



Product Number: 153

Fireproof Cable Support System

Description:

A fire resistant cable fixing system designed to fit around plastic trunking, tubing and armoured cables to hold cables in place in a fire situation.

This product comprises the following materials and therefore is supported by Health & Safety Data Sheets:

- (Appendix 3) Glass Cloth
- (Appendix 8) Foil Tape
- (Appendix 15) LVFR
- (Appendix 35) Graphite Mix
- (Appendix 67) K1200 Paper

*The information contained in this safety data sheet is given in good faith. It is accurate to the best of our knowledge and belief and represents the most up to date information. The information given in this data sheet does not constitute or replace the user's own assessment of workplace risk as required by other health and safety legislation.



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Appendix 3 **Woven Glass Fabric**

DATA SHEET

Description	Woven glass fabric Starch weave locked
Ends/cm	18.9
Picks/cm	11.1
Weave	4 end satin
Thickness	0.40 mm
Wt/m ²	430 g/m ²
Warp count	1360 d'tex
Weft count	1360 d'tex
Fibre type	Cont. fil glass
Filament diameter	9μ
Warp tensile strength	960 N/cm
Weft tensile strength	720 N/cm
Finish	Starch weave lock

Note : All figures quoted are nominal values



ENVIROGRAF®

HEALTH AND SAFETY DATA SHEET

FOIL – ADHESIVE TAPE

Appendix 8

Section 1 General

Our products are considered generally safe and inert and no hazards are anticipated provided good standards of industrial hygiene and good housekeeping are observed.

Section 2 Composition

These products are normally supplied in the form of rolls of adhesive coated aluminium. Individual products differ, but the adhesive generally contains one or more of the following: Acrylates, Rubbers, Resins, E.V.A.'s, Waxes, Plasticisers, Fillers, Plus other additives.

Section 3 Storage

It is recommended that these products be stored out of direct sunlight at temperatures between five and thirty degrees centigrade.

Section 4 Handling Precautions

Due regard should be given to the possibility of static build up within the rolls and their particular applications especially where flammable solvents are used or stored.

Finger damage is always a risk when aluminium foil and paper products are decoiled or applied. The use of lightweight leather gloves is recommended. Discard release paper is a slip hazard and must not be left on any floor space but disposed of together with spent cores into suitable waste containers.

Section 5 Fire

Products will burn in the event of contact with a flame, resulting in smoke and harmful fumes. Fires may be extinguished with Carbon Dioxide, Foam or Dry powder. Films and adhesives may drip before burning this may cause severe burns if skin contact is made. Do not attempt to remove adhesive, but cool down rapidly in water and seek medical advice.

Section 6 Health

Under normal conditions of handling, no hazards are anticipated but good industrial hygiene should always be observed, allergic reactions are unlikely but, should they occur, that individual should be removed from contact.

Section 7 Waste Disposal

Products should be disposed of on legal tip in compliance with local and national regulations (U.K. – DEPOSIT OF POISONOUS WASTE ACT 1972) AND CONTROL POLLUTION ACT 1974.

Section 8 Important

This information is based on our best current knowledge and is intended as a general guide to product performance.

It is not a warranty of specification, and customers must determine that the material is suitable for their particular purpose before use.



ENVIROGRAF®

Health & Safety Data
Appendix 15

LVFR COATING

(1) IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY / UNDERTAKING

Product name	LVFR Coating
Supplier	Intumescent Systems Ltd Telephone: (01304) 842555 Barrestone Fax: (01304) 842666 Nr Dover Kent CT15 7JG England

(2) COMPOSITION / INFORMATION ON INGREDIENTS

Chemical characterization	Aqueous (emulsion) polymer system
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(3) HAZARDS IDENTIFICATION

Health effects:

Skin	May cause slight irritation on prolonged / repeated contact.
Eyes	May cause some irritation.
Inhalation	No hazard under normal conditions of use.
Ingestion	Low toxicity.
Physical/chemical effects	Not applicable.

(4) FIRST AID MEASURES

Skin contact	Remove contaminated clothing and wash contaminated skin with soap and water.
Eye contact	Wash with water for several minutes. If irritation persists seek medical advice.
Inhalation	Remove the casualty to fresh air.
Ingestion	Rinse out mouth with water and if conscious drink plenty of water. Seek medical attention

(5) FIRE-FIGHTING MEASURES

Extinguishing media	Foam, carbon dioxide, powder, and water spray.
Extinguishing media which must not be used for safety reasons	None known.
Special exposure hazards	None known.
Special protective equipment for fire-fighters	Chemical protection suit / gloves / boots and self contained breathing apparatus.

(6) ACCIDENTAL RELEASE MEASURES

Personal Precautions	Use personal protection equipment
Environmental precautions	Do not dispose of into surface water or sanitary sewer system.
Methods for cleaning up	Scrape up excess and dispose of at an approved site.

(7) HANDLING AND STORAGE

Handling precautions	Not applicable.
Storage conditions	Store in closed containers between + 5°C and + 30°C in dry conditions. Avoid extremes of temperature.

(8) EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters	Not applicable.
Engineering measures	
Personal protection equipment:	
Respiratory protection	Not applicable.
Hand protection	Gloves.
Eye protection	Goggles.
Skin and body protection	Not applicable.

