SAFETY DATA SHEET

Following Regulation 1910.1200

SDS Number: 223 Date of first issue: 27 September 1994 Date of last revision: 21 February 2022

1 - Identification of product

a - Product identifier used on the label

Tradenames: Maftec, Pyro-Stack Modules, Unifelt Veneering Modules - 3000 - M

b - Other means of identification

POLYCRYSTALLINE PRODUCTS

c - Recommended use of the chemical and restrictions on use

High Temperature Thermal Insulation

d - Name, address, and telephone number

Morgan Advanced Materials
P. O. Box 923; Dept. 300
Augusta, GA 30903-0923
Telephone: 706-796-4200

e - Emergency Phone Number

For Product Stewardship and Emergency Information:
Hotline - 1-800-722-5681
Fax - 706-560-4054

For additional SDSs and to confirm this is the most current SDS for the product, visit our web page www.morganthermalceramics.com or send a request to MT.NorthAmerica@morganplc.com

2 - Hazard Identification

a - Classification of the chemical in accordance with paragraph (d) of §1910.1200

Not classified. Read the entire safety data sheet.

b - Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200

None.

Emergency Overview

c - Describe any hazards not otherwise classified that have been identified during the classification process

Mild mechanical irritation to skin, eyes and upper respiratory system may result from exposure.
These effects are usually temporary.

d - Mixture Rule

3 - Composition / Information On Ingredients

a - Composition table

COMPONENTS	CAS NUMBER	% BY WEIGHT
Mullite (Fibrous Forms)	1302-93-8	100

Note: (Mullite fiber may also be identified by various CAS numbers: 1344-28-1 (fibrous forms of Aluminium Oxide) or CAS number 675106-31-7 as PCW.

b - Common Name

(See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines)

d - Impurities and Stabilizing Additives

Not applicable.

4 - First-Aid measures

a - Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion

Eyes

Flush with large amounts of water for at least 15 minutes. Do not rub eyes.

Skin

Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.

Respiratory Tract

Remove affected person to clean fresh air. Drink water to clear throat, and blow nose to remove dust.

Gastrointestinal

Do not induce vomiting; drink plenty of water.

c - Indication of immediate medical attention and special treatment needed, if necessary

5 - Fire-fighting measures

a - Suitable (and unsuitable) extinguishing media and

Use extinguishing media suitable for type of surrounding fire

c - Special Protective Equipment and Precautions for Firefighters

NFPA Codes: Flammability: 0 Health: 1 Reactivity: 0 Special: 0

b - Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

None

6 - Accidental Release Measures

a - Personal precautions, protective equipment, and emergency procedures

Avoid creating airborne dust. Provide workers with respirators, if necessary (See Section 8). Follow routine housekeeping procedures. Where possible, use a HEPA vacuum to clean up the spilled material. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Avoid clean-up procedures that could result in water pollution.

b - Methods and materials for containment and cleaning up

Pick up large pieces and dispose in a closed container. Follow precaution stated in above section for clean up.

7 - Handling and storage

a - Precautions for safe handling

Limit the use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

b - Conditions for safe storage, including any incompatibilities

Store in a manner to minimize airborne dust.

c - empty containers

Product packaging may contain residue. Do not reuse.

8 - Risk Management Measures / Exposures Controls / Personal Protection

a - OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available

EXPOSURE GUIDELINES			
MAJOR COMPONENT	***OSHA PEL***	***ACGIH TLV***	***MANUFACTURER'S REG***
Mullite (Fibrous Forms)	15 mg/m^3 (total dust) 5 mg/m^3 (respirable dust)	Not Established	0.5 f/cc*
*Recommended exposure guideline (REG) for respirable fibers as an 8 hour time weighted average (TWA) exposure, based on air samples collected and analyzed using NIOSH method 7400(B).			
OTHER OCCUPATIONAL EXPOSURE LEVELS (OEL) 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.			

b - Appropriate Engineering Controls

Use engineering controls, such as ventilation and dust collection devices, to reduce airborne particulate concentrations to the lowest attainable level.

c - Individual protection measures, such as personal protective equipment

PPE - Skin

Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

PPE - Eye

Goggles/safety glasses with sideshields should be worn.

