DANSER MANUFACTURING SOLUTIONS, INC.

Trade name: Vacuduct® MOLDABLE

SECTION 1: Identification

Product identifier: **Vacuduct® MOLDABLE.**
Chemical Name: Vitreous Aluminosilicate Fiber.
SDS number: DMS004
Recommended use: Refractory Ceramic Fiber Product. Primarily used as thermal insulating material.
Recommended restrictions: No data available

Manufacturer/Importer/Supplier/Distributor information:

Company Name: Danser, Inc.
Company Address: P. O. Box 4098
Parkersburg, WV 26104
Company Telephone: (304) 679 3666
Company Website: www.danserinc.com
Contact Person: Louis DeAngelo
E-mail: sales@danserinc.com
Emergency phone number: (304) 679 3666 ext 1002

SECTION 2: Hazard(s) identification

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

Physical hazards
No physical hazards for this product.

Health hazards
Carcinogenicity Category 1B.
Specific target organ toxicity - repeated exposure Category 1.

Environmental hazards
No environmental hazards for this product.

Signal word: **DANGER.**

Hazard statement(s): May cause cancer.
Causes damage to organs through prolonged or repeated exposure.

Hazard Pictogram(s):

Signal Word:
Warning

Precautionary statement(s):

Prevention:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dusts or mists. Use respiratory protection as required; see section 8 of the Safety Data Sheet. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use personal protective equipment as required.
Response:	IF exposed: Call a POISON CENTER or doctor/physician. Specific treatment (see instructions on this label).
Storage:	Store locked up.
Disposal:	Dispose of contents/containers in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise Classified (HNOC):
Mild mechanical irritation to skin, eyes and upper respiratory system may result from exposure. These effects are usually temporary.

Percentage of ingredient(s) of unknown acute toxicity:
53% of the mixture consists of ingredients of unknown acute toxicity (oral).
58% of the mixture consists of ingredients of unknown acute toxicity (dermal/inhalation).

SECTION 3: Composition/information on ingredients

Mixture:

Chemical name	Concentration (weight %)	CAS#

Silica, amorphous	25 - 30	7631-86-9
Refractories, Fibers, Aluminosilicate	20 - 25	142844-00-6
Ethylene glycol	3 - 5	107-21-1

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

SECTION 4: First-aid Measures

Inhalation: If respiratory tract irritation develops, move the person to a dust free location. See Section 8 for additional measures to reduce or eliminate exposure. If symptoms persist, seek medical attention.

Skin contact: 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. If symptoms persist, seek medical attention.

Eye contact: If eyes become irritated, flush immediately with copious 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.

Ingestion: If gastrointestinal tract irritation develops, move the person to a dust free environment. DO NOT induce vomiting. Consult a physician if necessary.

Most important symptoms/effects, acute and delayed: 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.

Indication of immediate medical attention and special treatment needed: Skin and respiratory effects are the result of temporary, mild mechanical irritation; fiber exposure should not result in allergic manifestations. If any symptoms are observed, contact a physician and give them this SDS sheet.

SECTION 5: Fire-fighting measures

Suitable extinguishing media: Non-flammable. Use extinguishing media suitable for type of surrounding fire.
Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: None known.
Hazardous combustion products may include: Smoke, Carbon monoxide and Carbon dioxide.

Special protective equipment and precautions for fire-fighters NFPA Codes:
Flammability: 0 Health: 1 Reactivity: 0 Special: 0

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:
Use personal protective equipment. 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 must be equipped with a HEPA filter. Compressed air or dry sweeping should not be used for cleaning. Ensure adequate ventilation.

Methods and materials for containment and cleaning up:
SMALL SPILL: Wear appropriate protective clothing (see Section 8). 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. Place in approved container for disposal.
LARGE SPILL: Wear appropriate protective clothing (see Section 8). Restrict access to contaminated area. Stop spill at source. Dike to prevent spreading. 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. Place in approved container for disposal. Follow all local, state, and federal regulations for disposal. Do not contaminate water while cleaning equipment or disposing of wastes.

SECTION 7: Handling and Storage

Precautions for safe handling: Normal conditions of use and application are not expected to release respirable particulates of airborne fibers. Handle ceramic fiber carefully. Limit the 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.
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. Observe good personal hygiene practices. Change protective gloves/clothing when signs of contamination appear. Keep out of reach of children.

Conditions for safe storage, including any incompatibles: Store in original factory container in a dry area. Do not transfer to an unmarked container. Keep container closed when not in use. Product packaging may contain residue. Do not reuse.

