

SAFETY DATA SHEET

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

SDS Number: MK201 Date of first issue: 01 December 2010 Date of last revision: 21 February 2022

1 - Identification of product

1.1 - Identification of Product

Tradenames: Flexible Min-K F150, Flexible Min-K F182, Flexible Min-K F183, Flexible Min-K F282, Flexible Min-K F351, Flexible Min-K F382,

The above-mentioned products are articles containing various forms of mineral wools and other substances.

Index Number: None assigned

CAS number: None assigned

Registration number: None assigned

1.2 - Use of Product

These products are used as high temperature thermal insulation in aerospace, automotive, nuclear and fire protection applications.

1.3 - Identification of Company

IDENTIFICATION OF THE MANUFACTURER/SUPPLIER

Morgan Advanced Materials
 Thermal Ceramics
 30-36 Birralee Road, Regency Park, SA 5010, Australia
 Telephone: 1800 467 858
 Fax: 1800 467 850

Website

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

1.4 - Emergency information

EMERGENCY CONTACT NUMBER

Tel 1: +91 (4172) 244 313 extn no. 215 or 201
 Language: English

Opening hours: Only available during office hours

2 - Hazard Identification

2.1 - Classification of the substance/ mixture

2.1 CLASSIFICATION OF THE SUBSTANCE/MIXTURE *applies only to mix F150

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

Mineral wools (glass, rock and slag wool) included in these products have been classified under Regulation no. 1272/2008 as a category 2 carcinogen ("substance which cause concern for man owing to possible carcinogen effects") due to the absence of toxicological data allowing to exonerate these fibres under note Q of the Directive.

2.2 - Labelling Elements

No labelling required as product is considered an article under REACH and CLP regulations.

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.

Titanium dioxide powder is classified under REACH as a category 2 carcinogen. However, IARC has classified titanium dioxide as possibly carcinogenic in humans (Group 2B).

3 - Composition / Information On Ingredients

3.2 Mixture

These boards and shapes combine high temperature insulating properties and very low thermal conductivity and can be used particularly where conditions impose low weight and space constraints at high temperature.

| COMPONENT | % | CAS NUMBER | REACH Registration Number | Classification according to CLP |
|------------------------------|---------|------------------------|---------------------------|---------------------------------|
| Amorphous silica | 40 - 80 | 112945-52-5 or similar | Not yet available | not classified as hazardous |
| E-glass filament | 0 - 10 | 65997-17-3 | Not applicable | not classified as hazardous |
| Glasswool (1) | 0 - 10 | 65997-17-3 | Not yet available | cat 2 carcinogen (H351) |
| High Silica Glass Fibres (2) | 0 - 20 | Not applicable | Not applicable | not classified as hazardous |
| Titanium dioxide (3) | 0 - 20 | 1317-80-2 | N.A. | cat 2 carcinogen (H351) |
| AES fibres | 0 - 10 | 436083-99-7 | 01-2119457644-32-0000 | not classified as hazardous |
| Silicon carbide | 0 - 30 | 409-21-2 | Not yet available | not classified as hazardous |

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

(1) Only in Mix F150

(2) Only in mixes F182, F282, F351 and F382

(3) Not in mix F351;

* CAS definition: Alkaline earth silicate (AES) consisting of silica (50-82 wt%), calcia and magnesia (18-43 wt%), alumina, titania and zirconia (less than 6 wt%), and trace oxides

4 - First-Aid measures

Skin

In case of skin irritation 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 if 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,

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 the workers with appropriate protective equipment as detailed in section 8. 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.
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

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 a dry area.
Always use sealed and clearly labelled containers.
Avoid damaging containers.
Reduce dust emission during unpacking.

7.3 - Specific end use

Please refer to your local Morgan Thermal Ceramics' supplier.

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 national OELs (November 2014) are given in the table below.

| COUNTRY | Total Dust (mg/m ³) | Resp Dust (mg/m ³) | MMMF (fibre/ml) | Source |
|-------------|---------------------------------|--------------------------------|-----------------|---|
| Austria | 10 | 6 | 1 | Grenzwerteverordnung |
| Belgium | 10 | 3 | 1 | Valeurs limites d'exposition professionnelle – VLEP/ Grenswaarden voor beroepsmatige blootstelling – GWBB |
| Denmark | 10 | 5 | 1 | Grænseværdier for stoffer og materialer |
| Finland | No limit | No limit | 1 | Finnish Ministry of Social Affairs and Health |
| France | 10 | 5 | 1 | Institut National de Recherche et de Sécurité |
| Germany | 10 | 1.25 | No Limit | TRGS 900 |
| Hungary | No limit | No limit | 7 | EüM-SZCSM rendelet |
| Ireland | 10 | 4 | 1 | HAS – Ireland |
| Italy | 10 | 3 | 1 | Uses EU values |
| Luxembourg | 10 | 6 | 1 | Agents Chimiques, Cancérigènes Ou Mutagènes Au Travail |
| Netherlands | 10 | 5 | 1 | SER |
| Norway | 10 | 5 | 0.5 | Veiledning om administrative normer for forurensning i arbeidsatmosfære |
| Poland | No limit | No limit | 2 | Dziennik Ustaw 2010 |
| Spain | 10 | 3 | 1 | INSHT |
| Sweden | 10 | 5 | 1 | AFS 2005:17 |
| Switzerland | 10 | 6 | 1 | SUVA - Valeurs limites d'exposition aux postes de travail |
| UK | 10 | 4 | 2 | EH40/2005 |

