Kaolite® 1800 Monolithic

Product Data Sheet

Product Description

Kaolite 1800 is a very lightweight, low thermal conductivity, vermiculite based monolithic designed for backup insulation applications up to 982°C (1800°F). Kaolite 1800 contains a calcium-aluminate cement which gives them higher temperature capability when compared to Kaolite 1600.

Kaolite 1800 insulating monolithic reduces both the quantity of heat storage and heat transfer through the lining producing significant savings in furnace fuel consumption. The lower densities of these vermiculite containing Kaolite monolithic reduces the amount of supporting furnace steel work required and provide more insulation capability with a thinner lining. These products can be cast 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.

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 1800
Region of Manufacture	Americas
Bond type	Hydraulic
Raw material base	Vermiculite
Method of installation	Cast
Maximum grain size, mm	3
Maximum service temperature, °C (°F)	982 (1800)
Net material requirement, kg/m^3 (pcf)	416 (26)
Water addition, % by weight	
casting by vibrating	145-165
pouring	170-185
Packaging in bags, kg (lbs)	11 (25)

Whilst the values and application information in this datasheet are typical, they are given for guidance only. The values and the information given are subject to normal manufacturing variation and may be subject to change without notice. Morgan Advanced Materials – Thermal Ceramics makes no guarantees and gives no warranties about the suitability of a product and you should seek advice to confirm the product's suitability for use with Morgan Advanced Materials - Thermal Ceramics.

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Bulk Density, kg/m^3 (pcf), ASTM C134	
dried 24 hours @ 105°C (220°F)	464-625 (29-39)
fired 5 hours @ 816°C (1500°F)	368-496 (23-31)
Modulus of Rupture, MPa (psi), ASTM C133	
dried 24 hours @ 105°C (220°F)	0.28-0.48 (40-70)
fired 5 hours @ 816°C (1500°F)	0.21-0.34 (30-50)
fired 5 hours @ maximum service temperature °C (°F)	0.17-0.28 (25-40)
Cold Crushing Strength, MPa (psi), ASTM C133	
dried 24 hours @ 105°C (220°F)	0.52-1.03 (75-150)
fired 5 hours @ 816°C (1500°F)	0.55-1.03 (80-150)
fired 5 hours @ maximum service temperature °C (°F)	0.34-0.62 (50-90)
Permanent Linear Change, %, ASTM C113	
dried 24 hours @ 105°C (220°F)	0 to -0.3
fired 5 hours @ 816°C (1500°F)	-1.0 to -1.8
fired 5 hours @ maximum service temperature °C (°F)	-1.5 to -2.5
Chemical Analysis, %, Calcined Basis	
Alumina, Al_2O_3	30
Silica, SiO_2	29
Ferric Oxide, Fe_2O_3	9.2
Titanium Oxide, TiO_2	2
Calcium Oxide, CaO	18
Magnesium Oxide, MgO	8.1
Alkali as, K_2O+Na_2O	3.1
Thermal Conductivity, W.m•K (BTU•in/hr•ft^2•°F) , ASTM C417	
260°C (500°F)	0.11 (0.75)
538°C (1000°F)	0.14 (0.95)
816°C (1500°F)	0.16 (1.15)

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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