



KT Refractories US Company

Warehouse Address: 4583 S. Wayside Dr., Houston, TX 77087

Phone: 1877-365-2995 Fax: 713-838-2248

www.KTRefractories.com

MATERIAL SAFETY DATA SHEET

Part 1. IDENTIFICATION

a) Product identifier used on the label:

Ceramic Fiber Blanket

Alumina Silicate Wool Blanket

b) Other means of identification

Blanket- STD, HPS, HTZ

c) Recommended use of the chemical and restrictions on use

Common Use: High temperature insulation, furnace lining, heat shields, sealing and gaskets

Primary Use: Mainly applied in high temperature industrial furnaces, kilns, boilers and ovens for heat insulation, fire protection and back lining.

Secondary Use: Conversion into wet and dry mixtures and articles

Tertiary Use: Installation, removal, maintenance and service life on some industrial equipment.

d) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party;

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e) Emergency phone number.

1-877-365-2995

Part 2. HAZARD(S) IDENTIFICATION

a) Classification of the chemical in accordance with paragraph (d) of §1910.1200

The U.S. Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (HCS) 2012 indicates that IARC Group 2B corresponds to OSHA HCS 2012 Category 2 carcinogen classification (refer to, e.g., §1910.1200, Appendix F, Part D).

b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200

According to OSHA HCS 2012, RCF is classified as a category 2 carcinogen.

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Hazard Pictogram.

**Hazard Statements**

Suspected of causing cancer by inhalation.

Precautionary statements

Read and understand the practice instruction, wear professional protective equipment before Handling with it, Use the respiratory protection as required, seek medical advice if exposure, Minimize the airborne dust and always keep in proper way, dispose of waste in accordance with local, state and federal regulations.

May cause temporary mechanical irritation to exposed eyes, skin or respiratory tract.
Minimize exposure to airborne dust.

(c) Describe any hazards not otherwise classified that have been identified during the classification process

The exposure may cause mild mechanical irritation to skin, eyes and upper respiratory system, but the effects are temporary.

(d) Where an ingredient with unknown acute toxicity is used in a mixture at a concentration \geq 1% and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute toxicity is required.

Not applicable

Part 3. COMPOSITION / INFORMATION ON INGREDIENTS**a) Chemical name.**

Refractory Ceramic Fiber (RCF)

b) Common Name and Synonyms:



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Common Name. refractory ceramic fiber

Synonyms. RCF, ceramic fiber, Alumino Silicate Wool (ASW), synthetic vitreous fiber (SVF), man-made vitreous fiber (MMVF), man-made mineral fiber (MMMMF), high temperature insulation wool (HTIW)

c) CAS number and other unique identifiers;

CAS Number. 142844-00-6

d) Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance.

Not applicable

Part 4. FIRST AID MEASURES

a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion;

EYE CONTACT

If eyes become irritated, wash 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, 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. Change into clean clothing.

INGESTION:

Relocate affected individual to an environment of clean and fresh air. Drink plenty of water and 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.

b) Most important symptoms/effects, acute and delayed.

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The exposure may cause mild mechanical irritation to skin, eyes and upper respiratory system, but the effects are temporary.

c) Indication of immediate medical attention and special treatment needed, if necessary.

Skin and respiratory effects are the result of temporary, mild mechanical irritation

Part 5. FIRE FIGHTING MEASURES

a) Suitable (and unsuitable) extinguishing media.

use proper extinguishing media for the surrounding fire

b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).

Ceramic fiber products are not combustible, packing materials maybe combustible

c) Special protective equipment and precautions for fire-fighters.

Wear full bunker gear including positive pressure self-contained breathing apparatus.

Part 6. ACCIDENTAL RELEASE MEASURES

a) Personal precautions, protective equipment, and emergency procedures.

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.

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

b) Methods and materials for containment and cleaning up.

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.

Part 7. HANDLING AND STORAGE

a) Precautions for safe handling.

Clean up dust carefully. Use wet sweeping or high efficiency vacuum to remove dust. Do not use

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compressed air.

During after-service removal activities, wet exposed material frequently 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.

b) Conditions for safe storage, including any incompatibilities

Make sure to stock in a dry and clean place.

EMPTY CONTAINERS

Product packaging may contain residue. Do not reuse.

Part 8. EXPOSURE CONTROL & PERSONAL PROTECTION

a) OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available

Component	OSHA PEL	NIOSH REL	ACGIH TLV	PLANT REG
Refractory ceramic fiber	No established	0.5 f/cc, 8-hr. TWA	0.2 f/cc TLV, 8-hr. TWA	0.5 f/cc, 8-hr. TWA

*Except for the state of California, where the PEL for RCF is 0.2 f/cc 8-hr TWA, there is no specific regulatory standard for RCF in the U.S. OSHA's "Particulate Not Otherwise Regulated (PNOR)" standard (29 CFR 1910.1000, Subpart Z, Air Contaminants) applies generally - Total Dust 15 mg/m³; Respirable Fraction 5 mg/m³.

