

Product Data

6/10: 5477

GREENCAST®-94 PLUS

Description: High-Alumina, Low-Silica Castable for Severe Abrasion

- Features:
- Fine grained.
 - Outstanding abrasion resistance from dust erosion, rubbing, and heavy impact.
 - High temperature resistance for hydrogen service.
- Uses:
- Lining areas subjected to rubbing, grinding, or high-velocity, dust-laden gases.
 - Hydrogen transfer lines and secondary ammonia reformer linings.
 - High temperature burner blocks and high temperature thermal combustors.
 - Waste heat boiler high temperature boiler inlets.
 - Upper case sections of copper and iron vertical channel induction units.

Chemical Analysis: Approximate (Calcined Basis)

Silica (SiO ₂)	0.2%
Alumina (Al ₂ O ₃)	94.1%
Iron Oxide (Fe ₂ O ₃)	0.2%
Titania (TiO ₂)	0.1%
Lime (CaO)	5.1%
Magnesia (MgO)	0.1%
Alkalies (Na ₂ O+K ₂ O)	0.2%

Physical Data (Typical)

Vibration Cast

Maximum Service Temperature	3400°F (1870°C)
Material Required	168 lb/ft ³ (2.69 g/cm ³)
Bulk Density	lb/ft ³ (g/cm ³)
After 220°F (105°C)	169 to 175 (2.71 to 2.80)
After 1500°F (815°C)	160 to 168 (2.56 to 2.69)
Modulus of Rupture	lb/in. ² (MPa)
After 220°F (105°C)	1,400 (9.7)
After 1500°F (815°C)	1,750 (12.1)
After 2000°F (1095°C)	960 (6.6)
After 2500°F (1370°C)	1,510 (10.4)
Cold Crushing Strength	lb/in. ² (MPa)
After 220°F (105°C)	7,000 to 18,000 (48.3 to 124.1)
After 1500°F (815°C)	7,000 to 11,000 (48.3 to 75.9)
After 2000°F (1095°C)	7,920 (54.6)
After 2500°F (1370°C)	9,830 (67.8)
Permanent Linear Change	
After 220°F (105°C)	None
After 1500°F (815°C)	0.0 to -0.2%
After 2000°F (1095°C)	+0.4%
After 2500°F (1370°C)	-0.6%
After 2900°F (1595°C)	-0.7%
After 3200°F (1760°C)	-0.5%
Abrasion Loss	
After 1500°F (815°C)	< 12.0 cc

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Thermal Conductivity	Btu·in./hr·ft ² ·°F (W/m·°C)
At 400°F (205°C)	30.6 (4.41)
At 800°F (425°C)	21.1 (3.04)
At 1200°F (650°C)	16.3 (2.35)
At 1600°F (870°C)	14.1 (2.03)
At 2000°F (1095°C)	13.6 (1.96)
At 2400°F (1315°C)	14.5 (2.09)

Note: The test data shown are based on average results on production samples and are subject to normal variation on individual tests. The test data cannot be taken as establishing minimum or maximum specification purposes. ASTM test procedures used when applicable.

Mixing and Using Information (Water calculated at 8.337 lb/gallon)	55 lb bag	1000 lb bag	1500 lb bag
Water Required—Vibration Casting (Weight 8.3%)			
Pounds	4.6	83.0	124.5
Gallons	0.5	10.0	14.9
Liters	2.1	37.6	56.4
Water Required—Hand Casting (Weight 9.1%)			
Pounds	5.0	91.0	136.5
Gallons	0.6	10.9	16.4
Liters	2.3	41.2	61.9
Working Time	20 minutes		
For detailed mixing and using instructions, contact your HWI representative or visit www.thinkHWI.com .			
Heatup/Dryout Schedule			
See HWI Dryout Schedule 2—PLUS Rated Castables and Gunning Castables.			
Installation Guidelines			
See HWI Installation Guidelines CC-1—Conventional Castables—Standard.			
Shelf Life (Under Proper Storage Conditions)	365 days		

