



## **4 - First-Aid measures**

### **4.1 - Description of 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**

Wear suitable goggles, gloves and protective clothing.

### **6.2 - Environmental precautions**

Do not flush spillage to drain and prevent from entering natural watercourses.  
For waste disposal refer to section 13

### **6.3 - Methods and materials for containment and clean up**

Contain spillage, absorb in earth or sand and shovel into suitable containers

### **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 of dried product 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.  
Avoid freezing conditions and excessive heat, as properties may be impaired.  
Avoid damaging the packaging.  
Material supplied in plastic bucket.

### **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

Removing dried material after use may generate respirable dust.

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.

COUNTRY	EXPOSURE LIMIT* (Respirable Dust)	SOURCE
Germany	3 mg/m <sup>3</sup>	TRGS 900
France	5 mg/m <sup>3</sup>	Décret 97-331 du 10 avril 1997
U.K.	4 mg/m <sup>3</sup>	HSE - EH40

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

The short-term exposure limit (15-minute period) in the U.K. for the orthophosphoric acid is **2 mg/m<sup>3</sup>** (concentration of respirable dust) and in France is **1 mg/m<sup>3</sup>**.

### Information on monitoring procedures

#### 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:

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

Information on basic physical and chemical properties	Not applicable
State	Plastic mix of aggregates and fine powders
Colour	Not applicable
Odour	None
Odour threshold	Not Applicable
pH	2
Melting point/freezing point	> 1700°C
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	Not applicable
Vapour density	Not Applicable
Relative density	>2.4 T/m <sup>3</sup>
Solubility(ies)	Not applicable
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

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

Careful heat up of the product is essential to avoid rapid loss of the chemical combined water during heat up (see section 16).

### 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

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.

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

#### 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

### 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

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.

## 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 enters into force on 25 September 2009.

#### 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.

### 15.2 - Chemical Safety Assessment

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

(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)
- 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).

### RECOMMENDED HEATING PROCEDURE

Lining should be vented with 3 to 4 mm diameter holes on 150 mm centres to at least 65% of the depth of lining thickness. May be heated immediately after installation. If lining is to stand for more than 24 hours after installation, prevent from drying e.g. by covering loosely with polyethylene sheet. Raise to 110-130°C and hold for 6 hours (<300mm lining) or 24 hours (300-500mm lining) or until steam ceases. Raise to 550/600°C at 25°C per hour and hold for 6-8 hours. Raise to working temperature at 50°C per hour (<300 mm lining) or 25°C (300-500 mm lining). For linings thicker than 500 mm or installations greater than 30 tons, contact Thermal Ceramics. This information is only a guide. Please refer, for each product, to the defined commissioning schedules provided by Thermal Ceramics.

For more information connect to:

The Morgan Thermal Ceramics' website: (<http://www.morganthermalceramics.com/>)

Or ECFA's website: (<http://www.ecfa.eu>)

### Revision Summary

Amendments to sections 2, 3, 4, 5, 6, 8, 9, 12, 14, 15 and 16 to comply with new guidelines

### Technical data sheets

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

### NOTICE:

The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However safe as provided by law, 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 authorisation given or implied to practice any patented invention without a licence. 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 (however, this shall not act to restrict the vendor's potential liability for negligence or under statute).