(9) PHYSICAL AND CHEMICAL PROPERTIES

Colour	White, grey, red, yellow, black
Form	Shear thinning paste.
Odour	Slight.
pH as supplied	7.0 to 8.0
Boiling point/range	Not applicable.
Melting point/range	Not applicable.
Flash point	Not applicable.
Flammability (solid, gas)	Not applicable.
Autoignition temperature	Not applicable.
Explosive properties	Not applicable.
Oxidizing properties	Not applicable.
Vapour pressure	Not applicable.
Bulk density	1.20 to 1.30 g/cc
Solubility:	
Water solubility	Miscible.
Partition coefficient (n-octanol/water)	Not applicable.
Other data	

(10) STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Conditions to avoid	Avoid extremes of temperature especially frost and freezing conditions.
Materials to avoid	None, under normal conditions of use.
Hazardous decomposition products	No decomposition if stored and applied as directed.

(11) TOXICOLOGICAL INFORMATION

Not applicable.

(12) ECOLOGICAL INFORMATION

Not applicable.

(13) DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations at approved sites.

(14) TRANSPORT INFORMATION

UK road/rail	Not applicable. None hazardous.
IMDG	Not applicable. None hazardous.
ICAO	Not applicable. None hazardous.
ADR	Not applicable. None hazardous.

(15) REGULATORY INFORMATION

Supply classification:

Hazard symbol(s)	None.
Risk phrases	None.
Safety phrases	None.

(16) OTHER INFORMATION

Recommended use	Coating with fire retardant / resistant properties.
Further information	Consult technical data sheet.



ENVIROGRAF®

Appendix 35 GRAPHITE MIX

SECTION 1 - IDENTIFICATION OF THE PREPARATION(S) AND THE COMPANY

Product names / codes: Graphite Mix

Intended Use: Professional use only, for incorporation into intumescent paints and coatings

Company:

Intumescent Systems Ltd
Envirograf House,
Barfrestone,
Dover, Kent
CT15 7JG

Tel: +44 (0) 1304 842555

Fax: +44 (0) 1304 842666

SECTION 2 - HAZARDS IDENTIFICATION

- If the graphite mix is allowed to dry out there is the potential for the release of the associated dust and fibre content; these are mechanical irritants to the skin and eyes and irritant to the upper respiratory system if inhaled.
- The fibres will include man made vitreous silicate (mineral wool) fibres, Superwool® fibres, glass-fibres and cellulose fibres; the dusts will include graphite, china clay, starch and Aluminium tri-hydroxide.
- As with any airborne dust or fibres pre-existing upper respiratory and lung diseases may be aggravated.
- High concentrations of airborne graphite or starch dust may represent an explosion risk.
- Airborne graphite dust may result in shorts and malfunction of electrical equipment
- Spilt graphite may result in underfoot slip hazards for personnel and potential grip problems for fork lift trucks and other vehicles.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Constitution:

	% by weight	CAS / EINECs Nos.
Exfoliating Graphite	70 – 99	7782-42-5 / 231-955-3
Man Made Vitreous (Silicate) Fibres - Note Q	0 - 5.0	287922-11-6
Superwool®	0 - 5.0	436083-99-7 / 266-046-0
Chopped Strand Borosilicate Glass Fibre	0 - 5.0	65997-17-3
Woodpulp	0 - 5.0	65996-61-4 / 265-995-8
China Clay	0 - 5.0	332-58-7 / 310-127-6
Starch	0 - 5.0	9005-25-8 / 232-679-6
Aluminium tri-hydroxide	0 - 5.0	21645-51-2 / 2444927
Polymeric binder	0 - 5.0	N/A
Water	0 - 30	7732-18-5 / 231-791-2

SECTION 4 - FIRST AID MEASURES

Skin: Rinse affected areas with water and wash gently with soap. Do not use detergent.
Eyes: Flush eyes with large quantities of water.
Have eye bath readily available in areas where eye contact may occur.
Seek medical attention if irritation continues.
Ingestion: Drink plenty of water. Seek medical advice
Inhalation: Remove to fresh air, clear throat and blow nose to evacuate dust and fibre, drink water. Seek medical attention if symptoms persist.

SECTION 5 - FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Use extinguishing agent suitable for type of surrounding combustible materials. Do not inhale the products of combustion.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Do not allow dust or fibres to be wind blown.
Unwanted product should be collected and stored in sealed bags.
Do not use compressed air to remove dust or fibres from clothing or equipment
Dust and fibre deposits should be collected using a suitable vacuum cleaner with HEPA exhaust air filtration. The collected deposits and used vacuum bags should be sealed into poly-bags before disposal.

If sweeping is required the area should be thoroughly damped down with water before sweeping commences to prevent dust or fibres becoming airborne during sweeping.

SECTION 7 - HANDLING AND STORAGE

Handling: Keep dust generation to a minimum.
Storage: Keep cool and do not let the graphite mix dry out
Keep containers sealed until required for use.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Applicable Workplace Exposure Limits from UK HSE EH40 / 2005 and supplement Oct 2007 :

Machine made mineral fibre:	2.0 fibres/ml & 5 mg/m ³ (8 hr TWA)
Fine Carbon Dust:	3.5 mg/m ³ (8 hr TWA) and 7.0 mg/m ³ (15 minute reference period)
China Clay (kaolin) respirable dust:	2.0 mg/m ³ (8 hr TWA)
Starch	
Total Inhalable dust:	10.0 mg/m ³ (8 hr TWA)
Respirable dust :	4.0 mg/m ³ (8 hr TWA)
Aluminium Tri-hydroxide -	
Inhalable dust:	10.0 mg/m ³ (8 hr TWA)
Respirable dust :	4.0 mg/m ³ (8 hr TWA)

Respiratory Protection: Should not be required if the graphite mix is kept damp during processing. If the product is to be dry processed use local exhaust ventilation (extraction) where available. If workplace exposures exceed the workplace exposure limit for any of the components listed above then wear a disposable dust mask to EN149:2001 - FFP2 minimum

Hand Protection: The use of disposable Nitrile rubber gloves is recommended.

