

Product Description

Kaolite 1600 is a very lightweight, low thermal conductivity vermiculite based monolithic designed for backup insulation applications up to 871°C (1600°F).

Kaolite 1600 insulating monolithic reduces both the quantity of heat storage and heat transfer through the lining producing significant savings in furnace fuel consumption. The lower density of this vermiculite containing Kaolite monolithic reduces the amount of supporting furnace steel work required and provide more insulation capability with a thinner lining. This product can be cast, gunited or poured.

Instructions for using

Casting: Highest strength is obtained by using the least amount of clean mixing water and working material into place by lightly vibrating or rodding. A mechanical mixer is required for proper placement (paddle type mortar mixers are best suited). Mix for 3 minutes to achieve a ball-in-hand consistency and place material within 30 minutes.

Gunning: Use suitable guniting equipment. To reduce rebound and dust pre-dampen material uniformly with approximately 12-24% by weight clean water in mechanical mixer before placing into gun. Add required water at nozzle for effective placement. Suggested air pressure at the nozzle is between 1.25 and 1.8 bar (18 and 25 psi).

Precautions: Watertight forms must be used when placing material. All porous surfaces that will come into contact with the material must be waterproofed with a suitable coating or membrane. Cure 24 hours under damp conditions before initial heat-up. Keep freshly placed monolithic warm during cold weather, ideally between 16°C and 27°C (60°F and 80°F). New monolithic installations must be heated slowly the first time.

Freshly placed lightweight monolithics are sometimes prone to a deteriorating condition called alkali hydrolysis when they are kept in a non-dried state for a sustained period of time. Under these conditions, the monolithics should be force dried soon after placement to help retard the possible deterioration.

For detailed installation instructions and commissioning schedules, please contact your Morgan Advanced Materials- Thermal Ceramics representative.

Properties	Kaolite 1600	
Region of Manufacture	Americas	
Bond type	Hydraulic	
Raw material base	Vermiculite	
Method of installation	Cast	Gun
Maximum grain size, mm	3	
Maximum service temperature, °C (°F)	871 (1600)	871 (1600)
Net material requirement, kg/m ³ (pcf)	400 (25)	545 (34)
Water addition, % by weight		
casting by vibrating	140-160	140-160
pouring	165-180	165-180
Packaging in bags, kg (lbs)		
	9 (20)	9 (20)

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Kaolite[®] 1600 Monolithic

Product Data Sheet



Properties		Kaolite 1600	
Bulk Density, kg/m³ (pcf), ASTM C134			
dried 24 hours @ 105°C (220°F)	464-625 (29-39)	529-721 (33-45)	
fired 5 hours @ 816°C (1500°F)	368-513 (23-32)	432-609 (27-38)	
Modulus of Rupture, MPa (psi), ASTM C133			
dried 24 hours @ 105°C (220°F)	0.41-0.86 (60-125)	0.48-1.03 (70-150)	
fired 5 hours @ 816°C (1500°F)	0.14-0.31 (20-45)	0.21-0.38 (30-55)	
fired 5 hours @ maximum service temperature °C (°F)	0.17-0.28 (25-40)	0.24-0.34 (35-50)	
Cold Crushing Strength, MPa (psi), ASTM C133			
dried 24 hours @ 105°C (220°F)	1.03-2.07 (150-300)	1.21-2.41 (175-350)	
fired 5 hours @ 816°C (1500°F)	0.69-1.38 (100-200)	0.83-1.03 (120-150)	
fired 5 hours @ maximum service temperature °C (°F)	0.48-0.83 (70-120)	0.62-1.10 (90-160)	
Permanent Linear Change, %, ASTM C113			
dried 24 hours @ 105°C (220°F)	0 to -0.3	0 to -0.3	
fired 5 hours @ 816°C (1500°F)	-1.0 to -2.0	-1.0 to -2.0	
fired 5 hours @ maximum service temperature °C (°F)	-1.5 to -2.5	-1.5 to -2.5	
Chemical Analysis, %, Calcined Basis			
Alumina, Al ₂ O ₃	9.9	9.9	
Silica, SiO ₂	31	31	
Ferric Oxide, Fe ₂ O ₃	7.4	7.4	
Titanium Oxide, TiO ₂	1.1	1.1	
Calcium Oxide, CaO	39	39	
Magnesium Oxide, MgO	8.2	8.2	
Alkali as, K ₂ O+Na ₂ O	3.4	3.4	
Thermal Conductivity, W.m•K (BTU•in/hr•ft²•°F), ASTM C417			
260°C (500°F)	0.13 (0.87)	0.15 (1.03)	
538°C (1000°F)	0.15 (1.02)	0.16 (1.11)	
816°C (1500°F)	0.17 (1.16)	0.17 (1.2)	

Storage and Shelf Life

- Monolithics should be stored in a dry, well-ventilated area and held off the ground on pallets ideally with the original packaging intact. Keep out of rain and damp conditions.
- Normal shelf life is 12 months from date of manufacture when properly stored.

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