FUSED SILICA
HOT PRESS PLATENS
CASTABLE CERAMICS
FIRED SHAPES
AEROSPACE TOOLING

Foundry Service & Supplies, Inc.

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HI-TEMP INSULATIONS
CALCIUM SILICATE BOARDS
MILLBOARD AND BLANKET
PAPERS AND CEMENTS
CUTTING AND FABRICATING

KAOCRETE®

REFRACTORY CASTABLES & MONOLITHICS

KAOCRETE® DENSE CASTABLES

Thermal Ceramics has engineered a full line of products utilizing variables in aggregate chemistry, aggregate grain sizing, and high purity binder systems to develop dense castables which meet specific property requirements of industrial furnace operators.

Kaocrete A is a low-cost, kaolin-based castable for use up to 2000°F. It incorporates an early strength Portland cement which produces good load resistance at low temperatures and is easily cast.

Kaocrete B is a more plastic material than most refractory castables. It is an excellent plastering material, preferred for patching linings and baffles. Recommended only for relatively thin sections. Kaocrete B has extremely low rebound when gunned. A typical application would be refractory around water-cooled boiler tubes.

Kaocrete D is a low-cost castable for service up to 2500°F. For casting applications where thermal shock and moderate impact resistance is important. Typical applications would be boiler ash hoppers and kiln cars.

Kaocrete HS is a high strength cast and gun mix for service up to 2600°F. It incorporates an intermediate-purity calcium-aluminate cement and closely sized Kaolin aggregate. Kaocrete HS has a wide range of applications including piers, car bottoms, ash hoppers in utility boilers, seal tanks in F.C.C.U. vessels and kiln cars.

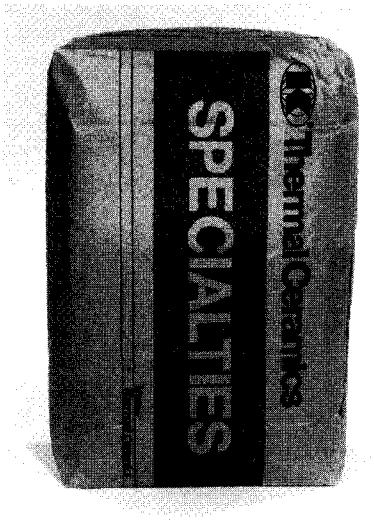
Kaocrete 26 is a general purpose, low iron monolithic that can be cast or gunned into place. Designed for applications up to 2600°F, Kaocrete 26 combines good volume stability with low cost. A typical application would be general furnace use.

Kaocrete 28-LI is a general-purpose, low iron monolithic which contains an intermediate-purity calcium aluminate cement that can be cast or gunned into place. Designed for applications up to 2800°F, Kaocrete 28-LI a economical choice for high-temperature applications.

Kaocast is an alumina-silica refractory castable capable of withstanding up to 3000°F. It posseses excellent volume stability. Many furnace operators select Kaocast for all purpose service where operating temperatures are between 2500°F and 3000°F. A typical application would be burner blocks.

Kaocrete 30 is a 3000°F castable designed for high strength at temperatures of 1500°F to 3000°F. For cast applications only. Typical applications would be high-temperature kiln cars and kiln hearths.

Kaocrete 32-CM is a 3200°F, casting grade, refractory castable with a 70% alumina content. It possesses excellent volume stability and high strength. A typical application would be a ladle metallurgy lance material.



Instructions For Using

CASTING

Highest strength is obtained with a castable refractory by using the least amount of clean mixing water that will allow thorough working of material into place by vibrating or rodding. A mechanical mixer is required for proper placement (paddle type mortar mixers are best suited). After adding the recommended amount of water to achieve a ball-in-hand consistency, wet mix for 3 minutes. Place material within 30 minutes after mixing.

GUNNING

Use suitable gunite equipment. Material should be predampened uniformly with approximately 4% by weight of clean water in a mechanical mixer before placing into gun. This will reduce rebound and dust. Add required water at nozzle for effective placement.

PRECAUTIONS

Store bagged castables in a dry place, off the ground and, when possible, with the original shrink wrapping intact.

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 castable warm during cold weather, ideally between 70°F and 80°F.

New castable installations must be heated slowly the first time.

For more information on castable placement, consult your Thermal Ceramics representative or call 1-800-329-7444 to receive faxed instruction manuals.

