

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: Sections 3, 8, 11, 15 & 16 revised. Replaces 3/5/07 MSDS..

Terms and Conditions of Sale

This is Subject to the Following terms and Conditions as Well as Those Appearing on the Attached.

1. Agreement of Sale; Acceptance: Any acceptance contained herein is expressly made conditional on Buyer's assent to any terms contained herein that are additional to or different from those proposed by Buyer in its purchase order and, hence, any terms and provisions of Buyer's purchase order which are inconsistent with the terms and conditions herof shall not be binding on the Seller. Unless Buyer shall notify Seller in writing to the contrary as soon as practicable after receipt hereof, acceptance of the terms and conditions hereof by Buyer shall be deemed made and; in the absence of such notification, the sale and shipment by the Seller of the goods covered hereby shall be conclusively deemed to be subject to the terms and conditions hereof.

2. Entire Contract: This contract constitutes the final and entire agreement between Seller and Buyer and any prior or contemporaneous understandings or agreements, oral or written, are merged herein.

3. Prices: The price to be paid by Buyer shall be the price in effect at the date of actual delivery of the goods unless otherwise specified in writing by Seller.

4. Taxes: The price of the goods does not include sales, use, excise, ad valorem, property or other taxes now or hereafter imposed, directly or indirectly, by any governmental authority or agency with respect to the manufacture, production, sale, delivery, consumption or use of the goods covered by this contract. Buyer shall pay such taxes directly or reimburse Seller for any such taxes which it may be required to pay.

5. Payment: The specific terms of payment are as specified in writing by Seller. If the Buyer shall fail to make any payments in accordance with the terms and provisions hereof, the Seller, in addition to its other rights and remedies, but not in limitation thereof, may, at its option, defer shipments or deliveries hereunder, or under any other contract with the Buyer, except upon receipt of satisfactory security or of cash before shipment.

6. Shipment; Risk of Loss; Title: The goods shall be shipped EXW Seller's shipping points. Risks of loss pass to Buyer upon delivery to the carrier. Title shall pass to Buyer on delivery to the carrier.

7. Deliveries: The date of delivery provided herein is an approximation based on Seller's best judgment and prompt receipt from the Buyer of all necessary data regarding the goods. Unless otherwise expressly stated, Seller shall have the right to deliver all of the goods at one time or in portions from time to time within the time of delivery herein provided. The delivery of non-conforming goods, or a default of any nature, in relation to one or more installments of this contract shall not substantially impair the value of this contract as a whole and shall not constitute a total breach of the contract as a whole.

8. Delays in Deliveries: Seller shall be excused for delay in delivery, may suspend performance and shall under no circumstances be responsible for failure to fill any order or orders when due to: acts of

God or of the public enemy; fires; floods; riots; strikes; freight embargoes or transportation delays; shortage of labor; inability to secure fuel, material shortages thereof; any existing or future laws or acts of the Federal or of any State Government (including specifically but not exclusively any orders, rules or regulations issued by any official or agency of any such government) affecting the conduct of Seller's business; any cause beyond Seller's reasonable control.

9. Overshipment: On orders for special shapes (non stocked items), Seller may ship quantities produced to cover possible losses in manufacturing and invoice the same up to an amount representing 10% of the initial order quantity.

10. Warranty: Seller warrants that the goods manufactured by the Seller when shipped are free from defects in materials and workmanship; provided, however, Seller shall have no obligation or liability under this warranty unless it shall have received prompt written notice specifying such defect no later than one (1) year from the date of shipment. In the event of defects developing within that period under normal and proper use, Buyer agrees that its sole and exclusive remedy shall require only that the Seller, at Seller's option, repair, modify or replace the non-conforming goods f.o.b. Seller's plant or accept the return of the non-conforming goods and refund the purchase price or part thereof, giving effect to the use or value received by Buyer. Seller's maximum liability under this contract is limited to the purchase price of the goods. No goods shall be returned to Seller without Seller's prior written consent. **THE WARRANTY IN THIS SECTION 10, TOGETHER WITH THE PATENT WARRANTY IN SECTION 12, IS SELLER'S SOLE AND EXCLUSIVE WARRANTY, IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, WRITTEN OR ORAL, AND DOES NOT INCLUDE ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.**

11. Laws, Code, Regulations, Safety Devices: Compliance with laws, codes and regulations relating to the goods and their use is the sole responsibility of Buyer, and Seller makes no warranty or representation with respect thereto. Buyer assumes the responsibility for providing and installing any and all devices for the protection of safety and health and shall indemnify and hold harmless Seller against any expense, loss or damage which Seller may incur or sustain as a result of Buyer's failure to do so.

