Kaolite® 1:2:4 Monolithic

Product Data Sheet

Product Description

Kaolite 1:2:4 is a general-purpose, cast/gun lightweight monolithic for use up to 2000°F (1093°C). It provides the advantage of a pre-mixed, controlled formula product compared to typical 1:2:4 spec field mixes.

Instructions for using

Casting: Highest strength is obtained with a monolithic refractory by using the least amount of clean mixing water that will allow thorough working of material into place by vibration. A mechanical mixer is required for proper placement (paddle type mortar mixers are best suited). Mix for 4-6 minutes to achieve a ball-in-hand consistency. Place material within 30 minutes after mixing.

Gunning: Use suitable gunite equipment. Material should be pre-dampened uniformly with approximately 8-12% by weight of clean water in a mechanical mixer before placing into gun. This will reduce rebound and dust. Add required water at nozzle with needle valve controls for effective placement. Suggested air pressure at the nozzle is 1.4 to 2.1 bar (20 to 30 psi).

Precautions: Watertight forms must be used when placing material. All porous surfaces that will come in contact with the material must be waterproofed with a suitable coating or membrane. For maximum strength, 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) until wet curing is completed. 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

Properties	Kaolite 1:2:4
Region of Manufacture	Americas
Bond type	Hydraulic
Raw material base	Vermiculite
Method of installation	Cast/Gun
Maximum grain size, mm	4
Maximum service temperature, °C (°F)	1093 (2000)
Net material requirement, kg/m^3 (pcf)	913 (57)
Water addition, % by weight	
casting by vibrating	55-65
Packaging in bags, kg (lbs)	23 (50)

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Bulk Density, kg/m^3 (pcf), ASTM C134	
dried 24 hours @ 105°C (220°F)	881-1057 (55-66)
fired 5 hours @ 816°C (1500°F)	801-961 (51-61)
Modulus of Rupture, MPa (psi), ASTM C133	
dried 24 hours @ 105°C (220°F)	0.86-1.38 (125-200)
fired 5 hours @ 816°C (1500°F)	0.55-1.21 (80-175)
fired 5 hours @ maximum service temperature °C (°F)	0.52-1.03 (75-150)
Cold Crushing Strength, MPa (psi), ASTM C133	
dried 24 hours @ 105°C (220°F)	2.07-3.45 (300-500)
fired 5 hours @ 816°C (1500°F)	1.72- 3.10 (250-450)
fired 5 hours @ maximum service temperature °C (°F)	1.72- 3.10 (250-450)
Permanent Linear Change, %, ASTM C113	
dried 24 hours @ 105°C (220°F)	0 to -0.2
fired 5 hours @ 816°C (1500°F)	-0.4 to -1.0
fired 5 hours @ maximum service temperature °C (°F)	-
Chemical Analysis, %, Calcined Basis	
Alumina, Al_2O_3	26
Silica, SiO_2	38
Ferric Oxide, Fe_2O_3	11.0
Titanium Oxide, TiO_2	1.4
Calcium Oxide, CaO	17
Magnesium Oxide, MgO	3.4
Alkali as, K_2O+Na_2O	2.6
Thermal Conductivity, W.m•K (BTU•in/hr•ft^2•°F) , ASTM C417	
260°C (500°F)	0.14 (1.3)
538°C (1000°F)	0.22 (1.55)
816°C (1500°F)	0.27(1.9)

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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