Eye Protection: Wear goggles or safety glasses with side shields. Do not wear contact lenses.

Skin Protection: Wear overalls that are loose fitting at the neck and wrists. Wash overalls separate from other clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Black flakes
Density: 450-550 kg/m³
Expansion: When dry rapid volumetric expansion will occur if the material is heated above 200 °C.
Flammability: Non-flammable. Ignites in oxygen @ 690°C

SECTION 10 - STABILITY AND REACTIVITY

Stability/Conditions to avoid: Stable
Materials to avoid: None
Hazardous decomposition products: May include acidic and toxic gases and airborne fibres.
Hazardous Polymerisation: Will not occur

SECTION 11 - TOXICOLOGICAL INFORMATION

Graphite:

Powdered graphite is non-toxic.

High levels of airborne graphite dust may be a mechanical eye irritant.

Skin contact with graphite dusts may cause temporary irritation due to mechanical effects; repeated prolonged exposures may lead to dermatitis.

Airborne graphite dust is an upper respiratory irritant; exposures may aggravate pre-existing upper respiratory and lung diseases.

Cases of pneumoconiosis, pulmonary fibrosis and emphysema have been reported in workers following prolonged exposures to high levels of airborne graphite dust.

Man Made Vitreous (Silicate) Fibres - Note Q (Rockwool fibre):

Coarse Fibres:

In common with other man-made mineral fibres the vitreous silicate fibres in this product are mechanical irritants which may result in temporary irritation of the throat, eyes or skin.

Respirable Fibres:

Animal Studies:

Short term inhalation studies of rats exposed to high levels of stone wool fibres have shown that the long fibres are biodegradable and quickly disappear from the lungs.

Human Epidemiological studies:

Large morbidity and mortality studies of both European and North American mineral wool manufacturing workers have been conducted with traditional mineral wools. The studies found no significant evidence of non-malignant lung disease (e.g. fibrosis). The studies did not establish a causal relationship between exposure to traditional mineral wools and malignant diseases (lung cancer or mesothelioma).

The particular mineral wool fibre used in the products covered by this MSDS is based on a new formulation with increased bio-solubility giving even more rapid clearance of fibres from the lungs compared with traditional mineral wools.

Superwool®:

Irritant properties:

When tested using approved methods (Directive 67/548/EC, Annex 5, Method B4) this material gives negative results. All man made mineral fibres can produce mild skin itching or reddening, unlike other irritant reactions this is not the result of allergy or chemical skin damage but is caused by mechanical effects.

Human data on Respiratory Effects:

Epidemiological studies were conducted among miners exposed to Wollastonite a natural calcium silicate. No respiratory disease was observed.

Inhalation data for animals for Calcium Magnesium and Zirconia silicate wool:

This is a glass wool with high temperature resistance but low bio-persistence. Several samples of vitreous fibres have been examined by long term inhalation testing of rats exposed to airborne fibre concentrations several orders of magnitude higher than are likely to occur in the workplace. No carcinogenic response was found for fibres in this range of low bio-persistence. In a 90 day inhalation test at high concentration this fibre did not produce any significant cell proliferation. A nonspecific inflammatory response was noticed at the end of the exposure period but rapidly declined thereafter. The biological effect declined more rapidly than the concentration of fibres in the lung.

Chopped strand glass fibre:

There are no known chronic health effects connected with long term use or contact with continuous filament glass fibre. The glass fibres in this product are mechanical irritants which may result in temporary irritation of the throat, eyes or skin. The evidence from human and animal studies was evaluated by the International Agency for Research on Cancer (IARC) as insufficient to classify continuous filament glass fibre as a possible, probable or confirmed cancer causing material. In 1987 (IARC) classified continuous filament glass fibre as "not classifiable with respect to human carcinogenicity (Group 3)"

Woodpulp (cellulose):

There are no known chronic health effects connected with long term use or contact with woodpulp. Airborne fibres may be upper respiratory irritants, mechanical eye irritants or temporary skin irritants for sensitive individuals.

China Clay (Kaolin) (hydrous kaolin clay):

High levels of airborne kaolin dust may be a mechanical eye irritant. Skin contact with kaolin dust may cause temporary irritation due to mechanical effects; repeated prolonged exposures may result in drying of the skin leading to dermatitis. Airborne kaolin dust is an upper respiratory irritant; exposures may aggravate pre-existing upper respiratory and lung diseases. Prolonged and repeated inhalation of respirable dusts (including kaolin dust) in excess of the appropriate exposure limits has caused pneumoconiosis, a lung disease. Not all individuals with pneumoconiosis will exhibit symptoms (signs) of the disease. However, pneumoconiosis can be progressive and symptoms can appear at any time, even years after the exposure has ceased. Kaolin is not listed as a carcinogen by the International Agency for Research on Cancer (IARC).

Starch:

Starch is widely used in foodstuffs and domestic products and is essentially non-toxic
Airborne starch dust may be an upper respiratory system irritant ; high concentrations may represent

Aluminium Tri-hydroxide:

ATH powder is insoluble is essentially non-toxic.

High levels of airborne ATH dust may be a mechanical eye irritant.

Skin contact with ATH dust may cause temporary irritation due to mechanical effects.

