MATERIAL SAFETY DATASHEET

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

MSDS Number: 605 Date of first issue: 01 August 1994 Date of last revision: 04 November 2013

1 - Identification of product

1.1 - Identification of Product

Firecrete 2400, Firecrete 2400G, Firecrete 2400HS, Firecrete 3X, Firecrete 3X-G, Firecrete 3X-V, Firecrete 4X, Firecrete 5X, Firecrete 5XTG, Firecrete 95, Firecrete 97, Firecrete C2, Firecrete HT, Firecrete HT-G, Firecrete STD, Firecrete STD LI, Firecrete STD LI-G, Tecnocast 40, Tecnocast 40IS, Tecnocast 42ER, Tecnocast 44, Tecnocast 46, Tecnocast 47, Tecnocast 52LI, Tecnocast 94 IS, Tecnocast 94C, Tecnocast 97,

The above mentioned products are dense concretes.

1.2 - Use of Product

Application as high temperature processing, lining of industrial furnaces, thermal insulation of kilns, etc… (Please refer to specific technical data sheet for more information).

1.3 - Identification of Company

U.K. THERMAL CERAMICS LIMITED
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marketing.tc@morganplc.com

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
Not applicable
2.1.2 CLASSIFICATION ACCORDING TO DIRECTIVE 1999/45/EC
Not applicable

2.2 - Labelling Elements

Not applicable

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.

CHRONIC EFFECTS FOR CRYSTALLINE SILICA
These products may contain minimal amounts of crystalline silica. Prolonged/repeated inhalation of respirable crystalline silica dust may cause delayed lung injury (silicosis).
IARC (International Agency for Research on Cancer) states that there is "sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the form of quartz or cristobalite from occupational sources to classify crystalline silica as carcinogenic to humans (Group 1)". (Monograph V 68)
In making the overall evaluation the Working Group noted however that carcinogenicity in humans was not detected in all industrial circumstances studied.

3 - Composition / Information On Ingredients

DESCRIPTION

These products are hydraulic-setting dense concretes.

Composition

COMPONENT	%	CAS Number	Index number	REACH Registration Number
Alumina	0-90	1344-28-1	Not Applicable	Not yet available
Alumino silicate	0-90	1318-02-1	Not Applicable	Not yet available
Cement	<20	65997-16-2	Not Applicable	Not yet available
Clay	0-10	1332-58-7	Not Applicable	Not yet available
Silica amorphous	0-40	7631-86-9	Not Applicable	Not yet available
Other inert material	<5	Not Applicable	Not Applicable	Not yet available

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

4 - First-Aid measures

4.1 - Skin

In case of skin irritation rinse affected areas with water and wash gently. Do not rub or scratch exposed skin.

4.2 - Eyes

In case of eye contact flush abundantly with water; have eye bath available. Do not rub eyes. Seek medical attention is irritation persists.

4.3 - 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.

5 - Fire-fighting measures

Non-combustible products,
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

Provide the workers with appropriate protective equipment until the situation is restored to normal (see section 8).

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.
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.

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
Avoid damaging packaging.
Recyclable cardboard and/or plastic films are recommended for packaging.

7.3 - SPECIFIC END USE

Please refer to your local Morgan Thermal Ceramics' supplier.

8 - Risk Management Measures / Exposures Controls / Personal Protection

Industrial hygiene standards and occupational exposure limits vary between countries and local jurisdictions. Check which exposure levels apply to your facility. 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 for respirable dust (in January 2002) are given below:

	EXPOSURE LIMIT*				
COUNTRY	**Respirable Dust**	**Crystalline silica**	**Quartz**	**Cristobalite**	**SOURCE**
Germany	3 mg/m3 or 6 mg/m3		0.15 mg/m3	0.15 mg/m3	TRGS 900,
France	5 mg/m3		0.10 mg/m3	0.05 mg/m3	Décret 97-331 du 10 avril 1997
U.K.	4 mg/m3	0.30 mg/m3			HSE - EH40

* *Gravimetric concentrations of respirable dust – 8-hour time weighted average.*

8.2 - EXPOSURE CONTROLS

8.2.1 APPROPRIATE ENGINEERING CONTROLS
Review your applications in order to identify potential sources of dust exposure.
Local exhaust ventilation, which collects dust at source, can be used. For example down draft tables, emission controlling tools and materials handling equipment.
Keep the workplace clean. Use a vacuum cleaner fitted with a HEPA filter. Avoid brushing and compressed air.

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:
Use of gloves and work clothes is recommended.
Soiled clothes should be cleaned before being taken off (e.g. use vacuum cleaning, not compressed air).

Eye protection:
As necessary wear goggles or safety glasses with side shields.