12. Patents: Seller warrants that the use or sale of the goods delivered hereunder will not infringe the claims of any United States patent covering the goods, but does not warrant infringement by reason of the use thereof in combination with other material or equipment in the operation of any process. Seller shall, at its own expense, assume the defense of any claim, suit or other proceeding brought against Buyer upon a claim that the goods furnished under this contract constitutes an infringement of any patent of the United States. Buyer agrees to cooperate in the defense of any such proceedings and to provide information, assistance and authority necessary therefor. Should the goods in such suit be held to constitute infringement and the use of the goods enjoined, the Seller shall, at its own expense and at its option, procure for the Buyer the right to

substantially equivalent goods or modify them so they become non-infringing. Buyer shall defend, hold harmless and indemnify Seller against all judgments, decrees, costs and expenses arising out of any action against Seller or its suppliers based on a claim that the manufacture or sale of goods hereunder constitutes infringement of any United States letters patent, if such goods were manufactured pursuant to Buyer's proprietary designs, specifications and/or formulae and were not normally offered for sale by seller, provided, however, Seller shall give prompt written notice of the claim or action and Seller shall give Buyer authority, information and assistance at Buyer's expense.

13. Liability: In no event shall Seller's obligation and liability under this contract extend to direct, indirect, punitive, special, incidental or consequential damages or losses Buyer may suffer or incur in connection therewith, such as but not limited to loss of revenue or profits, damages or losses as a result of Buyer's inability to operate, or shut down of, its plant or operations, loss of use of the goods or associated goods or cost of substitute goods, facilities or services, inability to fulfill contracts with third parties, injury to good will, claims of customers and the like, nor shall it extend to damages or losses Buyer may suffer or incur as a result of claims, suits or other proceedings made or instituted against Buyer by third parties, whether public or private in nature.

14. Buyer's Default; Termination: Buyer shall be liable to Seller for all damages or losses, including loss of reasonable profits, and for costs and expenses, including attorney's fees, sustained by Seller and arising from Buyer's default under, or breach of, any of the terms and conditions of this contract. In the event of any such default or breach, Seller may, without any obligation or liability to Buyer, terminate this contract forthwith by written notice to Buyer and such action by Seller shall not be deemed a waiver of any right or remedy with respect to such default or breach.

15. Assignment: No right or interest in this contract shall be assigned by Buyer without prior written agreement by the Seller. No delegation of any obligation owed, or the performance of any obligation by the Buyer shall be made without prior written agreement by the Seller.

16. Law Governing: The interpretation and performance of this contract shall be in accordance with and shall be controlled by the laws of the State of New York without regard to principles of conflicts of law. Buyer consents to the jurisdiction of the courts of the State of New York with venue in Niagara County. The United Nations Convention on the International Sale of Goods shall not apply to this contract or to the transactions between Buyer and Seller.

17. Modifications; Waiver: No waiver, alteration or modification of any of the provisions hereof shall be binding on the Seller unless made in writing and agreed to by a duly authorized official of the Seller. No waiver by the Seller of any one or more defaults by the Buyer in the performance of any provisions of this contract shall operate or be construed as a waiver of any future default or defaults, whether of a like or of a different character.

MATERIAL SAFETY DATA SHEET

MSDS No. M0090

Effective Date: 12/30/2009

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Group: REFRACTORY CERAMIC FIBER PRODUCT
Chemical Name: VITREOUS ALUMINOSILICATE FIBER
Synonym(s): RCF, ceramic fiber, synthetic vitreous fiber (SVF), man-made vitreous fiber (MMVF), man-made mineral fiber (MMMF)

2. COMPOSITION / INFORMATION ON INGREDIENTS

| <u>COMPONENTS</u> | <u>CAS NUMBER</u> | <u>% BY WEIGHT</u> |
|--|-------------------|--------------------|
| Refractories, Fibers, Aluminosilicate | 142844-00-6 | 40-60 |
| Water | 7732-18-5 | 20-50 |
| Silica (amorphous) | 7631-86-9 | 10-15 |
| Hydrated magnesium aluminum silicate mineral | 12199-37-0 | 1-3 |

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

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION! MAY BE HARMFUL IF SWALLOWED.
MAY CAUSE SKIN AND EYE IRRITATION.

