



## SAFETY DATA SHEET

SDS No. M0048

Effective Date: December 12<sup>th</sup>, 2012

### 1. IDENTIFICATION

**Product Identifier:** FIBERFRAX® LDS MOLDABLE® CERAMIC FIBER  
**FC-40/FC-50/FC-100 Pumpable-LDS; LDS Moldable (Caulking Grade)**

**Recommended Use:** High Temperature Insulation

**Manufacturer:** Unifrax I LLC  
 2351 Whirlpool St.  
 Niagara Falls, NY 14305-2413

**Supplier:** **FibreCast Incorporated 3264 Mainway, Burlington, Ontario, Canada**  
**L7M 1A7 905-319-1080; Fax 905-319-7611**  
**Customer Support: www.sales@fibrecast.com**

**Product Stewardship Information Hotline**  
**1-800-322-2293 (Monday - Friday 8:00 a.m. - 4:30 p.m. EST)**  
 CHEMTREC will provide assistance for chemical emergencies. Call **1-800-424-9300**

**Emergency Phone Number:**

### 2. HAZARDS IDENTIFICATION

**CLASSIFICATION:**

**CARCINOGENICITY, CATEGORY 1B**



**Danger!**

**May cause cancer by inhalation**

May cause temporary mechanical irritation to exposed eyes, skin or respiratory tract  
 Use personal protective equipment as needed  
 Do not handle until all safety instructions have been read and understood

#### POTENTIAL HEALTH EFFECTS

**LIKELY ROUTES OF EXPOSURE:** Respiratory Tract (nose & throat), Eyes, Skin

**FC-RESPIRATORY TRACT (nose & throat) IRRITATION:**  
 If 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:**  
 May cause temporary, mild mechanical irritation. Exposure may also result in inflammation, rash or itching.

**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.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

<b><u>COMPONENTS</u></b>	<b><u>CAS NUMBER</u></b>	<b><u>% BY WEIGHT</u></b>
Water	7732-18-5	40-45
Silica (amorphous)	7631-86-9	25-30
Refractories, Fibers, Aluminosilicate	142844-00-6	20-25
Ethylene glycol	107-21-1	3-5
Polyethylene oxide	25322-68-3	1-2
<b>Synonyms:</b>	RCF, ceramic fiber, synthetic vitreous fiber (SVF), man-made vitreous fiber (MMVF), man-made mineral fiber (MMMF), high temperature insulation wool (HTIW)	

## 4. FIRST AID MEASURES

### **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.

### **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

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

### **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.

**Flammable Properties:** Non combustible

**Special protective equipment and precautions for fire-fighters** Wear a NIOSH certified respirator together with other protective gear appropriate to the surrounding fire.

**Unusual Fire and Explosion Hazard:** None

**NFPA Unusual Hazards:** None

## 6. ACCIDENTAL RELEASE MEASURES

**PERSONAL PRECAUTIONS** Minimize airborne dust. Compressed air or dry sweeping should not be used for cleaning. See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines.

**METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP** 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.

## 7. HANDLING AND STORAGE

### **PRECAUTIONS FOR SAFE HANDLING**

Handle fiber carefully to minimize airborne dust. 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.

### **CONDITIONS FOR SAFE STORAGE**

Store in original 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**

<b>Components</b>	<b>OSHA PEL</b>	<b>ACGIH TLV</b>	<b>MANUFACTURER REG</b>
Refractories, Fibers, Aluminosilicate	None established*	0.2 f/cc TLV, 8-hr. TWA	0.5 f/cc, 8-hr. TWA**
Water	None established	None established.	None established
Silica (amorphous)	20 mppcf or 80 mg/m <sup>3</sup> / % SiO <sub>2</sub>	10 mg/m <sup>3</sup>	None established
Ethylene glycol	50 ppm (125 mg/m <sup>3</sup> ) C	50 ppm (127 mg/m <sup>3</sup> ) TLV-C (vapor and mist)	None established

Polyethylene oxide      None established      None established.      None established

\*Except of in the state of California, 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 Total Dust 15 mg/m<sup>3</sup>; Respirable Fraction 5 mg/m<sup>3</sup>. The PEL for RCF in California is 0.2 f/cc, 8-hr TWA.

