FIBRECAST INC.
Refractories • Vacuum-Forming • Engineering

MATERIAL SAFETY DATA SHEET

FC-40/FC-50/FC-100 RIGIDIZER [green tint] Effective Date: September 25, 2012

1. PRODUCT AND COMPANY IDENTIFICATION

Material Name:	Amorphous Silica Product [with a green tint for easier coverage]
Common Name:	Refractory Coating, Colloidal Silica
Intended Use:	High temperature insulation coating; 1260 deg C (2300 deg F) temperature grade rating
Trade Names:	**FC-40 Rigidizer[item 590007]; FC-50 Rigidizer[item 590012] or FC-100 Rigidizer[item590019] in 1 or 5 gal pails**
Manufacturer/Supplier:	FibreCast Incorporated, 3264 Mainway, Burlington, Ontario, Canada L7M 1A7 905-319-1080; Fax 905-319-7611 Customer Support: www.sales@fibrecast.com

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS #	% BY WEIGHT
Colloidal silica (amorphous)	7631-86-9	15 to 40
Sodium Silicate	1344-09-8	1 to 5
Food green # 3 dye	2353-45-9	< 0.1%
Water	7732-18-5	balance

3. LABEL INFORMATION

FC-40 or FC-50 or FC-100 RIGIDIZER

WHMIS Symbol: Toxic – Class D, Division 2B – Materials Causing Other Toxic Effects

Risk Phrases:
This product contains colloidal silica in a liquid state. **Dust generated from this product in a tear-out situation** may aggravate existing chronic lung conditions. Product which has been in long-term service above 1800 ^{0} F (980 ^{0} C) may undergo partial conversion to a cristobalite, a crystalline form of silica. Respirable crystalline silica is classified by IARC as a known human carcinogen.

Precautionary Measures:
As a liquid, avoid contact with skin and eyes. **For tear outs situations**, wear NIOSH approved respirator for airborne concentrations above 0.05 mg/m^3 of respirable cristobalite. When handling, wear long-sleeved, clothing, gloves and eye protection. Wash all exposed areas gently with soap and water after contact.

First Aid Measures:
If eyes become irritated, flush with water for 15 minutes. If skin becomes irritated, wash gently with soap and water, if irritation persists, consult physician. If breathing difficulties develop, remove from exposure and call physician immediately.

Refer to the Material Safety Data Sheet for further information

FibreCast Inc., 3246 Mainway, Burlington, ON, L7M 1A7 905-319-1080

4. HAZARDS IDENTIFICATION

Target Organs: Skin, eyes, and lungs.
Inhalation: During the tear out of products that utilize a rigidizer, airborne dust may cause respiratory tract irritation. Symptoms may include scratchiness of the nose or throat, cough or chest discomfort. Product mist may irritate upper respiratory tract.
Eye Contact: Avoid any eye contact with liquid – a mild alkaline product. Contact may cause irritation with redness and pain.
Skin Contact: Product is mildly irritating but has a pH less than hand soap. Prolonged contact with liquid may cause drying of the skin.
Ingestion: If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include nausea, vomiting, or abdominal pain.
Chronic Effects: None identified.
Medical Conditions Aggravated By Exposure [tear out]:
Removal of used product, sanding, scraping, or otherwise destroying the integrity of the dried product may result in the release of dust and potentially silica dust. Pre-existing medical conditions, including dermatitis, asthma or chronic lung disease may be aggravated by exposure to silica dust; individuals who are atopic (with a history of allergies) may experience greater amounts of skin and respiratory irritation.
Hazard Classification: The **International Agency for Research on Cancer (IARC)** has determined that amorphous silica is **not** classifiable as to its carcinogenicity to humans (Group 3) hence product has a WHMIS category of D2B based on the potential for some airborne dust..
IARC classified respirable crystalline silica, a possible by-product of amorphous silica devitrification following sustained, high-temperature (>1800°F) use, as a substance known to be carcinogenic to humans (Group 1). This is not expected in most applications.

5. FIRST AID MEASURES

Respiratory Tract (nose & throat) Irritation: If respiratory tract irritation develops from product mist, 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 any rigidizer enters eyes.
Skin Irritation: If skin becomes irritated, remove soiled clothing. Do not rub or scratch exposed skin. Wash the area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful.
Gastrointestinal Irritation: Not expected under normal use. If gastrointestinal tract irritation develops, move the person to a dust free environment.

6. FIRE FIGHTING MEASURES

NFPA Unusual Hazards: None
Flammable Properties: None
Flash Point: None
Extinguishing Media: Use extinguishing media suitable for type of surrounding fire.

7. ACCIDENTAL RELEASE MEASURES

During tear outs, avoid creating airborne dust. Dust suppressing cleaning methods such as wet sweeping or vacuuming should be used to clean the work area. Compressed air or dry sweeping should not be used for cleaning. Refer to local Regulations about compressed air limitations for cleaning.

8. HANDLING AND STORAGE

Storage: Store in original container in a dry area above freezing and in excessive heat. Keep container closed when not in use. This will extend the shelf life.

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

Removal and clean up of after service product exposed to excessive temperatures beyond design for long periods may result in exposure to a crystalline phase silica based on large quantities of product in use and lengthy exposure

periods. Depending on the product's use, other contaminants may also be present. During removal, the exposed material should be frequently misted with water to minimize airborne dust. A surfactant may be added to the water to improve the wetting process. Use only enough water to wet the insulation. Do not allow water to accumulate on floors.
Empty containers: Product packaging may contain residue. Do not reuse.

9. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Guidelines – Other Ingredients: The occupational exposure limits vary widely and are under constant review. Refer to those that apply currently to the location where the product is in use or being removed from service. The engineering controls or personal protective equipment employed to reduce exposure to dust will also control worker exposure to the following ingredients. The manufacturer recommends the following time weighted average occupational action levels for the other ingredients and they are based on current good industrial hygiene practices:

Silica quartz	after heating (removal) 0.05 mg/m^3 [ON limits as TWAEV]
Colloidal silica as a fume	10 mg/m^3 (as inhalable particles); 3 mg/m^3 (as respirable particles)

Engineering Control: During tear outs, 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 fibre and dust emissions.
EYE PROTECTION: When handling liquid product, wear safety glasses or chemical goggles to prevent any eye contact. Do not wear contact lenses unless chemical goggles are also worn. Do not touch eyes with soiled body parts or materials. Have eye-washing facilities available where eye contact can be an issue.
Skin Protection: Wear gloves, head coverings and full body clothing as necessary to prevent skin irritation.
Respiratory Protection: When engineering and/or administrative controls are insufficient, the use of appropriate respiratory protection, pursuant to the requirements of OSHA 1910.134 AND 29 CFR 1926.103, is recommended. 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.

10. PHYSICAL AND CHEMICAL PROPERTIES

Odour and Appearance:`	Odourless, green liquid.
Chemical Family:	Amorphous silica
Boiling Point:	100° C (212° F) % Solubility in Water: N. D.
Melting Point:	N. App
Specific Gravity:	1.3
Vapour Pressure:	17.5 @20° C (68° F)
pH:	9 to 10 depending on concentration
Molecular Weight:	Not applicable.
VOC content	0%

11. STABILITY AND REACTIVITY

Chemical Stability:	Stable under conditions of normal room temperatures.
Incompatibility:	Soluble in hydrofluoric acid, phosphoric acid and concentrated alkali
Conditions to Avoid	Freezing temperatures and excessively high room temperatures.
Hazardous Decomposition Products:	None known.
Hazardous Polymerization:	Not applicable.

12. TOXICOLOGICAL INFORMATION

Health Data Summary: The International Agency for Research on Cancer (IARC), has concluded that amorphous silica is "not classifiable as to its carcinogenicity to humans (Group 3)" based on "inadequate evidence in humans for the carcinogenicity of amorphous silica" and "inadequate evidence in experimental animals for the carcinogenicity of synthetic amorphous silica" (IARC Monograph 68, June 1997, p. 210-211).
Epidemiology: IARC noted that "very little epidemiological evidence was available" for amorphous silica. In evaluating the results of three community-based case-control studies, IARC concluded that "no association was detected for mesothelioma with biogenic amorphous silica fibres." (IARC Monograph 68, June 1997, p. 208).
Toxicology: A food-grade miconized synthetic amorphous silica was tested by oral administration to mice and rats. No increased incidence of tumours was seen. In another study in rats, using intrapleural implantation of two different preparations of synthetic amorphous silica, no increased incidence of tumours were observed (IARC Monograph 68, June 1997, p. 209).

13. ECOLOGICAL INFORMATION

No ecological concerns have been identified.

14. 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 is not classified as a hazardous waste** according to Federal regulations (40 CFR 261). Check local, regional, state or provincial regulations for applicable requirements for disposal. 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.

Transportation Information: Canadian Transportation of Dangerous Goods Regulation: Hazard Class & PIN: Non Regulated. **Not classified as dangerous goods** under ADR (road), RID (train), or IMDG (ship).

15. REGULATIONS

Canadian Workplace Hazardous Materials Information System (WHMIS) – When removed **after service**, product is classified as Class D2A – Materials Causing Other Toxic Effects; as a new product the rating is a D2B.

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

16. OTHER INFORMATION

After-Service: Removal: It is possible that the amorphous silica contained in this product may devitrify and form cristobalite (a form of crystalline silica) when used at temperatures above 980°C for sustained periods. Chronic exposure to respirable crystalline silica may lead to lung disease. IARC has concluded that: "Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)." [IARC Monograph 68, June 1997, p. 210-211]. The Occupational Safety and Health Administration (OSHA) has adopted a permissible exposure limit (PEL) for respirable cristobalite at 0.05 mg/m^3. When needed, the use of proper exposure controls and respiratory protection is recommended to reduce potential health risks and to ensure compliance with OSHA requirements. The evaluation of workplace hazards and the identification of appropriate respiratory protection is best performed, on a cases by case basis, by a qualified Industrial Hygienist.

17. PREPARATION INFORMATION

This MSDS was prepared September 25, 2012 by G.E.Menzies P.Eng. ROH. For more information, phone 905-319-1080 or visit our FibreCast website.

DISCLAIMER

The information presented herein is presented in good faith and believed to be accurate as of the effective date of this Material Safety Data Sheet. Occupational exposure limits are under constant review and may be changed at any time. Employers may use this MSDS to supplement other information gathered by them in their efforts to assure the health and safety of their employees and the proper use of this product. This summary of the relevant data reflects professional judgment. Employers should note that information perceived to be less relevant has not been included in this MSDS. Therefore, given the summary nature of this document, FibreCast Inc. 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.