SAFETY DATA SHEET

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

SDS Number: 1003 Date of first issue: 01 August 1995 Date of last revision: 21 February 2022

1 - Identification of product

1.1 - Identification of Product

Tradenames: Kaofil, Kaowool Mastic, Mastic F,

These products contain Refractory Ceramic Fibres (RCF)/Alumino-silicate wools (ASW) ((RCF/ASW)).
Index Number: 650-017-00-8 of Annex VI
CAS number: 142844-00-6
CAS Name: Refractories, fibres, aluminosilicate
Registration number: 01-2119458050-50-0002

1.2 - Use of Product

This product is used to fill gaps in refractory applications particularly fibre-based refractories. It is highly resistant to spalling and cracking and has also very good adhesive properties. Mastic could be used as seam filler, gap filler, caulking agent, patching repair material, lining material for launders, and so on. (Please refer to specific technical data sheet for more information)

• Primary Use: Manufacture of fibre (this use refers to the initial production of the fibre and is therefore not relevant to the downstream user)
• Secondary Use: Conversion into wet and dry mixtures and articles (refer to section 8)
• Tertiary Use: Installation, removal (industrial and professional) / Maintenance and service life (industrial and professional) (refer to section 8)

1.3 - Identification of Company

U.K.

THERMAL CERAMICS LIMITED
Tebay Road, Bromborough
Wirral, Merseyside CH62 3PH
Tel. : +44 (0) 151 334 4030
Fax : +44 (0) 151 334 1684

Website

www.morganthermalceramics.com
sds.tc@morganplc.com

1.4 - Emergency information

Tel: + 44 (0) 7931 963 973
Language: English
Opening hours: Only available during office hours

2 - Hazard 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 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 1st adaptation to Technical Progress of Regulation (EC) No 1272/2008 as published 10th August 2009, the classification as "irritant" has been removed for all types of manmade vitreous fibres (MMVFs).

2.2 - Labelling Elements

Component	Classification	Hazard pictogram & Symbol	H Statement
Refractory Ceramic Fibres (Alumino-silicate wools)	(EC)No. 1272/2008.	GHS 08	H350I

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

3.2 Mixture

These products in the form of mouldable mastics are made of refractory ceramic fibres. Once dried out, these products may generate dust.

COMPONENT	% by weight	CAS No.	REACH Registration Number	Hazard Classification according to CLP
Water	45-55	7732-18-5	Not yet available	Not classified as hazardous
Refractory Ceramic Fibre	20-25	142844-00-6	01-2119458050-50	Cat 1B Carcinogen (Lung, H350i)
Amorphous silica	10-20	7631-86-9	01-2119379499-16	Not classified as hazardous
Anionic acrylamide	<2	Not yet available	Not yet available	Not classified as hazardous
Propylene glycol	5-10	4254-15-3	Not yet available	Not classified as hazardous

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

4 - First-Aid measures

4.1 - Description of 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. Seek medical attention is irritation persists.

Nose and Throat

If these become irritated move to a dust free area, drink water and blow nose. Seek medical attention if irritation persists.

If symptoms persist, seek medical advice.

4.2 - Most Important symptoms and effects, both acute and delayed

No symptoms or effects expected either acute or delayed

4.3 - Indication of any immediate medical attention and special treatment required

No special treatment required, if exposure occurs wash exposed areas to avoid irritation.

5 - Fire-fighting measures

5.1 - Extinguishing media

Use extinguishing agent suitable for surrounding combustible materials.

5.2 - Special hazards arising from the substance or mixture

Non combustible products. However, virgin product binder may burn and produce gases and/or fumes.

5.3 - Advice for firefighters

Packaging and surrounding materials may be combustible.

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 damping the materials.
Do not flush spillage to drain and prevent from entering natural watercourses.
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 brushes are used, ensure that the area is wetted down first.
Do not use compressed air for clean up.
Do not allow to become windblown.

6.4 - Reference to other sections

For further information, please refer to sections 7 and 8

7 - Handling and storage

7.1 - Precautions for safe handling

Do not handle wet product with bare hands. The process or processes should be designed to limit the amount of handling. Regular good housekeeping will minimise secondary dispersal.