Airborne ATH dust is an upper respiratory irritant; exposures may aggravate pre-existing upper respiratory and lung diseases.

If ingested Aluminium can accumulate in the human body; repeated or extreme high level exposures to aluminium compounds may result in long term systemic effects.

Keeping the graphite mix moist during processing is unlikely to result in high level exposures to ATH dust or long term effects related to the aluminium content.

SECTION 12 - ECOLOGICAL INFORMATION

The graphite mix will remain stable over time with the inorganic components remaining inert

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste should be disposed of at a licensed industrial waste site; local regulations should be considered.

Waste should be bagged or suitably contained to prevent dust and fibres being wind blown during disposal.

In the UK the waste is not classified as Hazardous.

SECTION 14 - TRANSPORT INFORMATION

Not regulated for Transport.

Ensure that dust or fibres are not wind blown during transportation.

SECTION 15 - REGULATORY INFORMATION

Fibre Type Definitions and Classification according to Directive 97 / 69 / CE:

Man Made Vitreous (Silicate) Fibres - Note Q (Rockwool fibre):

The mineral wool fibres contained in these products are defined as “ man-made vitreous (silicate) fibres with random orientation with alkaline oxide and alkaline earth oxides (Na₂O + K₂O + MgO + BaO) content greater than 18% by weight”

The particular mineral wool fibres contained in these products have increased bio-solubility and are thus exonerated from classification as a carcinogen in accordance with Note Q of Directive 97 / 69 / CE; they also fulfil the requirements of Appendix V, No.7.1 (1) of the Dangerous Substance Ordinance of Germany.

Irritant Xi -

R38 Irritating to the Skin.

S36 / 37 Wear suitable protective clothing and gloves.

Superwool®:

The Superwool® fibres contained in this product are defined as "man-made vitreous (silicate) fibres with random orientation with alkaline oxide and alkaline earth oxides (Na₂O+K₂O+CaO+MgO+BaO) content greater than 18 % by weight"

Superwool® fibre is not classified as a carcinogen under directive 97/69/CE.

Under Directive 67/548/EEC all types of man-made vitreous (silicate) fibres including Superwool® are classified as "irritant" (due to their mechanical effects) despite the fact that testing by the appropriate EU method (B4 in annexe 5 of Directive 67/548/EEC) does not give a response.

Chopped Strand glass fibre:

The chopped strand continuous filament glass fibres contained in this product do not fall within the scope of Directive 97/69/CE as they are not "fibres with random orientation"

Chopped strand continuous filament glass fibres are not classified as carcinogenic according to Directive 97/69/CE.

SECTION 16 - OTHER INFORMATION

Notes: New SDS 5 March 2009 for Graphite mix

Further information regarding working with man made mineral fibres and measurement techniques may be obtained by referring to Guidance Note EH46 1990 and MDHS59 1988 published by the UK, Health & Safety Executive .

This information only concerns the above named product(s) and may not be valid if used with other product(s) or in any process. This information is, to our best knowledge, correct and complete, but no guarantee can be given. It remains the responsibility of the user to make sure that the information is appropriate and complete for their particular use of the product. If you have purchased this product for supply to a third party for use at work, it is your duty to take all necessary steps to ensure that any person handling or using the product is provided with the information on this sheet. If you are an employer, it is your duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions which should be taken.

MATERIAL SAFETY DATA SHEET

Envirograf® K1200 Paper

(Following Regulations (EC) No 1907/2006 & (EC) No 1272/2008)

1. Identification of the product and of the company

1.1 IDENTIFICATION OF THE PRODUCT

Envirograf 1200 Paper

1.2 IDENTIFICATION OF THE MANUFACTURER/SUPPLIER

U.K. Intumescent Systems Ltd
 Envirograf House
 Barfrestone, Dover, Kent, CT15 7JG
 Tel. : +44 (0) 1304 842555
 Fax : +44 (0) 1304 842666

Website : www.envirograf.com

Email : sales@envirograf.com

1.3 EMERGENCY CONTACT NUMBER

Tel 1: As Above

Opening hours: Only available during office hours

2. Hazards Identification

2.1 CLASSIFICATION OF THE SUBSTANCE/MIXTURE

2.1.1 CLASSIFICATION ACCORDING TO REGULATION (EC) NO 1272/2008

Under the Classification, Labelling and Packaging regulations (CLP) 1272/2008 EEC RCF/ASW has been classified as a 1B carcinogen.

2.1.2 CLASSIFICATION ACCORDING TO DIRECTIVE 67/548/EEC

RCF/ASW have been classified as a category 2 carcinogen ("substances which should be regarded as if they are carcinogenic to man")

2.1.3 ADDITIONAL INFORMATION:

The International Agency for Research on Cancer (IARC) reaffirmed in 2001 that group 2B ("possibly carcinogenic to humans") remains the appropriate classification for RCF/ASW. In accordance with 31st adaptation to Technical Progress of Directive 67/548/ECC as published 15th January 2009 the classification as "irritant" has been removed for all types of manmade vitreous fibres (MMVFs).

2.2 LABELING ELEMENTS

Component	Classification	Hazard pictogram & Symbol	R Phrase & H Statement
Alumino-silicate wools	(EC)No. 1272/2008.	GHS 08	H350I
	Directive 67/548/EEC	T	R49

Hazard pictogram

GHS 08



Signal Word

Danger

Hazard Statements

May cause cancer by inhalation (H350i)

Precautionary statements

Do not handle until all safety instructions have been read and understood. (P202)

Use personal protective equipment as required. (P281)

2.3 OTHER HAZARDS WHICH DO NOT RESULT IN CLASSIFICATION:

Mild mechanical irritation to skin, eyes and upper respiratory system may result from exposure. These effects are usually temporary

3. Composition / information on ingredients**DESCRIPTION**

This article is a felt made of refractory ceramic fibres coated with a cured phenol-formaldehyde resin.