SECTION 8: Exposure controls/personal protection

Control Parameters:

Occupational exposure limits:

US OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200): Permissible Exposure Limits		
Substance	**PEL-TWA (8 hour)**	**PEL-STEL (15 min)**
Silica, amorphous	80 mg/m^3/%SiO_2 (Table Z-3 Mineral Dusts)	No data available
Refractories, Fibers, Aluminosilicate	No data available *	No data available
Ethylene glycol	50 ppm 125 mg/m3 (Ceiling)	No data available

ACGIH Threshold Limit Values		
Substance	**TLV-TWA (8 hour)**	**TLV-STEL (15 min)**
Silica, amorphous	10 mg/m^3 (amorphous precipitated silica)	No data available
Refractories, Fibers, Aluminosilicate	0.2 fibre/cm3	No data available
Ethylene glycol	50 ppm (127 mg/m³) TLV-C (vapor and mist)	No data available

*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 Total Dust 15 mg/m³; Respirable Fraction 5 mg/m³.

OTHER OCCUPATIONAL EXPOSURE LEVELS (OEL)

RCF-related occupational exposure limits vary internationally. Regulatory OEL examples include: California, 0.2 f/cc; Canadian provincial OELs ranging from 0.2 to 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.

Appropriate 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.

Individual protection measures, such as personal protective equipment:

Eye/face 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.

Skin and Hand 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 or avoid 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.).

Respiratory protection: 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 are best performed, on a case-by-case basis, by a qualified Industrial Hygienist.

MANUFACTURER'S RESPIRATORY PROTECTION RECOMMENDATIONS WHEN HANDLING RCF PRODUCTS

Not yet determined but expected to be below 5.0 f/cc based on operation: Half-face, air-purifying respirator equipped with a NIOSH certified P100 particulate filter cartridge

Respirable Airborne Fiber Concn (levels are 8-hr. time-weighted averages)	Respirator Recommendation:
"Reliably" less than 0.5 f/cc:	Optional
0.5 f/cc to 5.0 f/cc:	Half-face, air-purifying respirator equipped with a NIOSH certified P100 particulate filter cartridge.
5.0 f/cc to 25 f/cc:	Full-facepiece, air purifying respirator equipped with a NIOSH certified P100 particulate filter cartridge 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 disposable particulate respirator, or respirators with filter cartridges rated N95 or better

The P100 recommendation is a conservative default choice; in some case, solid arguments can be made that other respirator types (e.g., N95, R99, etc.) may be suitable for some tasks or work environments. The P100 recommendation is 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.

Other: Use as necessary to prevent exposure. Work clothing should be changed daily. Contaminated clothing should be removed and washed thoroughly before re-using.

Thermal hazards: None known.

SECTION 9: Physical and chemical properties

Appearance:	
Physical state:	Solid.
Form:	Fibrous material.
Color:	White.
Odor:	Odorless.
Odor threshold:	No data available.
pH:	Not applicable.
Initial Boiling point/Boiling Range:	Not applicable.
Melting Point:	1760° C (3200° F)
Flash point:	None.
Evaporation rate:	Not available.
Flammability (solid, gas):	None.
Upper/lower flammability or explosive limits	
	Not Applicable
Vapor density (Air=1):	Not applicable.
Relative density (Specific gravity):	2.50 – 2.75
Solubilities (water, other):	Not Soluble in Water. Soluble in hydrofluoric acid, phosphoric acid, and concentrated alkali.
Partition coefficient (n-octanol/water):	Not available.
Auto-ignition temperature:	Not known.
Decomposition temperature:	Not available.

Viscosity: Not known.

Other information:
% Volatile: Not applicable.

SECTION 10: Stability and Reactivity

Reactivity: Non-Reactive.
Chemical stability: This material is stable under normal handling and storage conditions.
Possibility of hazardous reactions: Material is not known to polymerize.
Conditions to avoid: None known.
Incompatible materials: Soluble in hydrofluoric acid, phosphoric acid, and concentrated alkali.
Hazardous decomposition products: Thermal decomposition of binder from fires or from first heat of product may release smoke, carbon monoxide 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.

SECTION 11: Toxicological information

Information on likely routes of exposure:

Inhalation: At room temperature, exposures to ethylene glycol vapors are minimal due to physical properties; higher temperatures may generate vapor levels sufficient to cause adverse effects. When dried and abraded, and 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.

Ingestion: Single dose oral toxicity is considered to be moderate. Small amounts swallowed incidental to normal handling operations are not likely to cause injury.

