

Thermal Ceramics manufactures a complete line of refractory bulk fibers, each of which offers its own unique combination of properties. These bulk products are produced by varying composition, fiber length, compressed density, fiber content, fiber diameter, and lubricity to serve a wide range of customer needs.

Kaowool, the original Kaolin-based refractory fiber, is manufactured using high pressure air attenuation.

Kaowool High Purity, a high-purity blend of alumina and silica manufactured using high pressure air attenuation.

Cerafiber, a high-purity synthetic blend of alumina and silica, is manufactured using the melt spinning process as are all "Cera" fibers.

Cerachem is a bulk refractory fiber produced from an alumina-silica-zirconia composition designed to resist excessive shrinkage at elevated temperatures.

Cerachrome is a bulk refractory fiber produced from an alumina-silica-chromia composition which provides for a maximum use limit of 2600°F (1427°C).

Saffil is a 96% high-purity polycrystalline fiber that is manufactured by a unique solution process to control fiber diameter and non-fibrous material (shot content).

Engineered Fibers - Kaowool Enfil fibers are based on our extensive family of bulks. Value adding technology has been developed to allow Thermal Ceramics to tailor products to meet specific customer requirements. Fiber length, diameter, and surface treatment can be engineered as can the fiber content. Thermal Ceramics can work with you to produce a Kaowool Engineered Fiber to meet your unique requirements. The various grades of fibers can be engineered for applications in plastic reinforcement, metal matrix composites, and automotive applications.

Kaowool Bulk Fiber can be used as high-temperature loose fill or packing material in a variety of applications including expansion joint construction, furnace walls and base seals, low mass kiln car top construction, tube seal fabrication, and packing around hard refractory furnace components such as burner

blocks.

These products are also used in secondary processes such as felting, vacuum forming boards and shapes, and the manufacture of specialty papers, textiles, high-temperature adhesives and moldable products.

Thermal Ceramics bulk fibers offer a maximum temperature range of between 2300° and 3000°F (1260° to 1549°C). They also provide excellent chemical stability and resistance to chemical attack. Exceptions include hydrofluoric acid, phosphoric acids, and strong alkalis. If wet by oil or water, thermal and physical properties will be fully restored after drying.

Compared to other refractory materials, bulk fibers and products made from them are lightweight, resistant to thermal shock, and provide a low thermal conductivity.

The sound absorption capabilities of Thermal Ceramics bulk fibers are far superior than those of dense refractories or other insulating refractories.

Bulk Fiber

Product Information

Physical Properties	Kaowool	Kaowool HP	Cerafiber	Cerachem	Cerachrome	Saffil
Color	tan	white	white	white	blue/green	white
Maximum temperature rating, °F (°C)	2300 (1260)	2400 (1316)	2400 (1316)	2600 (1427)	2600 (1427)	3000 (1649)
Melting point, °F (°C)	3200 (1760)	3200 (1760)	3200 (1760)	3200 (1760)	3200 (1760)	3300 (1816)
Continuous use limit, up to °F (°C)	2000 (1093)	2150 (1177)	2150 (1177)	2400 (1316)	2500 (1371)	2800 (1538)
Specific gravity (ASTM C 135)	2.56	2.56	2.65	2.65	2.65	3.3
Specific heat, Btu/lb °F @ 1800°F (j/kg x K @ 982°C)	0.26 (1088.57)	0.26 (1088.57)	0.26 (1088.57)	0.26 (1088.57)	0.26 (1088.57)	0.25 (1046.7)
Fiber tensile strength, psi (kg/cm ²)	1.5 x 10 ⁶ (10,545)	—	—	—	—	2.9 x 10 ⁶ (20,387)
Fiber tensile modulus, psi (N/cm ²)	12.2 x 10 ⁶ (8.4 x 10 ⁶)	—	—	—	—	43 x 10 ⁶ (29.6 x 10 ⁶)

Chemical Analysis, (nominal, % weight basis after firing)

Alumina, Al ₂ O ₃	45	46-52	46	35	43	96
Silica, SiO ₂	53	48-54	54	50	54	4
Zirconia, ZrO ₂	—	—	—	15	—	—
Chromium oxide, Cr ₂ O ₃	—	—	—	—	3	—
Other	1 - 2	trace	trace	trace	trace	—

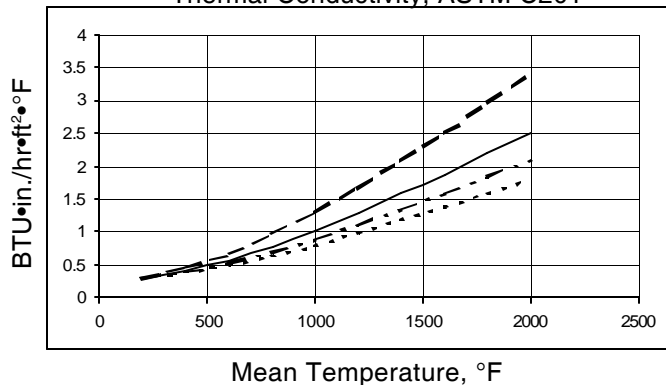
Available Forms

Available Forms	Grade	Fiber Index	Fiber Length	Fiber Lubrication	Standard Packaging*
Kaowool	BN	50	0.5 in. (avg)	unlubricated	50 lb bag
	88-60	50	4 in. (avg)	lubricated	50 lb bag
	A	50	4 in. (avg)	lubricated	50 lb bag
	HM-12	50	0.5 in. (max)	unlubricated	50 lb bag
	HM-25	50	1 in. (max)	unlubricated	50 lb bag
	HM-50	50	2 in. (max)	unlubricated	50 lb bag
Kaowool HP	HY	50	0.5 in. (avg)	unlubricated	50 lb bag
	HA	50	0.5 in. (avg)	unlubricated	50 lb bag
	A	50	4 in. (avg)	lubricated	50 lb bag
	VFS	50	0.05 in (avg)	unlubricated	40 lb bag
Cerafiber, Cerachem, Cerachrome	111	50	up to 10 in.	lubricated	40 lb bag
	112	50	up to 10 in.	unlubricated	40 lb bag
	HM-12	50	0.5 in. (max)	unlubricated	50 lb bag
	HM-25	50	1 in. (max)	unlubricated	50 lb bag
	HM-50	50	2 in. (max)	unlubricated	50 lb bag
	various	60 - 99	various	unlubricated	25 lb ctn
Engineered Fiber**	various	60 - 99	various	unlubricated	25 lb ctn
Saffil	—	99	up to 4 in.	unlubricated	22 lb bag

* Optional packaging for all products: 40, 50 lb bags, and 10, 25 lb cartons. Premium costs may apply to non-standard packaging.

** See your sales representative for information.

Thermal Conductivity, ASTM C201



The values given herein are typical average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Therefore, the data contained herein should not be used for specification purposes. Check with your Thermal Ceramics office to obtain current information.

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