\*\*HTIW Coalition 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, HTIW Coalition 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: California – 0.2 f/cc; Canada – 0.2 to 1.0 f/cc, United Kingdom – 1.0 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 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**

<b><u>Respirable Airborne Fiber Concentration</u></b> (levels are 8-hr. time-weighted averages)	<b><u>Respirator Recommendation</u></b> <sup>†</sup>
Not yet determined but expected to be below <b>REG/PEL/OEL</b> based on operation	A respirator with a filter efficiency of at least 95%
"Reliably" less than <b>REG/PEL/OEL</b>	See recommendation below for individual worker requests
Up to 10 times of <b>REG/PEL/OEL</b>	A single use respirator or half-face, air purifying respirator with a filter efficiency of at least 95%
Up to 50 times of <b>REG/PEL/OEL</b>	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 50 times of <b>REG/PEL/OEL</b>	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	A NIOSH certified respirator, such as a single use particulate respirator with a filter efficiency of at least 95%.

are "reliably" below 0.5 f/cc	
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†The 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:**

- 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.
- The manufacturer recommends the use of a full-facepiece air purifying respirator equipped with an appropriate particulate filter cartridge during furnace tear-out events and the removal of used RCF to control exposures to airborne fiber and the potential presence of crystalline silica. If exposure levels are known, the respiratory protection chart provided above may be applied.
- Potential exposure to other airborne contaminants should be evaluated by a qualified Industrial Hygienist for the selection of appropriate respiratory protection and air monitoring.

**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. If soiled work clothing must be taken home, employers should ensure employees are thoroughly trained on the best practices to minimize non-work dust exposure (e.g., vacuum clothes before leaving the work area, wash work clothing separately, rinse washer before washing other household clothes, etc.).

**Eye Protection:**

Wear safety glasses with side shields or other forms of eye protection in compliance with appropriate OSHA standards to prevent eye irritation. The use of contact lenses is not recommended, unless used in conjunction with appropriate eye protection. Do not touch eyes with soiled body parts or materials. If possible, have eye-washing facilities readily available where eye irritation can occur.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	White, fibrous wool	<b>Upper/lower flammability or explosive limits</b>	Not applicable
<b>Odor</b>	Odorless	<b>Vapor pressure</b>	Not applicable
<b>Odor threshold</b>	Not applicable	<b>Vapor density</b>	Not applicable
<b>pH</b>	Not applicable	<b>Relative density</b>	2.50 - 2.75 (fiber)
<b>Melting point</b>	1760° C (3200° F)	<b>Solubility</b>	Insoluble
<b>Initial boiling point and boiling range</b>	Not applicable	<b>Partition coefficient: n-octanol/water</b>	Not applicable
<b>Flash point</b>	Not applicable	<b>Auto-ignition temperature</b>	Not applicable
<b>Evaporation rate</b>	Not applicable	<b>Decomposition temperature</b>	Not applicable
<b>Flammability</b>	Not applicable	<b>Viscosity</b>	Not applicable

## 10. STABILITY AND REACTIVITY

**REACTIVITY** Not Applicable.  
**CHEMICAL STABILITY:** Stable under conditions of normal use.  
**POSSIBILITY OF HAZARDOUS REACTIONS:** Not Applicable.  
**CONDITIONS TO AVOID:** None.  
**INCOMPATIBLE MATERIALS:** None known.  
**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.

## 11. TOXICOLOGICAL INFORMATION

**LIKELY ROUTES OF EXPOSURE:** Respiratory Tract (nose & throat), Eyes, Skin

**SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS:**

**RESPIRATORY TRACT (nose & throat) IRRITATION:**

If 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:**

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

**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.

### **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 HTIW Coalition recommended exposure guideline (REG) of 0.5 f/cc for humans.

### **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 Annual Report on Carcinogens (latest edition), prepared by the **National Toxicology Program (NTP)**, classified respirable RCF as "reasonably anticipated" to be a carcinogen.

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**

<b>Ecotoxicity</b>	Unlikely to be hazardous to aquatic life.
<b>Persistence and degradability</b>	The product shows no evidence for biodegradability.
<b>Bioaccumulative potential</b>	Low potential for bioaccumulation.
<b>Mobility in soil</b>	No mobility in soil.

## **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** This product, 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**

<b>EPA:</b>	<b>Superfund Amendments and Reauthorization Act (SARA)</b> 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). <b>Toxic Substances Control Act (TSCA)</b> - RCF has been assigned a CAS number; however, it is an "article" under TSCA and therefore exempt from listing on the TSCA inventory. <b>Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)</b> and the <b>Clean Air Act (CAA)</b> - This product contains fibers with an average diameter greater than one micron and thus is not considered a hazardous air pollutant.
<b>OSHA:</b>	Comply with <b>Hazard Communication Standards</b> 29 CFR 1910.1200 and 29 CFR 1926.59 and the <b>Respiratory Protection Standards</b> 29 CFR 1910.134 and 29 CFR 1926.103.
<b>California:</b>	"Ceramic fibers (airborne particles of respirable size)" is listed in <b>Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986</b> as a chemical known to the State of California to cause cancer.
<b>Other</b>	RCF products are not known to be regulated by states other than California; however, state and