Skin: Repeated and prolonged skin exposure to large quantities of wet product may result in absorption of harmful amounts of ethylene glycol. Exposure to dried product may cause temporary, mild mechanical irritation. Exposure may also result in inflammation, rash or itching.

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

Symptoms related to the physical, chemical, and toxicological characteristics:
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.

Delayed and immediate effects and chronic effects from short or long-term exposure:

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.

Acute toxicity:

Ingredient Information:

Substance	Test Type (species)	Value
Silica, amorphous	LD_{50} Oral (Rat)	3160 mg/kg
	LD_{50} Dermal (Rabbit)	> 5000 mg/kg
	LC_{50} Inhalation (Rat	> 200 g/m3 (1h)
Refractories, Fibers, Aluminosilicate	LD_{50} Oral (Rat)	None known
	LD_{50} Dermal (Rat)	None known
	LC_{50} Inhalation, Dust	None known
Ethylene glycol	LD_{50} Oral (Rat)	4700 mg/kg
	LD_{50} Dermal (Rabbit)	10626 mg/kg
	LC_{50} Inhalation (Rat	None known

Product Acute Toxicity Estimates:

No data available.

Skin corrosion/irritation: Based upon information available on the known components, the product may cause temporary, mild mechanical irritation, inflammation, rash or itching.

Serious eye damage/eye irritation: Based upon information available on the known components, the product is may cause temporary, mild mechanical irritation and may cause damage to the outer surface of the eye.

Respiratory sensitization: Based upon information available on the known components, the product may cause respiratory sensitization in certain sensitive individuals.

Skin sensitization: Based upon information available on the known components, the product may cause skin sensitization in certain sensitive individuals.

Germ cell mutagenicity: Based upon information available on the known components, the product is not anticipated to be a mutagen.

Carcinogenicity: 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 and glass wool as substances reasonably anticipated to be carcinogens.
The American Conference of Governmental Industrial Hygienists (ACGIH) has classified RCF as "A2-Suspected Human Carcinogen."
The Commission of The European Communities (DG XI) has classified RCF as a substance that should be regarded as if it is carcinogenic to humans.
The Canadian Environmental Protection Agency (CEPA) has classified RCF as "probably carcinogenic" (Group 2).

Reproductive toxicity: Based upon information available on the known components, the product is not anticipated to cause reproductive toxicity**.**

Specific target organ toxicity-Single exposure: Based upon information available on the known components, the product may cause specific target organ toxicity after single exposure.

Specific target organ toxicity-Repeat exposure: Based upon information available on the known components, the product is not anticipated to cause specific target organ toxicity after repeated or prolonged exposure.

Aspiration hazard: Based upon information available on the known components, the product is not anticipated to be an aspiration hazard.

Further information:

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.

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; and (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.

TOXICOLOGY

A number of toxicological studies designed to identify any potential health effects from RCF exposure have been completed. In one study, conducted by the Research and Consulting Company, (Geneva, Switzerland), rats and hamsters were exposed to 30 mg/m³ (about 200 fibers/cc) of specially-prepared RCF for 6 hours/day, 5 days/week, for up to 24 months. In rats, a statistically significant increase in lung tumors was observed; two mesotheliomas (cancer of the pleural lining between the chest wall and lung) were also identified. Hamsters did not develop lung tumors; however, interstitial fibrosis and mesothelioma was found. Some, in the scientific community, have concluded that the "maximum tolerated dose" was exceeded and that significant particle contamination was a confounding issue; therefore, these study findings may not represent an accurate assessment of the potential for RCF to produce adverse health effects.

In a related multi-dose study with a similar protocol, other rats were exposed to doses of 16 mg/m³, 9 mg/m³, 3 mg/m³ that corresponds to about 115, 75, and 25 fibers per cubic centimeter respectively. This study found no statistically significant increase in lung cancer. Some cases of pleural and parenchymal fibrosis were seen in the 16 mg/m³ dose group. Some cases of mild fibrosis and one mesothelioma were observed in the 9 mg/m³ group. No acute respiratory effects were seen in the rats in the 3 mg/m³ exposure group, which suggests that there may be a dose/response threshold, below which irreversible respiratory impacts do not occur.

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.

Silica, Amorphous: Toxic effects found in animals following a single inhalation exposure to amorphous silica include upper respiratory irritation, lung congestion, bronchitis and emphysema. Repeated inhalation exposures at concentrations of 50 to 150 mg/m3 produced increased lung weights and lung changes. No progressive pulmonary fibrosis was seen and the observed lung changes were reversible. No adverse effects were observed in this study at 10 mg/m3. No animal test reports have been found which define carcinogenic, mutagenic or reproductive effects.

