Product Information Sheet

Saffil® Mats

DESCRIPTION

The Saffil® Mat product family is a group of high temperature, non-needled, thermally efficient, low density insulation mats manufactured from Saffil polycrystalline wool fibers that are designed for continuous use temperatures up to 1600°C (2912°F). Saffil fibers exhibit the highest degree of dimensional stability and chemical resistance out of Alkegen's high temperature insulating wool portfolio, and they are particularly suited for the most extreme heat processing applications and thermal management challenges.

Saffil Mats are virtually "shot" (unfiberized particles) free, making them an ideal candidate for applications where the presence of shot is undesirable. Saffil Mats are completely inorganic.

The high purity, "mullite" and "high alumina" chemical compositions of Saffil Blankets provides excellent chemical stability, as they are more resistant to fluxing by acids, concentrated alkalis, and general chemical attack than refractory ceramic fibers. Saffil 97 Mat (high alumina chemical composition) provides superior chemical stability and is particularly suited for use in highly reducing atmospheres and hydrogen furnace environments. If mat become wet by water or steam, the thermal and physical properties remain unaffected after drying.

GENERAL CHARACTERISTICS

Saffil® Mat products have the following outstanding characteristics:

- High temperature stability (up to 1600°C (2912°F))
- Resistance to chemical attack
- Exceptional insulating properties (Low Thermal Conductivity & Low Heat Storage)
- Virtually "shot" free
- Completely Inorganic
- Resistance to thermal shock
- Superior resiliency
- Light weight
- High vibration resistance

TYPICAL APPLICATIONS

- **Ferrous (Iron & Steel)**
  Continuous Annealing & Galvanizing Lines, Reheat Furnaces, Electric Arc Furnaces, Blast Furnaces, Forge Furnaces, Coke Ovens, Molten Metal Transfer Ladles & Preheat Stands

- **Ceramic & Glass**
  Porcelain Kilns, Technical Substrate Kilns, Refractory Production Kilns, Intermittent Kilns, Tunnel Kilns, Kiln Cars

- **Hydrocarbon Processing (Petrochemical & Refinery)**
  Cracking/Pyrolysis Furnaces, Fired Heaters, Reactor Vessels, Reformers

- **Aerospace**
  Heat Shields, High Temperature Seals, Ablative Shields

- **General Use & Other Industries**
  Hydrogen & Reducing Atmosphere Furnaces, Expansion Joints, Burner Block Wraps, Batten Strips, Aluminum Furnaces

Information on other applications is available upon request. Any new and/or special use of these products, whether in an application listed in our literature, is advised to be submitted to our Alkegen Application Engineering department for review and guidance on material selection.

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TYPICAL PRODUCT PARAMETERS

	Saffil 72 Mat	Saffil 97 Mat
Physical Properties		
Color	White	White
Classification Temperature*	1600°C (2912°F)	1600°C (2912°F)
Melting Point	> 1870°C (3400°F)	> 1870°C (3400°F)
Mean Fiber Diameter	3 - 4 Microns	3 - 4 Microns
Typical Fiber Index** (wt. %)	> 95%	> 99%

Chemical Properties		
Typical Chemical Analysis (wt. %)		
Al_2O_3	72	97
SiO_2	28	3
Trace Elements	< 0.5	< 0.5

Thermal Properties		
Thermal Conductivity (ASTM C201)		
Density, kg/m³ (lb/ft³)	24 (1.5)	35 (2.2)
Mean Temperature	Thermal Conductivity, W/m-K (Btu in/hr ft² °F)	
600°C (1112°F)	0.26 (1.8)	0.19 (1.3)
800°C (1472°F)	0.40 (2.8)	0.29 (2.0)
1000°C (1832°F)	0.56 (3.9)	0.39 (2.7)
1200°C (2192°F)	0.75 (5.2)	0.51 (3.5)

Permanent Linear Shrinkage (EN 1094-1)		
After 24 Hour Soak @ 1600°C (2912°F)	< 2.0%	< 4.0%

*The Classification Temperature is not a definition of the operational temperature use limit of these products, especially when long-term physical or dimensional stability is a factor. The classification temperature is the temperature at which irreversible linear shrinkage does not exceed a given value after a 24-hour heat soak test. For applications where long-term stability is not a requirement, products may be successfully used at temperatures well in excess of their Classification Temperature.

For continuous use applications requiring long-term stability, routine practice is to utilize materials in respect to their continuous use temperature. For polycrystalline wools, the Classification Temperature is also representative of it's Continuous Use Temperature. The Continuous Use Temperature is a recommended maximum operating temperature for the material usage under clean, oxidizing atmosphere conditions. For certain application conditions (specific chemical contaminants, reducing atmospheres, etc.), the Continuous Use Temperature may be reduced.

**Fiber Index is the amount of material (by weight %) that is fiber vs. "shot". Shot is globular grains of glass and is an undesired biproduct of the fiberization process. Saffil Mats have extremely high fiber index, yielding a very clean polycrystalline wool mat.

Data are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes. For assistance or further clarification, please contact your nearest Alkegen Application Engineering office.

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SIZE & AVAILABILITY

Saffil Mats are produced and distributed worldwide; the standard packaging, density, and thickness offerings are shown below. Variations featuring other dimensions may be obtainable upon inquiry. To obtain information on specific packaging options please reach out to your nearest Alkegen representative.

Saffil 72 Mat

Thickness, mm (in)	Width, mm (in)	Length, mm (ft)
50 (2)	1220 (48)	3810 (12.5)
50 (2)	305 (12)	1220 (4)

Saffil 97 Mat

Thickness, mm (in)	Width, mm (in)	Length, mm (ft)
35 (1.4)	610 (24)	14800 (48.56)

HEALTH AND SAFETY INFORMATION

A Material Safety Data Sheet has been issued describing the health, safety, and environmental properties of this product, identifying the potential hazards and giving advice on handling precautions and emergency procedures. This must be consulted and fully understood before handling, storage, or use.

The test data shown are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.

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Product Information Sheets are periodically updated by Alkegen. Before relying on any data or other information in this Product Information Sheet, you should confirm that it is still current and has not been superseded. A Product Information Sheet that has been superseded may contain incorrect, obsolete and/or irrelevant data and other information.

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