



MATERIAL SAFETY DATA SHEET

Classified as Hazardous according to criteria of Worksafe Australia

IDENTIFICATION

Brand Name	Fiberfrax [®]
Ship. Name (CSN)	None Allocated
Name	LDS Moldable
Other Names	Moldable LS Fiberfrax LDS Moldable Fiberfrax LDS Moldable AL Fiberfrax LDS 1400 Moldable
UN Number	None Allocated
DG Class	None Allocated
Packaging Group	None Allocated
Hazchem Code	None Allocated
Poisons Schedule	Not Scheduled
Product Use	High Temperature putty

PHYSICAL DATA

Appearance	White Putty with no odour
Melting Point	Not available
Boiling Point	Not available
Vapor Pressure	Not available
Specific Gravity	Not available
Flash Point	Not applicable
Flamm. Limit LEL	Not applicable
Flamm. Limit UEL	Not applicable
Solubility in Water	<1G/L in water

OTHER PROPERTIES

Autoignition Temp.	None
Vapor Density	Not applicable
pH Value	<8.5 (saturated solution in water)
Viscosity	Not applicable
Haz. Polymerization	None
Materials to Avoid	Incompatible with hydrofluoric acid, phosphoric acid and concentrated alkalis.
Formula	Not applicable: Mixture



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Molecular Weight Not applicable: Mixture
Other Information Pour Point: Not applicable

Ingredients

<u>Name</u>	<u>CAS</u>	<u>Proportion</u>
Colloidal silica (amorphous)	7631-86-9	50.65%
Ceramic Fibre	65997-17-3	20-45%
Fumed Silica	112945-52-5	1-15%
Other ingredients determined not to be hazardous		1-10%

HEALTH HAZARD INFORMATION

HEALTH EFFECTS

Acute - Ingestion If ingested in sufficient quantity product may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhoea

Acute - Eye May be irritating. Abrasive action may cause irritation and damage to the outer surface of the eye.

Acute - Skin May cause irritation and inflammation from reaction to sharp, broken ends of fibres.

Acute - Inhalation May cause respiratory tract irritation.

Chronic Repeated or prolonged breathing of particles of respirable size may cause inflammation of the lung leading to chest pain, difficult breathing and coughing. Refer to 'OTHER INFORMATION - Toxicology'.

FIRST AID

Ingestion Ingestion is unlikely. If ingested, DO NOT induce vomiting. The preferred method of elimination is through dilution and natural gastrointestinal elimination. Drink extra water or milk. Get medical attention if gastrointestinal symptoms develop, for example, irritation, nausea, vomiting, abdominal pain and diarrhoea. If spontaneous vomiting occurs monitor breathing difficulty.



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Eye Flush immediately with large amounts of water for at least 15 minutes. Any contact lenses should be removed, and eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention as good work hygiene practice in all cases of eye exposure, and especially if effects persist.

Skin If skin becomes irritated, remove contaminated clothing. Wash area of contact thoroughly with soap and water. Do not rub or scratch exposed skin. Using a skin cream or lotion after washing may be helpful. Get medical attention if irritation persists. Launder contaminated clothing separately.

Inhalation Remove exposed person/s from source of exposure, to fresh air. Some people may be sensitive to a fibre induced irritation of the respiratory tract. If symptoms such as shortness of breath, coughing, wheezing or chest pain develop, seek medical attention. If person experiences continued breathing difficulties, competent first-aid personnel can administer oxygen until medical assistance can be rendered.

First Aid Facilities Eyewash station and normal washroom facilities must be provided, and a safety shower is strongly recommended.

ADVICE TO DOCTOR

Advice to Doctor Pre-existing medical conditions may be aggravated by exposure, specifically, bronchial hyper-activity and chronic bronchial or lung disease. Persons chronically exposed to aluminosilicate should be periodically monitored with chest X-rays and pulmonary function testing. Granulomatous skin reactions may occur if material gains entry to open wounds.

OTHER HEALTH HAZARDOUS INFORMATION

Medical Conditions Generally Aggravated by Exposure See advice to doctor

PRECAUTIONS FOR USE



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Exposure Limits

Other Exposure Info.

Ceramic Fibre: 0.5 fibre/ml.

As established by the National Occupational Health and Safety Commission (Worksafe Australia). The Worksafe Australia exposure limit (TWA) for cristobalite is 0.1mg/m³ (respirable dust). (See 'Handling' and 'Respiratory' protection section(s))

Engineering Controls

Use adequate ventilation to keep the airborne concentrations of this material below the Worksafe Australia exposure standard. Local ventilation and/or enclosure of the process is preferred in these cases.