**States:** 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)** – 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)

**Europe:** Under the **CLP-Regulation** (classification, labelling and packaging of substances and mixtures) RCF has been classified as a 1B carcinogen

## **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 985° C (1805° F). Crystalline phase silica may begin to form at temperatures of approximately 1200° C (2192° F). 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)" and additionally notes "carcinogenicity in humans was not detected in all industrial circumstances studied." 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 micrograms/cm<sup>2</sup> - by comparison, pure quartz or cristobalite were significantly active at much lower levels (circa 20 micrograms/cm<sup>2</sup>).

### **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 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 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 Product Stewardship Information Hotline at 1-800-322-2293.

In 2002, the Occupational Safety and Health Administration (OSHA) endorsed a five year voluntary product stewardship program called PSP 2002. On May 23, 2007, HTIW Coalition's predecessor, RCFC, and its member companies renewed this voluntary product stewardship agreement with OSHA. On April 16, 2012, HTIW Coalition renewed this agreement.

This new five year program, called PSP 2012, continues and builds upon the earlier programs. PSP 2012 is a highly acclaimed, multifaceted strategic risk management initiative designed specifically to reduce workplace exposures to refractory ceramic fiber (RCF). For more information regarding PSP 2012, please visit <http://www.htiwcoalition.org>

### **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

<b>DSL:</b>	Domestic Substances List
<b>EPA:</b>	Environmental Protection Agency
<b>EU:</b>	European Union
<b>f/cc:</b>	Fibers per cubic centimeter
<b>HEPA:</b>	High Efficiency Particulate Air
<b>HMIS:</b>	Hazardous Materials Identification System
<b>IARC:</b>	International Agency for Research on Cancer
<b>IATA:</b>	International Air Transport Association
<b>IMDG:</b>	International Maritime Dangerous Goods Code
<b>mg/m<sup>3</sup>:</b>	Milligrams per cubic meter of air
<b>mmpcf:</b>	Million particles per cubic meter
<b>NFPA:</b>	National Fire Protection Association
<b>NIOSH:</b>	National Institute for Occupational Safety and Health
<b>OSHA:</b>	Occupational Safety and Health Administration
<b>29 CFR 1910.134 &amp; 1926.103:</b>	OSHA Respiratory Protection Standards
<b>29 CFR 1910.1200 &amp; 1926.59:</b>	OSHA Hazard Communication Standards
<b>PEL:</b>	Permissible Exposure Limit (OSHA)
<b>PIN:</b>	Product Identification Number
<b>PNOC:</b>	Particulates Not Otherwise Classified
<b>PNOR:</b>	Particulates Not Otherwise Regulated
<b>PSP:</b>	Product Stewardship Program
<b>RCRA:</b>	Resource Conservation and Recovery Act
<b>REL:</b>	Recommended Exposure Limit (NIOSH)
<b>RID:</b>	Carriage of Dangerous Goods by Rail (International Regulations)
<b>SARA:</b>	Superfund Amendments and Reauthorization Act
<b>SARA Title III:</b>	Emergency Planning and Community Right to Know Act
<b>SARA Section 302:</b>	Extremely Hazardous Substances
<b>SARA Section 304:</b>	Emergency Release
<b>SARA Section 311:</b>	MSDS/List of Chemicals and Hazardous Inventory
<b>SARA Section 312:</b>	Emergency and Hazardous Inventory
<b>SARA Section 313:</b>	Toxic Chemicals and Release Reporting
<b>STEL:</b>	Short Term Exposure Limit`
<b>SVF:</b>	Synthetic Vitreous Fiber
<b>TDG:</b>	Transportation of Dangerous Goods
<b>TLV:</b>	Threshold Limit Value (ACGIH)
<b>TSCA:</b>	Toxic Substances Control Act
<b>TWA:</b>	Time Weighted Average
<b>WHMIS:</b>	Workplace Hazardous Materials Information System (Canada)

**Revision Summary:** SDS revised to align with OSHA HCS 2012. Dec 12<sup>th</sup>,2012. **SDS Prepared By:** UNIFRAX RISK MANAGEMENT DEPARTMENT and FibreCast G.E.Menzies P.Eng. ROH.

#### **DISCLAIMER**

The information presented herein is presented in good faith and believed to be accurate as of the effective date of this Safety Data Sheet. Employers may use this SDS 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 SDS. Therefore, given the summary nature of this document, Unifrax I LLC 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.