DRIED, ABRADED PRODUCT MAY CAUSE RESPIRATORY TRACT IRRITATION AND POSE POSSIBLE CANCER HAZARD BY INHALATION.

(See Section 11 for more information)

CHRONIC EFFECT

There has been no increased incidence of respiratory disease in studies examining occupationally exposed workers. In animal studies, long-term laboratory exposure to doses hundreds of times higher than normal occupational exposures has produced fibrosis, lung cancer, and mesothelioma in rats or hamsters. The fibers used in those studies were specially sized to maximize rodent respirability.

OTHER POTENTIAL EFFECTS

TARGET ORGANS:

Respiratory Tract (nose & throat), Eyes, Skin

RESPIRATORY TRACT (nose & throat) IRRITATION:

If dried, airborne product is inhaled in sufficient quantity, may cause temporary, mild mechanical irritation to respiratory tract. Symptoms may include scratchiness of the nose or throat, cough or chest discomfort.

EYE IRRITATION:

May cause temporary, mild mechanical irritation. Fibers may be abrasive; prolonged contact may cause damage to the outer surface of the eye.

SKIN IRRITATION:

Exposure to dried product may cause temporary, mild mechanical irritation. Exposure may also result in inflammation, rash or itching.

GASTROINTESTINAL IRRITATION:

Unlikely route of exposure. Small amounts swallowed incidental to normal handling operations are not likely to cause injury.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

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

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.

In October 2001, the **International Agency for Research on Cancer (IARC)** confirmed that Group 2b (possible human carcinogen) remains the appropriate IARC classification for RCF.

The Seventh Annual Report on Carcinogens (1994), prepared by the **National Toxicology Program (NTP)**, classified respirable RCF as a substance reasonably anticipated to be a carcinogen.

The **American Conference of Governmental Industrial Hygienists (ACGIH)** has classified RCF as &A2-Suspected Human Carcinogen.⁸

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 MEASURES

FIRST AID PROCEDURES

RESPIRATORY TRACT (nose & throat) IRRITATION:

If respiratory tract irritation develops, move the person to a dust free location. Get medical attention if the irritation continues. 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. Get medical attention if irritation persists.

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.

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:

Thermal decomposition of binder from fires or from first heat of product may release smoke, carbon monoxide and carbon dioxide. 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.

Unusual Fire and Explosion Hazard: None

Extinguishing Media: Use extinguishing media suitable for type of surrounding fire.

6. ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES

Minimize 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 must be equipped with a HEPA filter. Compressed air or dry sweeping should not be used for cleaning.

7. HANDLING AND STORAGE

Normal conditions of use and application are not expected to release respirable particulates of airborne fibers. Removal of used product, sanding, scraping, or otherwise destroying the integrity of the dried product may result in the release of particulates and fibers. During such operations where fibers could possibly be released, appropriate respiratory protection should be provided as discussed below and/or in Section 8 under Respiratory Protection.

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

EXPOSURE GUIDELINES -- RCF

| COMPONENTS | OSHA PEL | MANUFACTURER REG |
|---------------------------------------|-------------------|-----------------------|
| Refractories, Fibers, Aluminosilicate | None Established* | 0.5 f/cc, 8-hr. TWA** |

* There is no specific regulatory standard for RCF in the U.S. OSHA,s &Particulate Not Otherwise Regulated (PNOR)8 standard [29 CFR 1910.1000, Subpart Z, Air Contaminants] applies generally; Total Dust 15 mg/m; Respirable Fraction 5 mg/m.