COMPOSITION

COMPONENT	CAS NUMBER	Index Number in CLP Annex VI	% by weight
Refractory Ceramic Fibre (Alumino-silicate wools)	142 844-00-6	650-017-00-8	70-98
Acrylic binder	Not applicable	Not applicable	2-15

Composition:

CAS definition: Chemical composition of Refractory Ceramic Fibres (RCF/ASW): :
SiO₂: 45-60 %, Al₂O₃: 285-55 %, ZrO₂ < 18%

None of the components are radioactive under the terms of European Directive Euratom 96/29.

4. First-aid measures**SKIN:**

Handling of this material may generate mild mechanical temporary skin irritation. If this occurs, rinse affected areas with water and wash gently. Do not rub or scratch exposed skin.

EYES:

In case of eye contact flush abundantly with water; have eye bath available. Do not rub eyes.

NOSE AND THROAT:

If these become irritated move to a dust free area, drink water and blow nose.

If symptoms persist, seek medical advice.

5. Fire-fighting measures

Non-combustible products. However, virgin product binder may burn and produce gases and/or fumes. Packaging and surrounding materials may be combustible.

Use extinguishing agent suitable for surrounding combustible materials.

6. Accidental release measures**6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES**

Where abnormally high dust concentrations occur, provide workers with appropriate protective equipment as detailed in section 8.

Restrict access to the area to a minimum number of workers required.

Restore the situation to normal as quickly as possible.

6.2 ENVIRONMENTAL PRECAUTIONS

Prevent further dust dispersion for example by dampening the materials Do not flush spillage to drain.

Check for local regulations, which may apply.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN UP

Pick up large pieces and use a vacuum cleaner fitted with a high efficiency filter (HEPA° If sweeping is used, ensure that the area is wetted down first.

Do not use compressed air for clean-up. Do not allow to become windblown.

7. Handling and storage

7.1 PRECAUTIONS FOR SAFE HANDLING

Handling can be a source of dust emission and therefore the processes should be designed to limit the amount of handling. Whenever possible, handling should be carried out under controlled conditions (i.e., using dust exhaust system).

Regular good housekeeping will minimise secondary dust dispersal.

7.2 CONDITIONS FOR SAFE STORAGE

Store in original packaging in dry area whilst awaiting use Always use sealed and visibly labelled containers.

Avoid damaging containers.

Reduce dust emission during unpacking.

Emptied containers, which may contain debris, should be cleaned (see 6.3) before disposal or recycling. Recyclable cardboard and/or plastic films are recommended for packaging.

7.3 SPECIFIC END USE

The main application of these products is as thermal insulation. Use of the products is restricted to "professional users".

Please refer to section 8 and the relevant exposure scenario.

8. Exposure controls / personal protection

8.1 CONTROL PARAMETERS

Industrial hygiene standards and occupational exposure limits vary between countries and local jurisdictions. Check which exposure levels apply to your facility and comply with local regulations. If no regulatory dust or other standards apply, a qualified industrial hygienist can assist with a specific workplace evaluation including recommendations for respiratory protection.

8.1.1 DNEL/DMEL (DERIVED NO-EFFECT LEVEL/DERIVED MINIMAL EFFECT LEVEL)

Due to overload which occurred in the rat multidose inhalation study described in section 11, the calculation of DMELs based on carcinogenicity is not possible; a precautionary value is therefore assigned based on fibrosis. An inhalation DMEL of 0.5 mg/m³ with an assessment factor of 25 can be calculated based on repeated dose toxicity, this value in the correct units would give a DMEL of 4 f/ml.

8.1.2 RECOMMENDED MONITORING PROCEDURES

United Kingdom: MDHS 59 specific for MMVF: "Man-made mineral fibre - Airborne number concentration by phase-contrast light microscopy" and MDHS 14/3 "General methods for sampling and gravimetric analysis of respirable and inhalable dust"

WHO-EURO method: Determination of airborne fibre number concentrations; A recommended method, by phase-contrast optical microscopy (membrane filter method); World Health Organisation Geneva 1997 ISBN 92 4 154496 1.

8.2 EXPOSURE CONTROLS

8.2.1 APPROPRIATE ENGINEERING CONTROLS

Review your application(s) and assess situations with the potential for dust release.

Where practical, enclose dust sources and provide dust extraction at source. Designate work areas and restrict access to informed and trained workers.

Use operating procedures that will limit dust production and exposure of workers.

Keep the workplace clean. Use a vacuum cleaner fitted with a HEPA filter; avoid using brooms and never use compressed air for clean up.

If necessary, consult an industrial hygienist to design workplace controls and practices.

The use of products specially tailored to your application(s) will help to control dust. Some products can be delivered ready for use to avoid further cutting or machining. Some could be pre-treated or packaged to minimise or avoid dust release during handling.

Consult your supplier for further details

8.2.2 PERSONAL PROTECTIVE EQUIPMENT

Skin Protection

Wear industrial leather gloves and work clothes, which are loose fitting at the neck and wrists. Soiled clothes should be cleaned to remove excess dust before being taken off (e.g. use vacuum cleaner, not compressed air). Each worker should be provided with two lockers in an appropriate changing and washing area. It is good hygiene practice to ensure work clothes are washed separately by the employer. Work clothes should not be taken home.