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 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. 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:

Wear gloves and work clothes, which are loose fitting at the neck and wrists. Soiled clothes should be cleaned to remove excess fibres before being taken off (e.g. use vacuum cleaner, not compressed air). Wash work clothes separately from other clothing.

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

Information on basic physical and chemical properties

| | |
|---|--|
| State | Not applicable |
| Colour | Quilted blanket or tape |
| Odour | Not applicable |
| Odour threshold | Slight |
| pH | Not Applicable |
| Melting point/freezing point | Not applicable |
| Initial boiling point and boiling point range | Not determined |
| Flash point | Not applicable |
| Evaporation rate | Not applicable |
| Flammability (solid, gas) | Not Applicable |
| Upper/lower flammability or explosive limits | Not applicable |
| Vapour pressure | Not applicable |
| Vapour density | Not applicable |
| Relative density | Not Applicable |
| Solubility(ies) | Not soluble in water |
| Partition co-efficient: n-octanol/water | Not applicable |
| Auto-ignition temperature | Not applicable |
| Decomposition temperature | Not Applicable |
| Viscosity | Not Applicable |
| Other safety information | No further relevant information available. |
| Particle Characteristics | Not applicable |
| Explosive properties | Not applicable |
| Oxidising properties | Not applicable |

10 - Stability and Reactivity

10.1 - Reactivity

The material is stable and non reactive.

10.2 - Chemical Stability

The product 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

None

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 AES have not been shown to migrate from the lung and/or gut and do not become located in other organs of the body

Fibres contained in the products listed in the title have been designed to be rapidly cleared from lung tissue. This low biopersistence has been confirmed in many studies on AES using EU protocol ECB/TM/27(rev 7). When inhaled, even at very high doses, they do not accumulate to any level capable of producing a serious adverse biological effect.

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

EXPERIMENTAL STUDIES FOR AES WOOL

In lifetime chronic studies there was no exposure-related effect more than would be seen with any "inert" dust. Subchronic studies at the highest doses achievable produced at worst a transient mild inflammatory response. Fibres with the same ability to persist in tissue do not produce tumours when injected into the peritoneal cavity of rats.

Experimental Studies for Mineral Wools

Animal inhalation studies on mineral wools showed neither pulmonary fibrosis nor lung cancer nor mesothelioma. Intratracheal and intraperitoneal injection studies did not show any disease except those involving selected fine glass fibres for special uses or experimental rock wools.

Experimental Studies for Titanium Dioxide

Titanium dioxide was reclassified by the IARC in 2006 as a "possibly carcinogenic to humans (Group 2B)". The classification was based on sufficient evidence in experimental animals but inadequate evidence in humans for the carcinogenicity of titanium dioxide. IARC indicated in the monograph that "the studies do not suggest an association between occupational exposure to titanium dioxide as it occurred in recent decades in Western Europe and North America and risk for cancer." (IARC Monograph volume 93.)

When tested using approved methods (as listed in Regulation (EC) 1907/2006, Annex 8, Section 8.1), fibres contained in this material give negative results. All man-made mineral fibres, like some natural fibres, can produce a mild irritation resulting in itching or rarely, in some sensitive individuals, in a slight reddening. Unlike other irritant reactions this is not the result of allergy or chemical skin damage but is caused by mechanical effects.

12 - Ecological information

12.1 - Toxicity

These products are inert materials that remain stable overtime.
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

13.1 - Disposal Considerations

14 - Transport information

14.1 - 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 - Regulatory information

The fibres contained in this product have been tested for bio persistence according to Note Q requirements under European Classification, Labelling and Packaging Regulations (EC/1272/2008) and its subsequent amendments.

Based on these results they are exonerated from classification as carcinogens in Europe and Australia.

16 - Other Information

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

16.2 - uses advised against

16.3 - NOTE

This Safety Data Sheet was originally produced in English and has subsequently been translated in to other languages; whilst every effort has been made to make this an accurate translation, please be aware that technical terms do not always translate correctly. The English version should always be considered as the reference version.

16.4 - Further Information

FURTHER INFORMATION

Further information can be found on

<http://www.morganthermalceramics.com/>

<http://www.ecfia.eu/>

<http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/workplace-exposure-standards-airborne-contaminants>

16.5 - Technical Datasheets

16.6 - Revision Summary

Content checked and revision date updated

16.7 - NOTICE

The information presented herein is based on data considered to be accurate as of the date of preparation of this Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by the vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.