** The Refractory Ceramic Fibers Coalition (RCFC) has sponsored comprehensive toxicology and epidemiology studies to identify potential RCF-related health effects [see Section 11 for more details], consulted experts familiar with fiber and particle science, conducted a thorough review of the RCF-related scientific literature, and further evaluated the data in a state-of-the-art quantitative risk assessment. Based on these efforts and in the absence of an OSHA PEL, RCFC has adopted a recommended exposure guideline, as measured under NIOSH Method 7400 B. The manufacturers, REG is intended to promote occupational health and safety through prudent exposure control and reduction and it reflects relative technical and economic feasibility as determined by extensive industrial hygiene monitoring efforts undertaken pursuant to an agreement with the U.S. Occupational Safety and Health Administration (OSHA).

OTHER OCCUPATIONAL EXPOSURE LEVELS (OEL)

RCF-related occupational exposure limits vary internationally. Regulatory OEL examples include: Canada) 0.2 to 1.0 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 determining their relative applicability to the workplace is best performed, on a case-by-case basis, by a qualified Industrial Hygienist.

EXPOSURE GUIDELINES -- OTHER INGREDIENTS

| COMPONENTS | OSHA PEL | MANUFACTURER REG |
|------------|----------|------------------|
|------------|----------|------------------|

| | | |
|---|--|--|
| Water Silica (amorphous) Hydrated magnesium aluminum silicate mineral | None established 20 mppcf or 80 mg/m/ % SiO2 5 mg/mPEL (resp. fraction), 15 mg/mPEL (total dust) as PNOR | None established None established None established |
|---|--|--|

OTHER OCCUPATIONAL EXPOSURE LEVELS (OEL)

Non-regulatory OEL examples include: ACGIH TLVs (TWAs): Water -- None established. Silica (amorphous) -- 10 mg/m
Hydrated magnesium aluminum silicate mineral, as PNOC -- 10 mg/m(total dust), 3 mg/m(respirable fraction)

ENGINEERING CONTROLS

Use engineering controls such as local exhaust ventilation, point of generation dust collection, down draft work stations, emission controlling tool designs, and materials handling equipment designed to minimize airborne fiber emissions.

PERSONAL PROTECTION EQUIPMENT

Respiratory Protection) RCF:

When engineering and/or administrative controls are insufficient to maintain workplace concentrations within the 0.5 f/cc REG, the use of appropriate respiratory protection, pursuant to the requirements of OSHA Standards 29 CFR 1910.134 and 29 CFR 1926.103, is recommended. The following information is provided as an example of appropriate respiratory protection for aluminosilicate fibers. The evaluation of workplace hazards and the identification of appropriate respiratory protection is best performed, on a case by case basis, by a qualified Industrial Hygienist.

| MANUFACTURER,S RESPIRATORY PROTECTION RECOMMENDATIONS WHEN HANDLING RCF PRODUCTS | | |
|--|--|--|
| Respirable Airborne Fiber Concentration (levels are 8-hr. time-weighted averages) | Respirator Recommendation | |
| Not yet determined but expected to be below 5.0 f/cc based on operation | A respirator with a filter efficiency of at least 95% | |
| "Reliably" less than 0.5 f/cc | Optional | |
| 0.5 f/cc to 5.0 f/cc | A single use respirator or half-face, air purifying respirator with a filter efficiency of at least 95% | |
| 5.0 f/cc to 25 f/cc | Full-facepiece, air purifying respirator equipped with a NIOSH certified particulate filter cartridge with a filter efficiency of at least 95% or PAPR | |
| Greater than 25 f/cc | PAPR with tight-fitting full facepiece or a supplied air respirator in continuous flow mode | |
| When individual workers request respiratory protection as a matter of personal comfort or choice where exposures are "reliably" below 0.5 f/cc | A NIOSH certified respirator, such as a single use particulate respirator with a filter efficiency of at least 95%. | |

pThe 95% filter efficiency recommendation is based on NIOSH respirator selection logic sequence for exposure to particulates. Selection of filter efficiency (i.e. 95%, 99% or 99.97%) depends on how much filter leakage can be accepted. Higher filter efficiency means lower filter leakage. Other factors to consider are the NIOSH filter series N, R or P. (N) Not resistant to oil, (R) Resistant to oil and (P) oil Proof. These recommendations are not designed to limit informed choices, provided that respiratory protection decisions comply with 29 CFR 1910.134.