PPE – Respiratory

When it is not possible or feasible to reduce airborne fiber and dust levels below the PEL,OEL or REG through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should: 1) monitor for airborne dust concentrations using appropriate NIOSH analytical methods and select the respiratory protection based upon the results of that monitoring , 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH/MSHA approved respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment.

9 - Physical and chemical properties

a - Appearance	White odorless wool-like material
b -Odor	Not applicable
c - Odor Threshold	Not applicable
e- pH	Not applicable
d - Melting Point	>3600°F (2032°C)
f- Initial Boiling Point/Range	Not applicable
g- Flashpoint	Not applicable
h - Evaporation Rate	Not applicable
i - Flammability	Not applicable
j - Upper/Lower Flammability or Explosive Limits	Not applicable
k - VAPOR PRESSURE	Not applicable
l - VAPOR DENSITY	Not applicable
m - Solubility	Not soluble in water
n - Relative Density	3.0 - 3.5
o - Partition Coefficient: n-Octanol/water	Not applicable
p - Auto-ignition temperature	Not applicable
q - Decomposition Temperature	Not applicable
r - Viscosity	Not applicable

10 - Stability and Reactivity

a - Reactivity

None.

b - Chemical Stability

Stable under conditions of normal use.

c - Possibility of Hazardous Reaction

None

d - Conditions to Avoid

None

e - Incompatible Materials

None

f - Hazardous decomposition products

None

11 - Toxicological information

a - TOXICOKINETICS, METABOLISM AND DISTRIBUTION

A long-term inhalation test on rats exposed to excessive levels of Polycrystalline Mullite Fibers (Maftec®) has shown no evidence of carcinogenicity in animals.

Tumorigenic Data (based on Aluminum Oxide)
Intrapleural, rat: TLDo 90 mg/kg
Implant, rat: TDLo 200 mg/kg
Implant, rat: TD200 mg/kg

b - Acute Toxicity

c - Epidemiology

d - Toxicology

Lifetime rat inhalation studies in the rat on PCW fibers at the maximum levels achievable have shown no evidence of lung cancer, lung fibrosis or any other adverse effect, apart from a minimal pulmonary response typical of that of a 'low toxicity dust'.

Also, a lifetime feeding study in rats has produced no evidence of any adverse effects at levels up to 2.5 % in the diet.

Intraperitoneal, intratracheal and intrapleural studies in rats, together with two in vitro tests, all showed negative results whereas asbestos and crystalline silica which were used as positive controls (where relevant) produced positive responses.

International Agency for Research on Cancer and National Toxicology Program

IARC, NTP, and OSHA do not list Mullite fiber or PCW as a carcinogen.However, in 1988 IARC classified man-made mineral fibers as possible human carcinogens (2B) and, at that time, one of the PCWs (Saffil fiber) was included in this broad category of ceramic fiber carcinogenic classification.

12 - Ecological information

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.

c - Bioaccumulative potential

No bioaccumulative potential.

d - Mobility in soil

No mobility in soil.

e - Other adverse effects (such as hazardous to the ozone layer

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

13 - Disposal Considerations

Waste Management and Disposal

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

Additional information

This product, as manufactured, is not classified as a listed or characteristic hazardous waste according to U. S. Federal regulations (40 CFR 261). Any processing, use, alteration or chemical additions to the product, as purchased, may alter the disposal requirements. Under U. S. Federal regulations, it is the waste generator's responsibility to properly characterize a waste material, to determine if it is a "hazardous" waste. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

14 - Transport information

a - UN number.