Eye Protection

As necessary, wear goggles or safety glasses with side shields

Respiratory Protection

For dust concentrations below the applicable exposure limit value, RPE is not required but FFP2 respirators should be provided for use on a voluntary basis.

For short term operations where excursions are less than ten times the applicable limit value, use FFP3 respirators.

In case of higher concentrations or where the concentration is not known, please seek advice from your company and/or your supplier.

You may also refer to the ECFIA code of practice available on the ECFIA's web site:

www.ecfia.eu

Information and Training of workers

This should include:

The applications involving RCF/ASW-containing products;

The potential risk to health resulting from the exposure to fibrous dust;

The requirements regarding smoking, eating and drinking at the workplace;

The requirements for protective equipment and clothing;

The good working practices to limit dust release;

The proper use of protective equipment.

8.2.3 ENVIRONMENTAL EXPOSURE CONTROLS

RCF/ASW is inorganic, inert and stable and it is not soluble in water (solubility <1mg/litre) and as such does not pose a detrimental effect on the environment.

Processes involving the manufacturing or use of RCF/ASW should be filtered to minimise fibre emissions to air

Waste RCF/ASW should be stored in closed containers and placed in to deep landfills, giving therefore little opportunity for release.

General good practice for spills and waste is to prevent products from being windblown, by covering and damping the waste materials. Contain spillages to prevent access to drain.

Refer to local, national or European applicable environmental standards for release to air water and soil. For waste, refer to section13

9. Physical and chemical properties

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE White/tan paper	PARTITION COEFFICIENT Not applicable
BOILING POINT Not applicable	ODOUR None
FLASH POINT Not applicable	MELTING POINT > 1650° C
AUTOFLAMMABILITY Not applicable	FLAMMABILITY Not applicable
OXIDISING PROPERTIES Not applicable	EXPLOSIVE PROPERTIES Not applicable
BULK DENSITY 120-220 kg/m ³	VAPOUR PRESSURE Not applicable
SOLUBILITY Less than 1 mg/l Ph Not applicable	
LENGTH WEIGHTED GEOMETRIC MEAN DIAMETER OF FIBRES CONTAINED IN THE PRODUCT 1.4 – 3 Tm	

9.2 OTHER SAFETY INFORMATION

These fibres are far denser than air or water and will settle rapidly under normal environmental conditions.

10. Stability and reactivity

10.1 REACTIVITY

RCF/ASW is stable and non reactive.

10.2 CHEMICAL STABILITY

RCF/ASW is inorganic, stable and inert

10.3 POSSIBILITY OF HAZARDOUS REACTIONS

None

10.4 CONDITIONS TO AVOID

Please refer to handling and storage advice in Section 7.

10.5 INCOMPATIBLE MATERIALS

None

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

Upon heating above 900°C for sustained periods, this amorphous material can begin to transform to mixtures of crystalline phases. For further information please refer to Section 16. During first heating, oxidation products from the organic binder might be emitted in a temperature range from 180°C to 600°C. It is recommended to ventilate the room until all gases and fumes have disappeared. Avoid exposure to high concentrations of gas or fumes.

11. Toxicological information

11.1 TOXICOKINETICS, METABOLISM AND DISTRIBUTION

11.1.1 BASIC TOXICOKINETIC

Exposure is predominantly by inhalation or ingestion. Man made vitreous fibres of a similar size to RCF/ASW have not been shown to migrate from the lung and/or gut and do not become located in other organs of the body

11.1.2 HUMAN TOXICOLOGICAL DATA

In order to determine possible human health effects following RCF exposure, the University of Cincinnati has been conducting medical surveillance studies on RCF workers in the U.S.A. The Institute of Occupational Medicine (IOM) has conducted medical surveillance studies on RCF workers in European manufacturing facilities. Pulmonary morbidity studies among production workers in Europe and U.S.A. have demonstrated an absence of interstitial fibrosis. In the European study a reduction of lung capacity among smokers has been identified, however, based on the latest results in the U.S.A. study this reduction is no longer statistically significant.

A statistically significant correlation between pleural plaques and cumulative RCF exposure was evidenced in the USA longitudinal study.

The U.S.A. mortality study did not show evidence of increased lung tumour development either in the lung parenchyma or in the pleura.

11.2 INFORMATION ON TOXICOLOGICAL EFFECTS

- *Acute toxicity: short term inhalation*
No data available: Short term tests have been undertaken to determine fibre (bio) solubility rather than toxicity; repeat dose inhalation tests have been undertaken to determine chronic toxicity and carcinogenicity.
- *Acute toxicity: oral*
No data available: Repeated dose studies have been carried out using gavage. No effect was found.
- *Skin corrosion/irritation:*
Not a chemical irritant according to test method OECD no. 404
- *Serious eye damage/irritation:*
Not possible to obtain acute toxicity information due to the morphology and chemical inertness of the substance
- *Respiratory or skin sensitisation*
No evidence from human epidemiological studies of any respiratory or skin sensitisation potential
- *Germ cell mutagenicity;*
Method: In vitro micronucleus test
Species: Hamster (CHO)
Dose: 1-35 mg/ml
 - o Routes of administration: In suspension
 - o Results: Negative
- *Carcinogenicity;*
Method: Inhalation. Multi-dose
Species: Rat,
Dose: 3 mg/m³, 9 mg/m³ and 16 mg/m³
Routes of administration: Nose only inhalation
Results: Fibrosis just reached significant levels at 16 and 9 mg/m³ but not at 3 mg/m³. None of the parenchymal tumour incidences were higher than the historical control values for this strain of animal.

