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ENGLISH

Revision 05/05/2009 (Check www.thermbond.com for updates)

# FORMULA PATCH

*Thermbond Refractories use the patented Stellar Binder System™ for easy and accurate mixing, controlled setting, fast dry-out and heat up, thermal shock resistance and other unique properties. Thermbond chemically bonds to existing fired refractories. CHARACTERISTICS: - Alumina - Silica - Mullite - Dense - Fine Grain - Non-Wetting - Fast Setting - Fast Curing*

## PACKAGING

Pail Contents	Bags: 1	Jugs: 1
Bag Weight*	27 lbs	12.2 kg
Jug Weight*	4 lbs	1.8 kg
Drum Weight*	N/A	N/A
Unit Weight*	31 lbs	14.1 kg
Yield / Unit*	0.21 ft <sup>3</sup>	0.006 m <sup>3</sup>
Units / Ton*	64.52 short	71.12 metric
Board Feet / Unit*	2.5 bd ft	
Wet to Dry Ratio*	Call for Instructions	
Liquid Activator	FORMULA	
Pails per Pallet	24	
Drums Per Dry Pallet	N/A	

## APPLICATION\*\*\*

Data based on	Casting
Alternative Method***	Hand Packing Troweling

## BULK DENSITY\*\*

As Placed	148 lbs/ft <sup>3</sup>	2371 kg/m <sup>3</sup>
After 1500F (816C)	140 lbs/ft <sup>3</sup>	2243 kg/m <sup>3</sup>

## MAXIMUM RECOMMENDED SERVICE TEMP\*\*

Hot Face	3000 F	1649 C
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## ABRASION RESISTANCE\*\* (ASTM C-704)

After 1500F (816C)	<20 cc loss
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## COMPRESSIVE STRENGTH\*\*

1500F (816C)	4000 psi	281 kg/cm <sup>2</sup>	28 N/mm <sup>2</sup>
2000F (1093C)	8000 psi	562 kg/cm <sup>2</sup>	55 N/mm <sup>2</sup>
2500F (1371C)	11750 psi	826 kg/cm <sup>2</sup>	81 N/mm <sup>2</sup>

## PERMANENT LINEAR CHANGE\*\*

1500F (816C)	-0.30%
2000F (1093C)	-0.60%
2500F (1371C)	-0.70%

## TYPICAL CHEMICAL ANALYSIS (After 1500F (816C))\*\*

Al <sub>2</sub> O <sub>3</sub>	64.14%
SiO <sub>2</sub>	30.58%
Fe <sub>2</sub> O <sub>3</sub>	0.88%
P <sub>2</sub> O <sub>5</sub>	1.07%
Other	3.34%
Total	100.00%

## THERMAL CONDUCTIVITY\*\*

600F (316C)	9 Btu-in/hr-ft <sup>2</sup> -F	1 W/m K
1200F (649C)	9 Btu-in/hr-ft <sup>2</sup> -F	1 W/m K
<b>1800F (982C)</b>	10 Btu-in/hr-ft <sup>2</sup> -F	1 W/m K
2400F (1316C)	10 Btu-in/hr-ft <sup>2</sup> -F	1 W/m K

## COLD MODULUS OF RUPTURE\*\*

1500F (816C)	900 psi	63 kg/cm <sup>2</sup>	6 N/mm <sup>2</sup>
2000F (1093C)	1750 psi	123 kg/cm <sup>2</sup>	12 N/mm <sup>2</sup>
2500F (1371C)	2600 psi	183 kg/cm <sup>2</sup>	18 N/mm <sup>2</sup>

## HOT MODULUS OF RUPTURE\*\*

1500F (816C)	2100 psi	148 kg/cm <sup>2</sup>	14 N/mm <sup>2</sup>
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\*Measures are approximate and may vary. For mixing partial units, contact Stellar Materials for specific wet-to-dry ratios. See Installation Guide for more detailed information.

\*\*Test data shown are based on averages subject to normal variation on individual tests, and therefore should not be assumed to be maximum or minimum specifications.

Due to the unique nature of the Stellar binder system, test procedures vary slightly from ASTM. Documentation of these variations is available upon request.  
 \*\*\* Test results may produce somewhat different