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REFRACTORY CASTABLES & MONOLITHICS

Kaocrete®	A	B	D	HS	26	28-LI	Kaocast	30	32-CM
Specifications									
Recommended use limit, °F	2000	2000	2500	2600	2600	2800	3000	3000	3200
Melting point, °F.	2760	2725	2725	3100	>2800	3100	3200	3200	3400
Average pound required to place one cubic foot[1]	128	100	130	128	126	127	126	140	144
Nom. density, pcf, fired	125 - 133	97 - 107	126 - 136	125 - 134	123 - 132	123 - 133	124 - 131	137 - 148	142 - 153
Recommended Water Ranges, % by weight[2]									
Casting (by vibrating)	13 - 14.5	24 - 27	11 - 12.5	12 - 13.5	11 - 12.5	12 - 13.5	10 - 12.5	8 - 9.5	9 - 10.5
Method of installation[3]	C	G,P	C	C,G	C,G	C,G	C,G	C	C
Pounds per bag	50	50	50	50	50	50	50	50	50
Physical Properties[4]									
Modulus of rupture, psi (ASTM C 133)									
Dried 18-24 hrs.@ 220°F	600 - 1000	200 - 600	1000 - 1400	1100 - 1600	500 - 900	600 - 1000	700 - 1200	700 - 1300	500 - 1000
Fired 5 hrs.@ 1500°F	100 - 300	100 -300	400 - 800	450 - 800	300 - 500	200 - 500	200 - 400	400 - 800	300 - 600
Fired 5 hrs.@ use limit	800 - 1500	200 - 400	1000 - 1500	900 - 1200	1000 - 1500	1000 - 1500	500 - 900	1500 - 2000	1500 - 2500
Cold crushing strength									
Dried 18-24 hrs.@ 220°F	2100-3000	1000-1800	5000-8000	5500-8500	2500-4000	3000-4000	2100-3000	5000-7000	3500-4300
Fired 5 hrs.@ 1500°F	1000-2000	700-1500	4000-6000	3500-7000	2000-3400	1700-3000	1500-2500	4000-5500	3000-4000
Fired 5 hrs.@ use limit	1000-1700	400-800	4500-7000	4000-6000	3500-5500	4000-6000	2000-3000	4500-5500	7000-8000
Perm. linear change, % (ASTM C 113)[5]									
Dried 18-24 hrs.@ 220°F	0.0 to -0.2	0.0 to -0.2	0 to -0.2	0 to -0.2	0 to -0.2	0 to -0.2	0 to -0.2	0 to -0.2	0 to -0.2
Fired 5 hrs.@ 1500°F	-0.2 to -0.5	-0.5 to -2.0	-0.1 to -0.4	-0.1 to -0.4	-0.1 to -0.4	-0.1 to -0.4	-0.1 to -0.4	-0.1 to -0.4	-0.1 to -0.4
Fired 5 hrs.@ use limit	0.2 to -0.6	-1.0 to -2.5	-0.4 to -1.0	-0.5 to +0.5	0 to +1.0	-0.5 to +0.5	-0.5 to +0.5	0 to +0.5	0 to +1.5
Chemical Analysis, (Nominal, %)									
Alumina, Al_2O_3	40	38	45	47	47	49	60	62	70
Silica, SiO_2	47	46	40	40	43	42	33	32	25
Ferric oxide, Fe_2O_3	1.6.	1.3	2.3	1	1.1	0.9	1	0.7	0.9
Titanium oxide, TiO_2	1.4	1.3	2.1	2	2.4	2.4	1.9	1.6	1.8
Calcium oxide , CaO	9.8	12	9.8	8.5	6.4	6	3.4	3.3	2.4
Magnesium oxide, MgO	0.5	0.9	trace	0.2	–	–	0.1	0.2	0.1
Alkalies, as, Na_2O	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Thermal Conductivity, Btu•in./hr•ft²•°F (ASTM C 417)									
Mean temperature									
@ 500°F	5.5	3.3	6.2	5.9	5.6	6.0	8.1	9.7	11.6
@ 1000°F	5.8	3.5	6.6	6.2	6.0	6.3	7.8	9.6	11.1
@ 1500°F	6.1	3.8	6.8	6.5	6.3	6.6	7.7	9.6	10.9
@ 2000°F	6.4	4.1	6.9	6.7	6.4	6.7	7.7	9.7	10.4

1. Gunite installation may require 10-30% average due to rebound and on-site loss.
2. Water requirements indicated are offered as a guide. Actual water required may be subject to field conditions.
3. Installation Key: C=Cast, G=Gun, P=Plaster
4. Properties indicated are for vibratory cost materials only unless specified otherwise.
5. Fired linear change values reflect samples taken from a dried to fired state.

Consult Thermal Ceramics for specific curing and heat-up recommendations.

Data are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.

Refer to the Material Safety Data Sheet (MSDS) for recommended work practices and other product safety information.