Components OSHA Supplier Alumina--silicate fiber None established

RCF-related occupational exposure limits vary from country to country. Listed here are a few regulatory OEL examples:

- Australia--0.5f/cc;
- Austria—0.5f/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;
- United Kingdom—2 f/cc

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

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is performed on a case-by-case, by a qualified industrial hygienist.

b) Appropriate engineering controls

Use engineering controls such as ventilation and dust collection devices to limit airborne fiber concentrations to the minimum attainable level, contact the technical support specialist of supplier for assistance

c) Individual protection measures, such as personal protective equipment.

Skin Protection.

Wear personal protective equipment (such as gloves, glasses) to prevent skin irritation. Keep the clothing washable but do not take unwashed clothing home.

Take necessary steps to minimize non-work dust exposure (e.g., vacuum clothes before leaving the working site, wash the clothing separately)

Wear the protective goggles or safety glasses with side shields.

Respiratory Protection

When engineering controls are not sufficient to maintain workplace concentrations below the 0.5 f/cc REG or a regulatory OEL, the use of appropriate respiratory protection, pursuant to the requirements of OSHA Standards 29 CFR 1910.134 and 29 CFR 1926.103, is recommended. A NIOSH certified respirator with a filter efficiency of at least 95% should be used.

Part 9. PHYSICAL AND CHEMICAL PROPERTIES

a) Appearance (physical state, color, etc.)

white wool

b) Odor

odorless

c) Odor threshold

N/A

d) pH

N/A



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e) Melting point:

1760 Celsius Degree

f) Flash point

N/A

g) Initial boiling point and boiling range

N/A

h) Flammability (solid, gas)

N/A

i) Flammability (solid, gas)

N/A

j) Upper/lower flammability or explosive limits

N/A

k) Vapor pressure

N/A

i) Vapor density

N/A

m) Relative density

2.5-2.7

n) Solubility(ies)

Insoluble

o) Partition coefficient: n-octanol/water

N/A

p) Auto-ignition temperature

N/A

q) Decomposition temperature

N/A

r) Viscosity

N/A

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Part 10. STABILITY AND REACTIVITY**a) Reactivity**

Refractory ceramic fiber is not reactive

b) Chemical stability

Stable under conditions of normal use

c) Possibility of hazardous reactions

None

d) Conditions to avoid (e.g., static discharge, shock, or vibration)

Refer to section 7 for handling and storage information

e) Incompatible materials

Hydrofluoric acid, and concentrated alkali

f) Hazardous decomposition products

None

Part 11. TOXICOLOGICAL INFORMATION**a) Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)**

Exposure is mainly by inhalation or ingestion. Man-made vitreous fibers of a similar size to RCF have not been shown to migrate from the lung and/or gut and do not become located in other organs of the body

b) Symptoms related to the physical, chemical and toxicological characteristics

May cause skin irritation and inflammation, physical irritation to eyes, temporary gastric irritation if ingested, irritation to nose, throat and upper respiratory tract if inhalation, however, these symptoms are all temporary

c) Delayed and immediate effects and also chronic effects from short- and long-term exposure

Epidemiological studies of RCF production workers have indicated no increased incidence of respiratory disease nor other significant health effects. In animal studies, long-term, high-dose inhalation exposure resulted in the development of respiratory disease in rats and hamsters.



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EPIDEMIOLOGY

The University of Cincinnati is conducting an ongoing epidemiologic investigation. The evidence obtained from employees in U. S. RCF manufacturing facilities is as follows:

1) There is no evidence of any fibrotic lung disease (interstitial fibrosis) from evaluations of chest X-rays.
2) There is no evidence of an elevated incidence of lung disease among RCF manufacturing employees.
3) In early studies, an apparent statistical "trend" was observed, in the exposed population, between RCF exposure duration and some measures of lung function. The observations were clinically insignificant. If these observations were made on an individual employee, the results would be interpreted as being within the normal (predicted) respiratory range. A more recent longitudinal study of employees with 5 or more pulmonary function tests found that there was no effect on lung function associated with RCF production experience. Initial data (circa 1987) seemed to indicate an interactive effect between smoking and RCF exposure; more recent data, however, found no interactive effect. Nevertheless, to promote good health, RCF employees are still actively encouraged not to smoke.

