (expressed or implied), assume any responsibility, or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user.