Method: Inhalation. Single dose

Species: Rat

Dose: 30 mg/m³

Routes of administration: Nose only inhalation

Results: Rats were exposed to a single concentration of 200 WHO fibres/ml specially prepared RCF for 24 months. High incidence of exposure-related pulmonary neoplasms (bronchoalveolar adenomas and carcinomas) were observed. A small number of mesotheliomas were observed in each of the fibre exposure groups (Mast et al 1995a).

Method: Inhalation. Single dose

Species: Hamster

Dose: 30 mg/m³

Routes of administration: Nose only inhalation

Results: Hamsters were exposed to a single concentration of 260 WHO fibres/ml specially prepared

RCF for 18 months and developed lung fibrosis, a significant number of pleural mesotheliomas

(42/102) but no primary lung tumours (McConnell et al 1995).

Method: Inhalation. Single dose

Species: Rat

Dose: RCF1: 130 F/ml and 50 mg/m³ (25% of non fibrous particles)

RCF1a: 125 F/ml and 26 mg/m³ (2% of non fibrous particles)

Routes of administration: Nose only inhalation

Results: Rats were exposed to RCF1 and RCF1a for 3 weeks. The objective of the study was to compare lung retention and biological effects of the original RCF1 compared to RCF1a. The main difference of these 2 samples was the non fibrous particle content of respectively 25% versus 2%. The post treatment observation was 12 months. Alveolar clearance was barely retarded after RCF1A exposure. After RCF1 exposure, however, a severe retardation of clearance was observed.

(Bellmann et al 2001) (*Source: publication*)

After intraperitoneal injection of ceramic fibres into rats in three experiments (Smith et al 1987, Pott et al 1987, Davis et al 1984), mesotheliomas were found in the abdominal cavity 6 in two studies, while the third report (Pott et al 1987) had incomplete histopathology. Only a few mesotheliomas were found in the abdominal cavity of hamsters after intraperitoneal

injection in one experiment (Smith et al 1987). However, the ceramic fibres tested were of relatively large diameter. When rats and hamsters were exposed via intraperitoneal injection, tumour incidence was related to fibre length and dose (Smith et al 1987, Pott et al 1987, Miller et al 1999, Pott et al 1989). (From SCOEL publication (EU Scientific Committee on Occupational Exposure Limits) publication SCOEL/SUM/165, October 2010)

- *Reproductive toxicity;*

Method:Gavage

Species:Rat

Dose: 250mg/kg/day

Routes of administration: Oral

Results: No effects were seen in an OECD 421 screening study. There are no reports of any reproductive toxic effects of mineral fibres. Exposure to these fibres is via inhalation and effects seen are in the lung. Clearance of fibres is via the gut and the faeces, so exposure of the reproductive organs is extremely unlikely.

- STOT-Single exposure: Not applicable
- STOT-Repeated exposure: Not applicable
- Aspiration hazard: Not applicable

IRRITANT PROPERTIES

Negative results have been obtained in animal studies (EU method B 4) for skin irritation. Inhalation exposures using the nose only route produce simultaneous heavy exposures to the eyes, but no reports of excess eye irritation exist. Animals exposed by inhalation similarly show no evidence of respiratory tract irritation. Human data confirm that only mechanical irritation, resulting in itching, occurs in humans, Screening at manufacturers' plants in the UK has failed to show any human cases of skin conditions related to fibre exposure.

12. Ecological information

These products are insoluble materials that remain stable overtime and are chemically identical to inorganic compounds found in the soil and sediment; they remain inert in the natural environment. No adverse effects of this material on the environment are anticipated.

13. Disposal considerations

13.1 WASTE TREATMENT

Waste containing > 0.1% RCF/ASW is categorized as a stable non-reactive hazardous waste according to Commission Decision 2000/532/EC, which can generally be disposed of at landfill sites licensed for this Purpose Unless wetted, such a waste is normally dusty and so should be properly sealed in clearly labelled containers for disposal. At some authorized disposal sites, dusty wastes may be treated differently in order to ensure they are dealt with promptly to avoid them being windblown. Please refer to the European list (Decision no 2000/532/CE as modified) to identify your appropriate European Waste Code (EWC) and ensure national and or regional regulation are complied with.

13.2 ADDITIONAL INFORMATION

When disposing of waste and assigning European Waste Code (EWC) any possible contamination during use will need to be considered and expert guidance sought as necessary.

14. Transport information

Not classified as dangerous goods under relevant international transport regulations (ADR, RID, IATA, IMDG).

Ensure that dust is not windblown during transportation.

Definitions:

ADR Transport by road, council directive 94/55/EC

IMDG Regulations relating to transport by sea

RID Transport by rail, Council Directive 96/49/EC

ICAO/IATA Regulations relating to transport by air

ADN European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

15. Regulatory information

15.1 Safety health AND ENVIRONMENT REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCES OR MIXTURES

EU regulations:

- Council Directive 67/548/EEC “on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances as modified and adapted to the technical progress” (OJEC L 196 of 16 August 1967, p.1 and its modifications and adaptations to technical progress).
- Council Directive 1999/45/EC of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations
- Regulation (EC) No 1907/2006 dated 18th December 2006 on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- Regulation (EC) No 1272/2008 dated 20th January 2009 on classification, labelling and packaging of substances and mixtures (OJ L 353)
- Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress for the 23rd time Council Directive 67/548/EEC (OJEC of 13 December 1997, L 343).
- Commission regulation (EC) No 790/2009 of 10 August 2009 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labeling and packaging of substances and mixtures. The 1st Adaptation to Technical Progress (ATP) to Regulation (EC) No 1272/2008 enters into force on 25 September 2009. It transfers the 30th and 31st ATPs of Directive 67/548/EEC to the Regulation (EC) No 1272/2008.

