

MATERIAL SAFETY DATASHEET

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

MSDS Number: 401 Date of first issue: Date of last revision: 05/02/2013

1 - Identification of product**1.1 - Identification of Product**

1260 Wet Felt, 1400 Wet Felt, Felt 1260 (soft), Felt 1400 (soft), Kaowool Paper, Kaowool Paper 1260, Kaowool Paper 1350, Kaowool Paper 1400, Kaowool Wet Felt, Paper AZS, Paper STD, SC Paper 1260, SC Paper 1260 I, UniFelt,

These products contain Refractory Ceramic Fibres (RCF)/Alumino-silicate wools (ASW) ((RCF/ASW)).

CAS number: 142844-00-6

CAS Name: Refractories, fibres, aluminosilicate

1.2 - Use of Product

Use of the products is restricted to professional users for application as thermal insulation, heat shields, heat containment, gaskets and expansion joints at temperatures up to 1400°C in industrial furnaces, ovens, kilns, boilers and other process equipment and in the aerospace and automotive industries. Products are not intended for direct sale to the general public

1.3 - Identification of Company

IDENTIFICATION OF THE MANUFACTURER/SUPPLIER

Murugappa Morgan Thermal Ceramics Ltd.,
Plot No: 26 & 27, SIPCOT Industrial complex,
Ranipet, Vellore District, Tamil Nadu, India
Pin: 632403

Murugappa Morgan Thermal Ceramics Ltd.,
Plot No: 681, Motibhoyan Village,
Sanand-Kalol state Highway, Kalol Taluk,
Gandhi Nagar District, Gujarat, India

Website : www.morganthermalceramics.com

Email : marketing.tc@morganplc.com

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

The International Agency for Research of Cancer (IARC), a scientific entity depending from the World Health Organization (WHO), has evaluated the possible health effect of RCF as follows :

- There is inadequate evidence in humans for the carcinogenicity of Refractory Ceramic Fibres.
- There is sufficient evidence in experimental animals for the carcinogenicity of refractory ceramic fibres.

IARC Overall evaluation: Refractory Ceramic Fibres are possibly carcinogenic to humans (group 2B)

This product is classified as hazardous according to the criteria of Safe Work Australia (SWA).

2.2 - Labelling Elements

The label used for all MTC RCF products has been designed in line with the GHS labelling requirements and MTC policy. Classification used to identify the type of GHS labelling is the EU classification system CLP 1b.

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)

In Australia RCF is classified with the following R & S phrases

Risk Phrase

R49 May cause cancer by inhalation

Safety Phrases

S53 Avoid exposure-obtain special instruction before use

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Refer to Safe Work Australia Code of Practice for SMF, [NOHSC: 2006 (1990)].

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

These articles are papers and felts made of acrylic bonded refractory ceramic fibres.

Composition

COMPONENT	%	CAS NUMBER
Refractory Ceramic Fibre	70-98	142 844-00-6
Acrylic binder	2-15	N.A.

Composition:

* CAS definition: Chemical composition of Refractory ceramic fibres (RCF/ASW): SiO₂ 45-60% - Al₂O₃ 28-55%, ZrO₂<18%

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

4 - First-Aid measures

4.1 - 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.

4.2 - Eyes

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

4.3 - 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, class of reaction to fire is zero.

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 brushing is used, ensure that the area is wetted down first.

Do not use compressed air for clean up.

Do not allow to be 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 for further information on safe use.

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 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 (January 2011) are given in the table below. Thermal Ceramics recommend that where no regulatory limits are in place customers follow the NIOSH recommendations as laid out below.

NIOSH - NIOSH Document: Occupational exposure to RCF (2006)

Recommended Exposure Level (REL) 0.5 f/ml (TWA)

If regular monitoring results show an average fibre level above 0.25 f/ml, NIOSH recommends to take further action to reduce workplace dust levels, with an ultimate target of achieving 0.2 f/ml. Full information on the recommendations can be found in NIOSH document, Criteria for a Recommended Standard: Occupational Exposure to Refractory Ceramic Fibers (2006), see section 16 for internet reference.

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 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 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 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 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 too 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

APPEARANCE	White/tan paper
BOILING POINT	Not applicable
FLASH POINT	Not applicable
AUTOFLAMMABILITY	Not applicable
OXIDISING PROPERTIES	Not applicable
SOLUBILITY	Less than 1 mg/l
PARTITION COEFFICIENT	Not applicable
ODOUR	None
FIBRE MELTING POINT	> 1650°C
FLAMMABILITY	Not applicable
EXPLOSIVE PROPERTIES	Not applicable
VAPOUR PRESSURE	Not applicable
pH	Not applicable
LENGTH WEIGHTED GEOMETRIC MEAN DIAMETER	1.3 - 4 µm

10 - Stability and Reactivity

CONDITIONS OR MATERIALS TO AVOID
None

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.

FUMES

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 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. 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 USA have demonstrated an absence of interstitial fibrosis and no decrement in lung function associated with current exposures among non smokers or ex smokers. A reduction of lung capacity among smokers has been identified.

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

The USA 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 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.

12 - Ecological information

These products are inert materials that remain stable over time.

These products are insoluble in the natural environment and are chemically identical to inorganic compounds found in the soil and sediment.

RCF/ASW is inorganic and a dense material, which will settle rapidly from both air and liquid.

No adverse effects of this material on the environment are anticipated.

13 - Disposal Considerations

To prevent waste materials from becoming airborne during waste storage, transportation and disposal, a covered container or plastic bagging is recommended.

Waste from these materials (even after use above 900°C) is not classified as hazardous waste and may generally be disposed of at a normal tipping site which has been licensed for the disposal of industrial waste. Taking into account any possible contamination during use, which may be classified as hazardous, expert guidance should be sought.

Such a waste is normally dusty (unless wetted) and so should be properly bagged and clearly labelled for disposal. At some tip sites dusty waste may be treated differently in order to ensure they are dealt with promptly and to avoid them being windblown. Check for national and /or regional regulations to identify all applicable disposal requirements.

14 - Transport information

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

Ensure that dust is not windblown during transportation.

UN Number None Allocated

DG Class None Allocated

Subsidiary risk(s) None Allocated

Packing Group None Allocated

Hazchem Code None Allocated

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

