

Product Description

Kao-Tuff 110C is a medium-weight erosion-resistant monolithic with excellent insulating properties installed by standard vibratory casting techniques. Abrasion losses 7 -15cc's and a thermal conductivity of 5.3 at 816°C (1500°F) make it effective for numerous applications in FCCU and other industrial uses.

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 10-20 minutes after mixing.

Precautions: Use watertight forms; when placing against porous surfaces, waterproof the surface. 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). In hot conditions, keep mix temperatures below 80°F or working time will be greatly reduced. 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 110C	
Region of Manufacture	Americas	
Bond type	Hydraulic	
Raw material base	Fireclay	
Method of installation	Vibratory Cast	
Maximum grain size, mm	4	
Maximum service temperature, °C (°F)	1316 (2400)	
Net material requirement, kg/m ³ (pcf)	1762 (110)	
Water addition, % by weight		
	casting by vibrating	13.5-15.5
Packaging in bags, kg (lbs)	25 (55)	

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Kao-Tuff™ 110C Monolithic

Product Data Sheet



Properties		Kao-Tuff 110C
Bulk Density, kg/m³ (pcf), ASTM C134		
	dried 24 hours @ 105°C (220°F)	1810-1986 (113-124)
	fired 5 hours @ 816°C (1500°F)	1698-1858 (106-116)
Modulus of Rupture, MPa (psi), ASTM C133		
	dried 24 hours @ 105°C (220°F)	6.9-12.4 (1000-1800)
	fired 5 hours @ 816°C (1500°F)	5.5-9.7 (800-1400)
	fired 5 hours @ maximum service temperature °C (°F)	5.9-9.7 (850-1400)
Cold Crushing Strength, MPa (psi), ASTM C133		
	dried 24 hours @ 105°C (220°F)	41.4-65.5 (6000-9500)
	fired 5 hours @ 816°C (1500°F)	48.3-86.2 (7000-12500)
	fired 5 hours @ maximum service temperature °C (°F)	41.4-69.0 (6000-10000)
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)	-0.6 to +0.4
Abrasion loss, cm³, ASTM C704		
	fired 5 hours @ 816°C (1500°F)	7-13
Chemical Analysis, %, Calcined Basis		
	Alumina, Al ₂ O ₃	47
	Silica, SiO ₂	35
	Iron Oxide, Fe ₂ O ₃	1.6
	Titania, TiO ₂	0.8
	Lime, CaO	14
	Magnesia, MgO	0.4
	Alkali as, Na ₂ O + K ₂ O	1.3
Thermal Conductivity, W.m·K (BTU·in/hr·ft²·°F) , ASTM C417		
	260°C (500°F)	0.74 (5.1)
	538°C (1000°F)	0.75 (5.2)
	816°C (1500°F)	0.76 (5.3)
	1093°C (2000°F)	0.78 (5.4)

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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