Other Information:

HAZARDOUS POLYMERIZATION: Not Applicable.

11. TOXICOLOGICAL INFORMATION

Normal conditions of use and application are not expected to release respirable particulates of airborne fibers. Removal of used product, sanding, scraping, or otherwise destroying the integrity of the dried product may result in the release of particulates and fibers. The toxicological information below applies to the aluminosilicate fiber portion of the dried product.

HEALTH DATA SUMMARY

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.

EPIDEMIOLOGY

In order to determine possible human health effects following RCF exposure, the University of Cincinnati in the United States and the Institute of Occupational Medicine (IOM) in Europe have conducted medical surveillance studies on RCF workers in U.S. and European manufacturing facilities. The University of Cincinnati study has been in progress for over 20-years, collecting data from respiratory questionnaires, lung function tests, chest X-rays, exposure monitoring, and worker mortality.

The results of this study of RCF plant workers exposed from 1953 to the present have shown (LeMasters *et al.*, 2003):

- No excess mortality related to all deaths, all cancers, or lung cancer
- No statistically significant increase in interstitial findings (fibrosis), and
- No mesotheliomas or increase in lung cancer

The initial cross-sectional spirometry studies in the U.S. (LeMasters *et al.* 1998) and Europe (Cowie *et al.* 2001) revealed lung function decrements in the RCF-exposed cohort that were associated with heavier historical exposures. Subsequently, longitudinal studies have revealed no RCF exposure related decrements in lung function associated with current exposure levels.

Through 1996, pleural plaques seen on chest X-rays in 2.7% of the workers. Pleural plaques are considered a marker of exposure and not disease. The prevalence of pleural plaques has remained relatively constant over time, perhaps as a result of lower current exposure levels.

Thus, this long term epidemiology study has demonstrated an absence of interstitial fibrosis, no increased mortality risk and no decrement in lung function associated with current exposures.

TOXICOLOGY

Early animal studies of RCF effects by intraperitoneal and intrapleural injections, as well as by inhalation, resulted in mostly negative results. In an effort to eliminate any questions posed by the results of these early studies, a definitive *Maximum Tolerated Dose Study* (MTD) by nose only, lifetime inhalation in rats and hamsters, was designed in the 1980s. The MTD study appeared to confirm that RCF was an animal carcinogen under certain test conditions, e.g., extremely high concentrations of approximately 200 f/cc inhaled directly into the lungs.

A later review of the MTD pathology indicated that the animals, lungs were likely overloaded because of large quantities of non-fibrous particles, and that this overload condition was likely responsible for the disease observed. In fact, evaluation of the aerosol samples used confirmed the presence of significant quantities of particulate matter.

In a subsequent multi-dose animal inhalation study at 25 f/cc, 75 f/cc, and 115 f/cc; a *no observed effect level* (NOEL) was found at 25 f/cc. This level is 50 times the RCFC recommended REG of 0.5 f/cc for humans.

To obtain more epidemiology or toxicology information, please call the toll free telephone number for the Unifrax Product

Stewardship Program found in Section 16 - Other Information.

12. ECOLOGICAL INFORMATION

No ecological concerns have been identified.

13. DISPOSAL CONSIDERATIONS

WASTE MANAGEMENT

To prevent waste materials from becoming airborne during waste storage, transportation and disposal, a covered container or plastic bagging is recommended.

DISPOSAL

RCF, as manufactured, is not classified as a hazardous waste according to Federal regulations (40 CFR 261). 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. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

| | | | |
|---------------|----------------|-----------------------------|----------------|
| Hazard Class: | Not Regulated | United Nations (UN) Number: | Not Applicable |
| Labels: | Not Applicable | North America (NA) Number: | Not Applicable |
| Placards: | Not Applicable | Bill of Lading: | Product Name |

INTERNATIONAL

Canadian TDG Hazard Class & PIN: Not regulated
Not classified as dangerous goods under ADR (road), RID (train) or IMDG (ship).

15. REGULATORY INFORMATION

UNITED STATES 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).
Toxic Substances Control Act (TSCA) - RCF has been assigned a CAS number; however, it is an "article" under TSCA and therefore exempt from listing on the TSCA inventory.