7.2 - Conditions for safe storage

Store in dry and cool condition. Always use sealed and clearly labelled containers. Avoid storage in temperature lower than +5°C (risk of solidification) or above +40°C. Avoid damaging the packaging and keep closed when not in use. Emptied containers, which may contain debris, should be cleaned 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 - Risk Management Measures / Exposures 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. Examples of exposure limits applying (in November 2014) in different countries are given below:

COUNTRY	RCF (fibre/ml)	Source
EU BOELV	0.3	Carcinogens and Mutagens Directive (DIRECTIVE 2004/37/EC)
Austria	0.3	Grenzwerteverordnung
Belgium	0.3	Valeurs limites d'exposition professionnelle – VLEP/ Grenswaarden voor beroepsmatige blootstelling – GWBB
Denmark	0.3	Grænseværdier for stoffer og materialer
Finland	0.2	Finnish Ministry of Social Affairs and Health
France	0.1	Institut National de Recherche et de Sécurité
Germany*	0.2*	TRGS 900
Hungary	*0.3*	*EüM-SZCSM rendelet*
Ireland	0.3	HAS – Ireland
Italy	0.3	Decree no. 44/20
Luxembourg	0.3	Agents Chimiques, Cancérigènes Ou Mutagènes Au Travail
Netherlands	0.3	SER
Norway	0.1	Veiledning om administrative normer for forurensning i arbeidsatmosfære
Poland	0.3	Dziennik Ustaw 2019
Spain	0.3	INSHT
Sweden	0.2	AFS 2005:17
Switzerland	0.25	SUVA - *Valeurs limites d'exposition aux postes de travail*
United Kingdom	0.3	EH40 / 2020

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

SCOEL (Scientific Committee on Occupational Exposure Limits) published a report in 2012 using all available data to set an OEL for RCF, because this substance is a fibre and its hazard is related to inhalation, this OEL is more appropriate than a modelled DNEL. The report concludes as follows:

Assuming a 45 years exposure the average cumulative exposures of 147.9 and 184.8 fmo/ml, respectively, result in an average fibre concentrations of 0.27 and 0.34 f/ml. Considering these values as no observed adverse effect levels SCOEL proposes an OEL of 0.3 f/ml.

Information on monitoring procedures

United Kingdom

MDHS 59 specific for MMVF: "Man-made mineral fibre - Airborne number concentration by phase-contrast light microscopy" and
MDHS 14/4 "General methods for sampling and gravimetric analysis of respirable and inhalable dust"

NIOSH

NIOSH 0500 "Particulates not otherwise regulate, total"
NIOSH 0600 "Particulates not otherwise regulate, respirable"
NIOSH 7400 "Asbestos and other fibres by PCM"

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

Table of Uses and Risk Management Measures (RMM):

Intended use	RMM - Hierarchy of Controls

Secondary use– Conversion into wet and dry mixtures and articles. Process would include: Mixing forming operations, handling of RCF/ASW products, assembly of RCF/ASW containing products, machine and hand finishing of RCF/ASW products. Reference ES 2	• Where it is practical to do so, automatically feed RCF/ASW in to the process • Where practical to do so, segregate dry and wet processing • Enclose the process where practically possible. • Where practical to do so, segregate machine areas and restrict access to operators involved in the process. • Enclose Machines as far as practically possible. • Install LEV where possible, when machine finishing, handling, compressing and hand cutting to remove dust at source • Employ experienced personnel – trained in the correct use of fibrous products • PPE and RPE used for all dusty tasks • Provide vacuum cleaner connection point to central system where practical or use a portable HEPA vacuum • Regular clean up – using a wet scrubbing unit where practically possible and in general a HEPA vacuum should be used. • Dry brushing and use of compressed air should be prohibited • Waste materials to be contained at source, labelled and stored separately for disposal or recycling.
Intended use	**RMM - Hierarchy of Controls**
Tertiary use - maintenance and service life (Industrial or professional use) Process: Small scale repairs involving removal and installation of RCF/ASW products. Use of the product in an enclosed system, where there is occasional control access or no access. Reference ES 3	• Use pre-cut, pre-sized pieces where practically possible. • Allow access only to trained (authorised) operators • Where practically possible, perform all hand cutting in a segregated area, on a down draft bench. • Clean up work area regularly during the shift using a HEPA equipped vacuum cleaner. • Prohibit use of dry brushing and compressed air cleaning. • Bag and seal waste immediately at source. • Use PPE and RPE appropriate to task. • Employ good hygiene practices.
Intended use	**RMM - Hierarchy of Controls**
Tertiary use - installation and removal (industrial or professional). Large scale removal and installation of RCF/ASW from Industrial processes. Large scale removal and installation by professionals. Reference ES 4	• Where practically possible enclose or segregate the work area. • Allow only authorised personnel. • Pre-wet insulation prior to removal where practically possible. • Where practically possible use a water lance for removal or vacuum-truck. • Use down draft bench for hand cutting products. • Cover pre-cut section during transport and storage to prevent secondary exposure. • Where practically possible provide multiple vacuum hoses for convenient cleanup of spillage or use portable HEPA filtered vacuums. • Bag waste materials immediately at source • Prohibit use of dry brushing and or compressed air cleaning. • Experienced personnel only • Use appropriate PPE and RPE appropriate to expected concentrations

