



Thermal Ceramics Kaowool Millboard products are processed from a slurry consisting of Kaowool ceramic fibers, fillers and binders. The fiber raw material is Kaolin, a naturally occurring high-purity alumina-silica fireclay. Kaowool Millboard products are strong, thin, durable ceramic fiber based boards having a variety of high-temperature applications. Although these products were formulated and designed to replace asbestos millboard, their potential use extends into more conventional refractory fiber applications. Their use should be considered whenever there is a need for a thin, durable board with excellent insulating characteristics.

Kaowool Millboard Grade 830 was specifically designed for use in the iron and steel industry as a molten contact product. Kaowool Millboard Grade 830 has proven to be excellent for use as a one shot casting mold liner for both stools and ingot molds because of the unique combination of organic and inorganic binders. This 40 pcf (641 kg/m^3), 0.16" (4 mm) product produces an exceptionally smooth surface finish of cast metal pieces when compared to those surfaces produced by sand casting and other board products. Millboard products can be easily die cut into various shapes by the end user or can be supplied die cut to suit a specific application.

Features

- Asbestos replacement millboard
- Thin durable insulation and gasketing
- Easy to install
- Thickness tolerance of $\pm 0.0315"$ (0.7875 mm)
- Suitable for saw or die cutting
- Excellent backup insulation
- Grade 830 excellent for molten metal contact applications
- 2000°F to 2700°F (1482°C) use limits

Applications

Grade 822

- High-temperature gaskets
- High-temperature roll covering
- Fire protection
- Thermal barrier
- Backup insulation in rotary kilns

Grade 830

- One-shot casting mold liner for stools and ingot molds
- Molten metal contact applications in the iron and steel industries
- Molten metal contact applications in the non-ferrous industries
- High-temperature gaskets

Standard Sizes

	Nominal Thickness	Sheet Size	Sq/Ft Per Sheet (Sq/M)	Weight Per Sheet
Grade	in (mm)	in (cm)		lbs (kg)
822	1/8 (3.125)	27½ x 27½ (68.75 x 68.75)	5.25 (1.59)	3 (2.72)
	1/8 (3.125)	55 x 55 (137.5 x 137.5)	21 (6.36)	12 (5.45)
	¼ (6.25)	55 x 55 (137.5 x 137.5)	21 (6.36)	24 (10.9)
830	0.160 (4)	55 x 55 (137.5 x 137.5)	21 (6.36)	11 (5)

Special sizes and configurations are available upon request.

Physical Properties

	Grade 822	Grade 830
Color	white	tan
Nominal density, pcf (kg/m^3)	55 (881)	40 (641)
Maximum temperature rating, °F (°C)	2300 (1260)	2700 (1482) (one shot)
Continuous use limit, up to °F (°C)	2000 (1093)	2000 (1093)
Melting point, °F (°C)	3200 (1760)	3200 (1760)
Modulus of rupture, psi (Mpa)	650 - 750 (4.48 - 5.17)	400 - 500 (2.76 - 3.45)
Compressive strength, psi (Mpa)		
@ 5% deformation	50 - 75 (0.34 - 0.51)	–
@ 10% deformation	100 - 125 (0.69 - 0.86)	–
@ 15% deformation	250 - 300 (1.72 - 2.06)	–

Chemical Analysis (% fired basis)

	Grade 822	Grade 830
Alumina, Al ₂ O ₃	35	35
Silica, SiO ₂	63	65
Other	2	–
Loss on ignition, L.O.I.		
@ 1000°F (538°C)	5 - 7	12 - 15
Organic material	4 - 6	11 - 14
Moisture content, (max)	0.5	0.5

Thermal Conductivity, Btu•in./hr•ft²•°F ($w/m•k$) (ASTM C 201)

Mean temperature	Grade 822	Grade 830
@ 500°F (260°C)	0.80 (0.11)	0.53 (0.08)
@ 1000°F (538°C)	0.89 (0.13)	0.71 (0.10)
@ 1500°F (816°C)	0.98 (0.14)	0.91 (0.13)
@ 2000°F (1093°C)	1.08 (0.16)	1.15 (0.16)

Chemical Properties

Kaowool Millboard provides excellent resistance to chemical attack. Exceptions include hydrofluoric acid, phosphoric acid, and strong alkalies.

A small amount of combustible organic binder will burn out at approximately 300°F (149°C). **Caution should be exercised during the initial heating. Adequate ventilation should be provided to avoid potential flash ignition of the binder out-gassing and to avoid air entry while at elevated temperature.**

Data are average results of tests conducted under standard procedures and are subject to variation.

Data contained in this brochure are intended as a guide only. For specifications and estimating purposes, contact your nearest Thermal Ceramics representative.

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