Respiratory protection:
For dust concentrations below the exposure limit value, RPE is not required but FFP2 respirators may be used on a voluntary basis.
For short-term operations where excursions are less than ten times the limit value use FFP2 respirators.
In case of higher concentrations or where the concentration is not known, please seek advice from your company and/or local Thermal Ceramics' supplier.

INFORMATION AND TRAINING OF WORKERS
Workers should be trained on good working practices and informed on applicable local regulations

8.2.3 - Environmental Exposure Controls

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

APPEARANCE	Grey Powder
RELATIVE DENSITY	1.5 - 3 g/cm³
SOLUBILITY	Not applicable
ODOUR	None
MELTING POINT	> 1260 - 1800°C depending on product
pH	Not applicable
LENGTH WEIGHTED GEOMETRIC MEAN DIAMETER	Not applicable

10 - Stability and Reactivity

10.1 - Reactivity

The material is stable and non reactive.

10.3 - Possibility of Hazardous Reactions

None

10.4 - Conditions to Avoid

Please refer to handling and storage advice in Section 7

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

11.1 - TOXICOKINETICS, METABOLISM AND DISTRIBUTION

11.1.1 BASIC TOXICOKINETICS
As manufactured, these products may contain a minimal amount of crystalline silica.
Exposure is predominantly by inhalation or ingestion, available toxicological information is as follows:

11.1.2 Human Toxicological data
Epidemiology for crystalline silica
Prolonged/repeated inhalation of respirable crystalline silica dust may cause delayed lung injury (silicosis).
In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystalline silica from occupational sources inhaled in the form of quartz or cristobalite is carcinogenic to humans (Group 1) [IARC Monograph; vol.68; June 1997]. However, in reaching its conclusion, IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g., cigarette smoking) or distribution of its polymorphs.

11.2 - INFORMATION ON TOXICOLOGICAL EFFECTS

Experimental studies for crystalline silica
Animals exposed to very high concentrations of crystalline silica, artificially or by inhalation, have reported fibrosis and tumours (IARC Monographs 42 and 68).
Inhalation and intratracheal installation of crystalline silica in rats caused lung cancer. However, studies in other species such as mice and hamsters caused no lung cancer. Crystalline silica also caused fibrosis in rats and hamsters in several inhalation and intratracheal installation studies.

ACUTE TOXICITY
Lethal dose 50 % (LD50) / lethal concentration 50% (LC50): N.A.

12 - Ecological information

These products are inert materials that remain stable overtime.
No adverse effects of this material on the environment are anticipated.

13 - Disposal Considerations

WASTE TREATMENT

Waste from these materials may be generally disposed off at a landfill, which has been licensed for this purpose. Please refer to the European list (Decision N° 2000/532/CE as modified) to identify your appropriate waste number, and insure national and/or regional regulations are complied with.

Unless wetted, such a waste is normally dusty and so should be properly sealed in containers for disposal. At some authorised disposal sites, dusty waste may be treated differently in order to ensure they are dealt with promptly to avoid them being windblown. Check for any national and/or regional regulations, which may apply.

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

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 (OJ L 200 of 30.7.1999)
- 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, labelling 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.

PROTECTION OF WORKERS
Shall be in accordance with several European Directives as amended and their implementations by the Member States:
a) Council Directive 89/391/EEC dated 12 June 1989 "on the introduction of measures to encourage improvements in the safety and health of workers at work" (OJEC (Official Journal of the European Community) L 183 of 29 June 1989, p.1).
b) Council Directive 98/24/EC dated 7 April 1998 "on the protection of workers from the risks related to chemical agents at work" (OJEC L 131 of 5 May 1998, p.11).

OTHER POSSIBLE 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 any national regulation.

Chemical Safety Reports have been requested from suppliers, as soon as this information is available it will be shared with downstream users.

16 - Other Information

useful references

(the directives which are cited must be considered in their amended version)
- Council Directive 89/391/EEC dated 12 June 1989 "on the introduction of measures to encourage improvements in the safety and health of workers at work" (OJEC L 183 of 29 June 1989, p.1).
- 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).
- Council Directive 98/24/EC of 7 April 1998 "on the protection of the health and safety of workers from the risks related to chemical agents at work" (OJEC L 131 of 5 May 1998, p11).

precautionary measures

Additional information and precautions to be considered upon removal of after service material

Continuous use of these products at temperatures above 900°C may, as with many other refractories, lead to the formation of cristobalite (a type of crystalline silica).
Please refer to sections 2, 11 and to national regulation on crystalline silica.

High concentrations of dusts may be generated when after-service products are mechanically disturbed during operations such as wrecking. Therefore Morgan Thermal Ceramics 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.