Kao-Tuff™ C Monolithic

Product Data Sheet

Product Description

Kao-Tuff C is an abrasion resistant monolithic. Kao-Tuff C is installed by using standard vibratory casting techniques. The high strength materials consistently produce abrasion losses in range of 6-15 cc's.

Instructions for Using

Casting: Highest strength is obtained with a monolithic refractory by using the least amount of clean mixing water which will allow thorough working of material into place by vibrating or rodding. A mechanical mixer is required for proper placement (paddle type mortar mixer best suited). After adding the recommended amount of water to achieve a ball-in-hand consistency, wet mix for 4-6 minutes. Place material within 30 minutes after mixing.

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 in a damp condition 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 complete. New monolithic installations must be heated slowly the first time.

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

Properties	Kao-Tuff C
Region of Manufacture	Americas
Bond type	Hydraulic
Raw material base	Chamotte
Method of installation	Vibratory Cast
Maximum grain size, mm	6
Maximum service temperature, °C (°F)	1538 (2800)
Net material requirement, kg/m^3 (pcf)	2179 (136)
Water addition, % by weight	
casting by vibrating	8.0-9.5
Packaging in bags, kg (lbs)	25 (55)

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Properties	Kao-Tuff C
Bulk Density, kg/m^3 (pcf), ASTM C134	
dried 24 hours @ 105°C (220°F)	2211-2387 (138-149)
fired 5 hours @ 816°C (1500°F)	2098-2259 (131-141)
Modulus of Rupture, MPa (psi), ASTM C133	
dried 24 hours @ 105°C (220°F)	7.6-13.8 (1100-2000)
fired 5 hours @ 816°C (1500°F)	6.2-9.7 (900-1400)
fired 5 hours @ maximum service temperature °C (°F)	8.3-13.8 (1200-2000)
Cold Crushing Strength, MPa (psi), ASTM C133	
dried 24 hours @ 105°C (220°F)	41.4-69.0 (6000-10000)
fired 5 hours @ 816°C (1500°F)	41.4-75.9 (6000-11000)
fired 5 hours @ maximum service temperature °C (°F)	55.2-82.8 (8000-12000)
Permanent Linear Change, %, ASTM C113	
dried 24 hours @ 105°C (220°F)	0 to -0.2
fired 5 hours @ 816°C (1500°F)	-0.1 to -0.3
fired 5 hours @ maximum service temperature °C (°F)	-1.0 to -2.0
Abrasion loss, cm^3, ASTM C704	
fired 5 hours @ 816°C (1500°F)	8-15
Chemical Analysis, %, Calcined Basis	
Alumina, Al_2O_3	59
Silica, SiO_2	33
Iron Oxide, Fe_2O_3	0.8
Titania, TiO_2	1.3
Lime, CaO	5.5
Magnesia, MgO	0.2
Alkali as, $Na_2O + K_2O$	0.3
Thermal Conductivity, W.m•K (BTU•in/hr•ft^2•°F) , ASTM C417	
260°C (500°F)	1.28 (8.9)
538°C (1000°F)	1.30 (9.0)
816°C (1500°F)	1.28 (8.9)
1093°C (2000°F)	1.26 (8.7)

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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