4) Pleural plaques (thickening along the chest wall) have been observed in a small number of RCF employees. Some studies appear to show a relationship between the occurrence of pleural plaques on chest radiographs and the following variables:

- (a) years since RCF production hire date;
- (b) duration of RCF production employment;
- (c) cumulative RCF exposure. The best evidence to date indicates that pleural plaques are a marker of exposure only.

Pleural plaques are not associated with pulmonary impairment. The pathogenesis of pleural plaques remains incompletely understood; however, the mechanism appears to be an inflammatory response caused by inhaled fibers.

Other toxicological studies have been conducted which utilized non-physiological exposure methods such as intrapleural, intraperitoneal and intratracheal implantation or injection. Some of these studies have found that RCF is a potential carcinogen. Some experts, however, suggest that these tests have limited relevance because they bypass many of the biological mechanisms that prevent fiber deposition or facilitate fiber clearance.

d) Numerical measures of toxicity (such as acute toxicity estimates).

N/A

e) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA.

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IARC, in 1988, Monograph v.43 (and later reaffirmed in 2002, v.81), classified RCF as possibly carcinogenic to humans (group 2B). IARC evaluated the possible health effects of RCF as follows:

- There is inadequate evidence in humans for the carcinogenicity of RCF.
- There is sufficient evidence in experimental animals for the carcinogenicity of RCF.

The Annual Report on Carcinogens (latest edition), prepared by NTP, classified respirable RCF as "reasonably anticipated" to be a carcinogen).

Not classified by OSHA.

Part 12. ECOLOGICAL INFORMATION

a) Ecotoxicity (aquatic and terrestrial, where available);

No aquatic toxicity.

b) Persistence and degradability;

Ceramic fiber products are insoluble and it remains stable and are chemically identical to inorganic compounds found in the soil, they remain inert in the natural environment.

c) Bioaccumulative potential;

None

d) Mobility in soil;

None

e) Other adverse effects (such as hazardous to the ozone layer).

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

Part 13. DISPOSAL CONSIDERATIONS

This product is not classified as a listed or characteristic hazardous waste according to U. S. Federal regulations (40 CFR 261). Any processing, use, alteration or chemical additions to the product, as purchased, may alter the disposal requirements.

Under U. S. Federal regulations, it is the waste generator's responsibility to properly characterize a waste material, to determine if it is a "hazardous" waste. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

In case of contamination, by other materials classified as hazardous waste, expert guidance should be sought.

Part 14. TRANSPORT INFORMATION

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(a) UN number;

N/A

(b) UN proper shipping name;

N/A

(c) Transport hazard class(es);

N/A

(d) Packing group, if applicable;

N/A

(e) Environmental hazards (e.g., Marine pollutant (Yes/No));

Not classified as marine pollutant

(f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code);

N/A

(g) Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises.

N/A

Not classified as dangerous goods under ADR (road), RID (train) or IMDG (ship).

Product should remain in sealed containers during transportation.

Part 15. REGULATORY INFORMATION

US REGULATIONS

EPA

Superfund Amendments and Reauthorization Act (SARA) Title III - this product does not contain any substances reportable under Sections 302, 304, 313, (40 CFR 372). Sections 311 and 312 (40 CFR 370) apply (delayed hazard).

Hazard Categories:

Immediate Hazard – No

Delayed Hazard – Yes

Fire Hazard – No

Pressure Hazard – No

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Reactivity Hazard – No

Toxic Substances Control Act (TSCA) –

Refractory ceramic fiber is not required to be listed on the TSCA inventory.

OSHA

Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and the Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103.

California

“Ceramic fibers (airborne particles of respirable size)” is listed in Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986 as a chemical 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. If in doubt, make sure to contact your local regulatory organs.

International Regulations:

Canadian Workplace Hazardous Materials Information System (WHMIS):

No Canadian Workplace Hazardous Materials Information System categories apply to this product.

Canadian Environmental 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:

Part 16. OTHER INFORMATION

Removal after service:

Under sustained and steady high temperature over 1000°C, this material will possibly transform to crystalline silica 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 source is carcinogenic to humans” IARC monograph 68, June 1997 p 210—211). The permissible exposure limit(PEL) set by OSHA for respirable

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cristobalite is 0.05mg/m³. 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/m³: Milligrams per cubic meter of air

NIOSH: National institute for Occupational Safety and Health

OSHA: Occupational Safety & Health Administration

PEL: Permissible exposure limit

SARA: Super amendments and reauthorization act

TSCA: Toxic Substances Controls Act

Date of preparation of the SDS: July 10,2013

Date of the last change to SDS: Jun 20,2019

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, We do not extend any warranty, assume any responsibility, or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user.