

# SUPER HYBOND® PLUS



## Product Data

02/05: 6189

Description: High-Strength, Super-Duty, Plastic Refractory

- Features:
- Superduty fireclay, air-set plastic.
  - Excellent resistance to thermal shock from rapid heating or cooling furnace conditions.
  - Very volume stable at high furnace operating conditions.
  - Strength to resist intermittent mechanical abuse.

- Uses:
- Burner blocks.
  - Rotary kiln feed and discharge hoods.
  - Combustion chambers.
  - Boilers.
  - Forge furnace sidewall and roof regions.
  - Gypsum kettle settings, dryers, and door jambs.

### Chemical Analysis: Approximate (Calcined Basis)

Silica (SiO <sub>2</sub> )	49.9%
Alumina (Al <sub>2</sub> O <sub>3</sub> )	44.0%
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	1.4%
Titania (TiO <sub>2</sub> )	2.7%
Lime (CaO)	0.5%
Magnesia (MgO)	0.3%
Alkalies (Na <sub>2</sub> O+K <sub>2</sub> O)	1.2%

### Physical Data (Typical)

Maximum Service Temperature	2800°F (1540°C)
Material Required	146 lb/ft <sup>3</sup> (2.34 g/cm <sup>3</sup> )
Modulus of Rupture	lb/in. <sup>2</sup> (MPa)
After 220°F (105°C)	300 (2.1)
After 1500°F (815°C)	300 (2.1)
After 2000°F (1095°C)	400 (2.8)
After 2550°F (1400°C)	600 (4.1)
Permanent Linear Change	
After 220°F (105°C)	-0.7%
After 1500°F (815°C)	-0.8%
After 2000°F (1095°C)	-1.1%
After 2550°F (1400°C)	+0.7%
After 2910°F (1600°C)	+3.0%
Thermal Conductivity	Btu·in/hr·ft <sup>2</sup> ·°F (W/m·°C)
At 400°F (205°C)	4.0 (0.58)
At 800°F (425°C)	4.5 (0.65)
At 1200°F (650°C)	4.9 (0.71)
At 1600°F (870°C)	5.8 (0.84)
At 2000°F (1095°C)	7.3 (1.05)

### Particle Size

Maximum Grain Size 4 Mesh (Tyler) (4.7 mm opening) Less than 10%

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 minimum or maximum values for specification purposes. ASTM test procedures used when applicable.

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### Mixing and Using Information

Material is supplied ready to use.

### Heatup/Dryout Schedule

See HWI Dryout Schedule 6—PLUS Rated Plastics and Rams.

### Installation Guidelines

See HWI Installation Guidelines P-1—Plastics.

Shelf Life (Under Proper Storage Conditions)

120 days