Hazard Class: Not Regulated United Nations (UN) Number: Not Applicable
Labels: Not Applicable North America (NA) Number: Not Applicable
Placards: Not Applicable Bill of Lading: Product Name

b - UN proper shipping name

Not applicable.

c - Transport hazard class(es)

Not applicable.

d - Packing group, if applicable

Not applicable.

e - Environmental hazards (e.g., Marine pollutant (Yes/No))

No.

f - Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)

Not regulated.

g - Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises

Not applicable.

International

INTERNATIONAL
Canadian TDG Hazard Class & PIN: Not regulated
Not classified as dangerous goods under ADR (road), RID (train), IATA (air) or IMDG (ship).

15 - Regulatory information

15.1 - United States Regulations

UNITED STATES REGULATIONS
EPA: Superfund Amendments and Reauthorization Act (SARA) Title III – These products contain PCW, a form of aluminum oxide (fibrous forms) which is reportable under Section 313 (40 CFR 372). Sections 311 and 312 (40 CFR 370) apply (delayed hazard).

OSHA: Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication Standard.
TSCA: All substances contained in this product are listed in the TSCA Chemical Inventory [Section 8(b)]. PCW has been assigned a CAS number; however, as "article" by definition, it is not required to be listed on the TSCA inventory.

California: "Ceramic Fibers (airborne particles of respirable size)" are listed in Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986: Known to the State of California to cause cancer.
Other States: Ceramic fiber products are not known to be regulated by states other than California; however, state and local OSHA and EPA regulations may apply to these products. Contact your local agency if in doubt.

15.2 - International Regulations

INTERNATIONAL REGULATIONS
Canadian WHMIS: Class D-2A Materials Causing Other Toxic Effects
Canadian EPA: All substances in this product are listed, as required, on the Domestic Substance List (DSL).

16 - Other Information

initial statement

Devitrification

Product Stewardship Program

Morgan Thermal Ceramics has established a program to provide customers with up-to-date information regarding the proper use and handling of High Temperature Insdulation Wool, including Refractory Ceramic Fiber (RCF). In addition, Thermal Ceramics has established a program to monitor airborne fiber concentrations at customer facilities. If you would like more information about this program, please call your local supplier or the Product Stewardship Information Hotline listed at the front of this SDS.

Morgan Thermal Ceramics is a member of the HTIWC (High Temperature Insulation Wool Coalition).

In 2002, OSHA endorsed a five year voluntary product stewardship program called PSP 2002. On May 23, 2007, HTIW Coalition's predecessor, RCFC, and its member companies renewed this voluntary product stewardship agreement with OSHA. On April 16, 2012, HTIW Coalition renewed this agreement for a second time.

This new five year program, called PSP 2012, continues and builds upon the earlier programs. PSP 2012 is a highly acclaimed, multifaceted strategic risk management initiative designed specifically to reduce workplace exposures to Refractory Ceramic Fiber (RCF). For more information regarding PSP 2012, please visit **http://www.htiwcoalition.org**

HMIS HAZARD RATING

HMIS Health: 1*
HMIS Flammable: 0
HMIS Reactivity: 0

HMIS Personal Protective: To be determined by user

* See section 3 of the MSDS for possible chronic health effects.

TECHNICAL DATA SHEETS

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Revision Summary

Revision date updated.

MSDS prepared by

SDS Prepared By: MORGAN THERMAL CERAMICS ENVIRONMENTAL, HEALTH & SAFETY DEPARTMENT

Disclaimer

The information presented herein is presented in good faith and believed to be accurate as of the effective date of this Safety Data Sheet. Employers may use this SDS to supplement other information gathered by them in their efforts to assure the health and safety of their employees and the proper use of the product. This summary of the relevant data reflects professional judgment; employers should note that information perceived to be less relevant has not been included in this SDS. Therefore, given the summary nature of this document, Morgan Thermal Ceramics does not extend any warranty (expressed or implied), assume any responsibility, or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user.