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ENGLISH

Revision 07/16/2008 (Check www.thermbond.com for updates)

# FORMULA 9-E

*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 - Dense - Fast Setting - Fast Curing - Extra Working Time*

PACKAGING		
Unit Equivalent	Bags: 1	Jugs: 1
Bag Weight*	60 lbs	27.2 kg
Jug Weight*	8 lbs	3.6 kg
Drum Weight*	400 lbs	181.4 kg
Unit Weight*	68 lbs	30.7 kg
Yield / Unit*	0.45 ft <sup>3</sup>	0.013 m <sup>3</sup>
Units / Ton*	29.59 short	32.61 metric
Board Feet / Unit*	5.4 bd ft	
Wet to Dry Ratio*	12.7% - 13.9%	
Liquid Activator	FORMULA	
Bags Per Pallet	48	
Drums Per Dry Pallet	1	

APPLICATION***	
Data based on	Casting
Alternative Method***	Pumping

BULK DENSITY**		
As Placed	150 lbs/ft <sup>3</sup>	2403 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

COMPRESSIVE STRENGTH**			
1500F (816C)	3500 psi	246 kg/cm <sup>2</sup>	24 N/mm <sup>2</sup>
2000F (1093C)	5000 psi	352 kg/cm <sup>2</sup>	34 N/mm <sup>2</sup>
2500F (1371C)	6500 psi	457 kg/cm <sup>2</sup>	45 N/mm <sup>2</sup>

PERMANENT LINEAR CHANGE**	
1500F (816C)	-0.20%
2000F (1093C)	-0.75%
2500F (1371C)	-0.10%

TYPICAL CHEMICAL ANALYSIS (After 1500F (816C))**	
Al <sub>2</sub> O <sub>3</sub>	55.94%
SiO <sub>2</sub>	34.14%
Fe <sub>2</sub> O <sub>3</sub>	0.80%
P <sub>2</sub> O <sub>5</sub>	5.28%
Other	3.85%
Total	100.00%

THERMAL CONDUCTIVITY**		
600F (316C)	8.5 Btu-in/hr-ft <sup>2</sup> -F	1.23 W/m K
1200F (649C)	9.1 Btu-in/hr-ft <sup>2</sup> -F	1.31 W/m K
1800F (982C)	9.5 Btu-in/hr-ft <sup>2</sup> -F	1.37 W/m K
2400F (1316C)	10.1 Btu-in/hr-ft <sup>2</sup> -F	1.45 W/m K

COLD MODULUS OF RUPTURE**			
1500F (816C)	750 psi	53 kg/cm <sup>2</sup>	5 N/mm <sup>2</sup>
2000F (1093C)	1050 psi	74 kg/cm <sup>2</sup>	7 N/mm <sup>2</sup>
2500F (1371C)	1200 psi	84 kg/cm <sup>2</sup>	8 N/mm <sup>2</sup>

HOT MODULUS OF RUPTURE**			
1500F (816C)	1750 psi	123 kg/cm <sup>2</sup>	12 N/mm <sup>2</sup>

\*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.

\*\*\*Application by alternative method may produce somewhat different results.

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