SECTION 12: Ecological information

Ecotoxicity:

Product data:
No data available

Ingredient Information:

Substance	Test Type	Species	Value
Silica, amorphous	LC_{50}	Fish	None available
	EC_{50}	Invertebrate	None available
	LC_{50}	Algae	None available
Refractories, Fibers, Aluminosilicate	LC_{50}	Fish	None available
	EC_{50}	Invertebrate	None available
	LC_{50}	Algae	None available
Ethylene glycol	LC_{50}	Oncorhynchus mykiss (rainbow trout) Leuciscus idus (Golden orfe)	18500 mg/l (96h) > 10000 mg/l (48h)
	EC_{50}	Daphnia magna (Water flea)	74000 mg/l (24h)
	LC_{50}	Algae	None available

Persistence and degradability: No data available.
Bioaccumulative potential: No data available.
Mobility in soil: No data available.
Mobility in general: No data available.
Other adverse effects: No data available.

SECTION 13: Disposal considerations

Disposal instructions:
To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended.
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.

SECTION 14: Transport Information

DOT: Not regulated United Nations (UN) Number: Not applicable.
IATA: Not regulated United Nations (UN) Number: Not applicable.
IMDG: Not regulated United Nations (UN) Number: Not applicable.

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

Special precautions during transport: Not available.
Labels: Not applicable
North America (NA) Number: Not applicable.
Placards: Not applicable.
Bill of Lading: Product name.

SECTION 15: Regulatory Information

USA:

United States Federal Regulations: This SDS complies with the OSHA, 29 CFR 1910.1200. The product is hazardous under OSHA.

Toxic Substances Control Act (TSCA) – All substances in this product are listed, as required, on the TSCA inventory. RCF has been assigned a CAS number; however, it is a simple mixture and therefore not required to be listed on the TSCA inventory. The components of RCF are listed on the inventory.

SARA Superfund and Reauthorization Act of 1986 Title III sections 302, 311,312 and 313:
Section 302 – No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

CERCLA/Superfund, 40 CFR 117, 302: This product does not contain chemicals listed on CERCLA/Superfund. RCF contains fibers with an average diameter greater than one micron and thus is not considered a hazardous air pollutant.

CHEMICAL	C.A.S. Number	Weight %	Section 311/312
Silica, Amorphous	7631-86-9	25 - 30	Acute Health Hazard, Chronic Health Hazard.
Refractories, Fibers, Aluminosilicate	142844-00-6	20 - 25	Chronic Health Hazard
Ethylene glycol	107-21-1	3 - 5	Acute Health Hazard, Chronic Health Hazard

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 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 Environmental Protection Act (CEPA) - All substances in this product are listed, as required, on the Domestic Substance List (DSL)

Europe
Integration of RCF into ANNEX XV of the REACH Regulation

RCF is classified under the CLP (classification, labelling and packaging of substances and mixtures) regulation as a category 1B carcinogen. On January 13, 2010 the European Chemicals Agency (ECHA) updated the candidate list for authorization (Annex XV of the REACH regulation) and added 14 new substances in this list including aluminosilicate refractory ceramic fibers.

As a consequence, EU (European Union) or EEA (European Economic Area) suppliers of articles which contain aluminosilicate refractory ceramic fibers in a concentration above 0.1% (w/w) have to provide sufficient information, available to them, to their customers or upon requests to a consumer within 45 days of the receipt of the request. This information must ensure safe use of the article, and as minimum contains the name of the substance.

SECTION 16: Other Information

Hazardous Materials Identification System (HMIS) Hazard Rating

HMIS Health	1* (* denotes potential for chronic effects)
HMIS Flammability	0
HMIS Reactivity	0
HMIS Personal Protective Equipment	X (To be determined by user)

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 silica (cristobalite) formation may begin at temperatures of approximately 1200° C (2192° F). 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 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/cm² - by comparison, pure quartz or cristobalite were significantly active at much lower levels (circa 20 g/cm²).

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 are best performed, on a case-by-case basis, by a qualified industrial hygiene professional.

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
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: SDS/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)

DISCLAIMER

It is the responsibility of the user to comply with all federal, state, and local regulations. The information contained in this Safety Data Sheet is considered to be reliable. However, no guarantees or representations of any kind are made as to its accuracy when applied to particular

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