The following personal protective guidelines should be followed, especially where engineering controls (eg. mechanical dust collection and other means of exhaust ventilation) are not technically feasible or do not reduce airborne fibre concentrations to below 0.5 fibre/ml. However, when the material has been exposed to temperatures greater than 1000°C, more extensive precautions are required as outlined below in 'Personal Protection Respiratory' section.

PERSONAL PROTECTION

Respiratory Type

(AS1716)

Respiratory equipment that conforms to AS1715/1716 must be used,

where exposure to material is likely to exceed or approach exposure standards. If airborne exposure limits are exceeded and engineering controls are not feasible, respiratory protection (as described below) must be used. Respiratory protection must also be used if irritation is experienced, or if airborne limits are unknown. If the material has been exposed to temperatures above 1000°C refer to below

CONCENTRATION: Up to 5 fibres/ml

RESPIRATOR TYPE: The optional disposable dust respirator (eg. 9970 or equivalent).

CONCENTRATION: 0.5 to 5 fibres/ml

RESPIRATOR TYPE: Half-face, air purifying respirator



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equipped with a high efficiency particulate air (HEPA) filter cartridges (eg. 3M 6000S with 2040 filter or equivalent).

CONCENTRATION: 5 to25 fibres/ml

RESPIRATOR TYPE: Full-face, air purifying respirator with high efficiency particulate air (HEPA) filter cartridges (eg. 3M 7800S with respirator (PAPR) equipped with HEPA filter cartridges (eg. 3M W3265S with W3267 filters or equivalent).

CONCENTRATION: >25 fibres/ml

RESPIRATOR TYPE: Full-face, positive pressure supplied air purifying respirator(eg. 3M 7800S with W9435 hose and W2806 low pressure regulator kit or equivalent).

If airborne fibre levels are not known, as minimum protection, use half mask air purifying respirator equipped with high efficiency particulate air (HEPA) filter cartridges (eg. 6000 series or equivalent). If respiratory protection is used, employees must be given instructions and training on their correct use.

Eye Protection

Safety glasses with side shields, or chemical goggles must be worn when handling this material. Contact lenses should not be worn unless chemical goggles are also worn and care is taken not to touch the eye with contaminated parts of the body. Have eye washing facilities readily available where eye contact can occur.

Glove Type

Wear gloves, hats or full body clothing to prevent skin contact as necessary.

Clothing

Use separate lockers for work clothes to prevent fibre transfer to street clothes. Avoid taking unwashed work clothes home or provide disposable work clothing. Wash work clothes separately from other clothing. Rinse washing machine thoroughly after use. If clothing is to be laundered by someone else, inform launderer of proper procedure.

Work/Hygienic Practices

Good work hygiene practice must be followed when handling this substance; that is, always wash face and hands before



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eating, drinking, smoking, toilet breaks and at the end of shifts.
Do not take contaminated clothing home.

FLAMMABILITY

Fire Hazards

Not applicable; material is non-combustible for practical purposes.

SAFE HANDLING INFORMATION

STORAGE AND TRANSPORT

Storage Precautions

No special transport or storage requirements are necessary.

Handling

The toxicology data indicates that ceramic fibre should be handled with caution. The handling practices described in this MSDS must be strictly followed. In particular, when handling refractory ceramic fibre in any application, special caution should be taken to avoid unnecessary cutting and tearing of the material to minimise the generation of airborne dusts. Product which has been in service at temperatures above 1000°C, may undergo partial conversion to cristobalite, a form of crystalline silica. This reaction occurs at the furnace lining hot face. As a consequence, this material becomes more friable; special caution must be taken to minimise generation of airborne dust. The amount of cristobalite present will depend on the temperature and length in service.

If airborne fibre or cristobalite concentrations are not known, as minimum protection, use AS1715/1716 approved half face, air purifying respirator with HEPA filter cartridges. Insulation surfaces should be lightly sprayed with water before removal to suppress airborne dust. As water evaporates during removal, additional water should be sprayed on the surfaces as needed. Only enough water should be sprayed to suppress dust so that water does not run onto the floor of the work area. To aid the wetting process, a surfactant may be used. After RCF removal is completed, dust suppressing cleaning methods, such as wet sweeping or vacuuming, should be used to clean the work area. If dry vacuuming is used, the vacuum must be equipped with a HEPA filter. Air blowing or dry sweeping should not be used. Dust suppressing components can be used to clean up light dust.