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

Information on basic physical and chemical properties	Not applicable
State	White paste
Colour	Not applicable
Odour	None
Odour threshold	Not Applicable
pH	7-10
Melting point/freezing point	Not determined
Initial boiling point and boiling point range	Not applicable
Flash point	Not applicable
Evaporation rate	Not Applicable
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits	Not applicable
Vapour pressure	20 mm Hg
Vapour density	Not Applicable
Relative density	1.2 - 1.4 kg/dm³ (wet)
Solubility(ies)	slight
Partition co-efficient: n-octanol/water	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Not Applicable
Viscosity	Not Applicable
Particle Characteristics	Not applicable
Explosive properties	Not applicable
Oxidising properties	Not applicable

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

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 gases and fumes have disappeared. Avoid exposure to high concentrations of gas or fumes.

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 begins to transform to mixtures of crystalline phases. For further information please refer to Section 16.

11 - Toxicological information

Toxicokinetics, metabolism and distribution

11.1.1 Basic toxicokinetics
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.

11.1 - Information on hazard classes as defined in Regulation (EC) No 1272/2008

- 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 possible to obtain acute toxicity information due to the nature of the substance

- Serious eye damage/irritation:
Not possible to obtain acute toxicity information due to the nature 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
Routes of administration: In suspension
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) was 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), 6 mesotheliomas were found in the abdominal cavity 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)

- 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.

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12 - Ecological information

12.1 - Toxicity

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.

12.2 - Persistence and degradability

Not established

12.3 - Bioaccumulative potential

Not established

12.4 - Mobility in soil

No information available

12.5 - Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent and very bioaccumulative (vPvB).

12.6 - Endocrine Disrupting Properties

No additional information available

12.7 - Other adverse effects

13 - Disposal Considerations

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 insure 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.

14 - Transport information

14.1. UN number
Not Applicable

14.2. UN proper shipping name
Not Applicable

14.3. Transport hazard class(es)
Not Applicable

14.4. Packing group
Not Applicable

14.5. Environmental hazards
Not Applicable

14.6. Special precautions for user
Not Applicable

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not Applicable

15 - Regulatory information

15.1 - Safety health and environment regulations/legislation specific for the substances or mixtures

EU regulations:

- 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)
- Annex of Regulation (EU) 2015/830
- 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, labelling and packaging of substances and mixtures.
- The 1st Adaptation to Technical Progress (ATP) to Regulation (EC) No 1272/2008 entered into force on 25 September 2009.
- Directive 2004/37/EC dated 29th April 2004 on Carcinogens and Mutagens Directive (CMD)

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.

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

(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.
Micro crystals, 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.

The trade association representing the European high temperature insulation wool industry (ECFIA) has undertaken an extensive hygiene programme for High Temperature Insulation Wool (HTIW). The objectives are twofold: (i) to monitor workplace dust concentrations at both manufacturers' and customers' premises, and (ii) to document manufacturing and use of HTIW products from an industrial hygiene perspective in order to establish appropriate recommendations to reduce exposures. The initial results of the programme have been published. If you wish to participate in the CARE programme, contact ECFIA or your Thermal Ceramics' supplier.

ECFIA recommends that this fibre should not be used for spraying

For more information connect to:
The Morgan Thermal Ceramics' website: (http://www.morganthermalceramics.com/)
Or ECFIA's website: (http://www.ecfia.eu)

Revision Summary

Update to Section 8

Technical data sheets

For more information on individual products please see the relevant technical data sheet available from http://www.morganthermalceramics.com/downloads/datasheets