INTEGRATION OF RCF/ASW IN TO ANNEXE XV OF THE REACH REGULATION:

RCF are classified as a carcinogenic substance CLP 1B (See section 15 above). On the 13th of January 2010 ECHA updated the candidate list for authorisation (Annexe XV of the REACH regulation) and added 14 new substances in this list including aluminosilicate refractory ceramic fibres and zirconia aluminosilicate refractory ceramic fibres. As a consequence, EU (European Union) or EEA (European Economical Area) suppliers of articles which contain aluminosilicate refractory ceramic fibres and zirconia aluminosilicate refractory ceramic fibres 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.

RESTRICTION ON MARKETING OF RCF/ASW

Marketing and use of RCF/ASW is controlled by Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations as modified (21st amending, Directive 2001/41/EC, 19 June 2001) and is restricted to professional use only.

PROTECTION OF WORKERS

Shall be in accordance with several European Directives as amended and their implementations by the Member States:

- Council Directive 89/391/EEC dated 12 June 1989 “on the introduction of measures to encourage improvement in the safety and health of workers at work (OJEC (Official Journal of the European Community) L 183 of 29 June 1989, p.1).
- Council Directive 98/24/EC dated 7 April 1997 “on the protection of workers from the risks related to chemical agents at work” (OJEC L 131 of 5 May 1998, p.11).
- Council Directive 2004/37/EC of 29 April 2004 on the protection of workers from risks related to exposure to carcinogens mutagens and reprotoxics at work (OJEC L 158 of 30 April 2004).

OTHER EU REGULATIONS:

Member states are in charge of implementing European directives into their own national regulation within a period of time normally given in the directive. Member States may impose more stringent requirements. Please always refer to national regulations.

SOURCE OF REFERENCE FOR OELs:

UK: HSE EH40 Workplace Exposure Limit

France: Décret N°2007-1539 du 26 octobre 2007 fixant des valeurs limites d'exposition professionnelle contraignantes pour certains agents chimiques et modifiant le code du travail

Germany: Änderung und Ergänzung der Bekanntmachung GS 910 / TRGS 558 and TRGS 619,

15.2 CHEMICAL SAFETY ASSESSMENT

A Chemical Safety Assessment has been carried out for RCF/ASW and CSR can be provided on request.

16. Other information

USEFUL REFERENCES (the directives which are cited must be considered in their amended version)

- Hazards from the use of Refractory Ceramic Fibre. Health and Safety Executive: Information document, HSE 267 (1998).
- Working with High Temperature Insulation wools 2006;
- ECFIA; Code of Practice.
- Maxim LD et al (1998). CARE – A European programme for monitoring and reducing Refractory Ceramic Fibre dust at the workplace initial results; Gefahrstoffe – Reinhaltung der Luft, 58:3,97-103.
- Recognition and control of exposure to RCF, ECFIA, April 2009

ADDITIONAL INFORMATION AND PRECAUTIONS TO BE CONSIDERED UPON REMOVAL OF AFTER SERVICE MATERIAL

As produced, all Refractory Ceramic Fibres are vitreous (glassy) materials which, upon continued exposure to elevated temperatures (above 900°C), may devitrify. The occurrence and extent of crystalline phase formation is dependent on the duration and temperature of exposure, fibre chemistry and/or the presence of fluxing agents. The presence of crystalline phases can be confirmed only through laboratory analysis of the “hot-face” fibre.

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 mentioned “in making the overall evaluation, the Working Group noted that carcinogenicity in humans was not detected in all industrial circumstances studied...” As only a thin layer of the insulation (hot face side) is exposed to high temperatures, respirable dust generated during removal operations does not contain detectable levels of crystalline silica (CS). In applications where the material is heat soaked, duration of heat exposure is normally short and a significant devitrification allowing CS to build up does not occur. This is the case for waste mould casting for instance. Toxicological evaluation of the effect of the presence of CS in artificially heated RCF/ASW material has not shown any increased toxicity *in vitro*. The lack of toxicological effects may be explained by the following factors; Increased brittleness of fibres after service life, favours fast fibre translocation through macrophage. Microcrystals, including crystalline silica, are embedded in the glass structure of the fibre and are therefore not biologically available. The IARC evaluation as provided in Monograph 68 is not relevant as CS is not biologically available in after service RCF/ASW. High concentrations of fibres and other dusts may be generated when after-service products are mechanically disturbed during operations such as wrecking. Therefore ECFIA recommends:

- a) control measures are taken to reduce dust emissions;
- b) all personnel directly involved wear an appropriate respirator to minimise exposure; and
- c) Compliance with local regulatory limits.

CARE PROGRAMME

ECFIA, representing the high temperature insulation wool (HTIW) industry, has undertaken an extensive industrial hygiene programme to provide assistance to the users of all products containing HTIW.

The objectives are twofold:

- to monitor workplace dust concentrations at both manufacturers’ and customers’ premises.
- to document manufacturing and use of RCF products from an industrial hygiene perspective in order to establish appropriate recommendations to reduce exposures.

If you wish to participate in the CARE programme, contact ECFIA or your supplier.

NOTE

The directives and subsequent regulations detailed in this Safety Data Sheet are only applicable to the European Union (EU) Countries and not to countries outside of the E