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Ship. Name (CSN) None Allocated

SPILLS AND DISPOSAL

Spills and Leaks Where possible, use HEPA fitted vacuum suction to clean up spilled material. Use dust suppressant where sweeping is necessary. Avoid clean up procedures that may result in water pollution. Personal safety and exposure recommendations described elsewhere in this data sheet apply to exposure during clean up of spilled material.

Disposal Waste shall be placed in containers, plastic bags or other methods which will prevent fibre and/or dust emission, and disposed of in accordance with all local, state and federal waste disposal authority that pertain to this material.

FIRE/EXPLOSION HAZARD

Fire/Explosion Hazards Not applicable; material is not combustible for practical purposes.

Hazardous Combustion Products Thermal decomposition of the binder from fires may release hydrocarbons, including small amounts of formaldehyde and be oxides of carbon. Oxides of silica may also be formed at extreme temperatures. Adequate respiratory and other protection must used.

Extinguishing Media Use extinguishing agent suitable for surrounding fire.

Hazardous Reaction Stable under normal conditions of use.

Hazchem Code None Allocated

OTHER INFORMATION

Toxicology The potential for man made or Synthetic Mineral Fibres, (SMF), to produce toxicity has been the subject of extensive investigations. Unifrax is continuing to support the necessary investigations and will make all data available to all interested



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parties. Information will be updated as studies are completed and reviewed. The following is a review of the results to date:

Epidemiology

Epidemiology Investigations of refractory ceramic fibre, (RCF), production workers have been ongoing for more than 10 years. The preliminary evidence is as follows:

1. There is no evidence of any fibrotic lung disease (interstitial fibrosis) whatsoever on X-ray.
2. There is no evidence of any lung disease among those employees exposed to ceramic fibre that have never smoked.
3. A statistical 'trend' was observed between slight decreases in measures of pulmonary function and the duration of exposure to RCF. However this trend is similar to that observed in smokers who work in other industries. These observations are clinically insignificant and individual results are within the range of values obtained from the normal population.
4. Pleural plaques (thickening along the chest wall) have been observed in a small number of employees in overseas plants who have had long duration of employment. A repeat study found inconsistencies in detecting such pleural plaques. No pleural plaques have been found in the Australian manufacturing workforce. There are several occupational and non-occupational causes for pleural plaques and it is generally considered that plaques are not a 'pre-cancer' state, nor are they associated with any measurable effect on lung function.

Toxicology

A number of studies have been conducted on the health effects of inhalation exposure of rats and hamsters. In a lifetime (6 hours per day, 5 days a week for 24 months) nose only inhalation study, rats exposed to the Maximum Tolerated Dose (30mg/m³, 200 fibres/ml) developed progressive lung damage (interstitial fibrosis) and cancer of the lung and mesothelioma. In contrast, hamsters similarly exposed developed interstitial fibrosis and mesothelioma but no lung cancers. A multiple dose study (3, 9, 16mg/m³; 25, 75 and 150 fibres/ml) found a dose related parenchymal fibrosis however in the lowest exposed group (25 fibres/ml); no irreversible effects were found



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that could be attributed to ceramic fibre exposure. There was no statistical excess of lung tumours at any dose. One rat developed a mesothelioma in the 75 fibre/ml exposure group.

In 1987 the International Agency for Research on Cancer (IARC) reviewed the epidemiological and animal toxicology data on SMF (including ceramic fibre, glasswool, rockwool, and slagwool) and classified the group as possible human carcinogens (IARC Group 2B).

Information on Ecological Effects

Conformance to specific local, state and federal regulations may be required for this material.

Risk Statement

R40 Possible risk of irreversible effects. R36/37/38 Irritating to eyes, respiratory system and skin.

Safety Statement

S22 Do not breathe dust. S28 After contact with skin, wash immediately with plenty of soap and water. S38 If insufficient ventilation, wear suitable respiratory equipment. S40 To clean floor and all objects contaminated by this material, use HEPA fitted vacuum cleaner. S20/21 When using, do not eat, drink or smoke. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Hazard Category

Harmful, Irritant

CONTACT POINT

Contact

During Business Hours Telephone:
Emergency Contact After Hours:

Ph: (03) 9463 0000.
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0409 288 916.

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