Toxic Substances Control Act (TSCA) - RCF has been assigned a CAS number; however, it is an "article" under TSCA and therefore exempt from listing on the TSCA inventory.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the **Clean Air Act (CAA)** - RCF contains fibers with an average diameter greater than one micron and thus is not considered a hazardous air pollutant.

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)⁸ 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: RCF 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, contact your local regulatory agency.

INTERNATIONAL REGULATIONS

Canada: **Canadian Workplace Hazardous Materials Information System (WHMIS)**) RCF is classified as Class D2A) Materials Causing Other Toxic Effects
Canadian Environmental Protection Act (CEPA) - All substances in this product are listed, as required, on the Domestic Substance List (DSL)

European Union: **European Directive 97/69/EC** classified RCF as a Category 2 carcinogen; that is it & should be regarded as if it is carcinogenic to man.⁸

16. OTHER INFORMATION

RCF DEVITRIFICATION

As produced, all RCF fibers are vitreous (glassy) materials which do not contain crystalline silica. Continued exposure to elevated temperatures may cause these fibers to devitrify (become crystalline). The first crystalline formation (mullite) begins to occur at approximately 985C (1805F). Crystalline phase silica may begin to form at temperatures of approximately 1200C (2192F). When the glass RCF fibers devitrify, they form a mixed mineral crystalline silica containing dust. The crystalline silica is trapped in grain boundaries within a matrix predominately consisting of mullite. The occurrence and extent of crystalline phase formation is dependent on the duration and temperature of exposure, fiber chemistry and/or the presence of fluxing agents. The presence of crystalline phases can be confirmed only through laboratory analysis of the "hot face" fiber.

IARC's evaluation of crystalline silica states & Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)⁸ and additionally notes & carcinogenicity in humans was not detected in all industrial circumstances studied.⁸ IARC also studied mixed mineral crystalline silica containing dusts such as coal dusts (containing 5) 15 % crystalline silica) and diatomaceous earth without seeing any evidence of disease. (IARC Monograph Vol. 68, 1997). NTP lists all polymorphs of crystalline silica amongst substances which may "reasonably be anticipated to be carcinogens".

IARC and NTP did not evaluate after-service RCF, which may contain various crystalline phases. However, an analysis of after-service RCF samples obtained pursuant to an exposure monitoring agreement with the USEPA, found that in the furnace conditions sampled, most did not contain detectable levels of crystalline silica. Other relevant RCF studies found that (1) simulated after-service RCF showed little, or no, activity where exposure was by inhalation or by intraperitoneal injection; and (2) after-service RCF was not cytotoxic to macrophage-like cells at concentrations up to 320 g/cm - by comparison, pure quartz or cristobalite were significantly active at much lower levels (circa 20 g/cm).

RCF AFTER-SERVICE REMOVAL

Respiratory protection should be provided in compliance with OSHA standards. During removal operations, a full face respirator is recommended to reduce inhalation exposure along with eye and respiratory tract irritation. A specific evaluation of workplace hazards and the identification of appropriate respiratory protection is best performed, on a case by case basis, by a

qualified industrial hygiene professional.

PRODUCT STEWARDSHIP PROGRAM

Unifrax I LLC 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 I LLC has also established a program to monitor airborne fiber concentrations at customer facilities. If you would like more information about this program, please call the Unifrax I LLC Product Stewardship Information Hotline at 1-800-322-2293.

The Refractory Ceramic Fibers Coalition (RCFC) and the U.S. Occupational Safety and Health Administration (OSHA) introduced a voluntary worker protection program entitled PSP HTW, a comprehensive, multi-faceted risk management program designed to control and reduce workplace exposures to refractory ceramic fiber (RCF). Unifrax I LLC, as a member of RCFC, is participating in this highly acclaimed product stewardship program. For more information regarding PSP HTW, please call the Unifrax I LLC's Product Stewardship Information Hotline at 1-800-322-2293 or refer to the RCFC web site: <http://www.rcfc.net>.

DEFINITIONS

| | |
|--|--|
| 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 |
| HTW: | High Temperature Wools |
| IARC: | International Agency for Research on Cancer |
| IATA: | International Air Transport Association |
| IMDG: | International Maritime Dangerous Goods Code |
| mg/m | 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) |