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ENGLISH

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# FORMULA 5-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: - High Alumina - Very Dense - Non-Wetting - Fast Setting - Fast Curing - Extra Working Time*

PACKAGING		
Unit Equivalent	Bags: 1	Jugs: 1
Bag Weight*	63 lbs	28.6 kg
Jug Weight*	8 lbs	3.6 kg
Drum Weight*	400 lbs	181.4 kg
Unit Weight*	71 lbs	32.0 kg
Yield / Unit*	0.40 ft <sup>3</sup>	0.011 m <sup>3</sup>
Units / Ton*	28.33 short	31.23 metric
Board Feet / Unit*	4.8 bd ft	
Wet to Dry Ratio*	12.1% - 13.3%	
Liquid Activator	FORMULA	
Bags Per Pallet	48	
Drums Per Dry Pallet	1	

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

BULK DENSITY**		
As Placed	175 lbs/ft <sup>3</sup>	2803 kg/m <sup>3</sup>
After 1500F (816C)	165 lbs/ft <sup>3</sup>	2643 kg/m <sup>3</sup>

MAXIMUM RECOMMENDED SERVICE TEMP**		
Hot Face	3000 F	1649 C

ABRASION RESISTANCE** (ASTM C-704)	
After 1500F (816C)	<8 cc loss

MOLTEN METAL CONTACT	
- Aluminum - Zinc	

COMPRESSIVE STRENGTH**			
1500F (816C)	6250 psi	439 kg/cm <sup>2</sup>	43 N/mm <sup>2</sup>
2000F (1093C)	8250 psi	580 kg/cm <sup>2</sup>	57 N/mm <sup>2</sup>
2500F (1371C)	10250 psi	721 kg/cm <sup>2</sup>	71 N/mm <sup>2</sup>

PERMANENT LINEAR CHANGE**	
1500F (816C)	-0.20%
2000F (1093C)	-0.30%
2500F (1371C)	-1.50%

TYPICAL CHEMICAL ANALYSIS (After 1500F (816C))**	
Al <sub>2</sub> O <sub>3</sub>	86.52%
SiO <sub>2</sub>	2.04%
Fe <sub>2</sub> O <sub>3</sub>	1.00%
P <sub>2</sub> O <sub>5</sub>	5.02%
Other	5.42%
Total	100.00%

THERMAL CONDUCTIVITY**		
600F (316C)	14.8 Btu-in/hr-ft <sup>2</sup> -F	2.14 W/m K
1200F (649C)	12.7 Btu-in/hr-ft <sup>2</sup> -F	1.83 W/m K
1800F (982C)	12.1 Btu-in/hr-ft <sup>2</sup> -F	1.75 W/m K
2400F (1316C)	12.5 Btu-in/hr-ft <sup>2</sup> -F	1.80 W/m K

COLD MODULUS OF RUPTURE**			
1500F (816C)	1450 psi	102 kg/cm <sup>2</sup>	10 N/mm <sup>2</sup>
2000F (1093C)	1550 psi	109 kg/cm <sup>2</sup>	11 N/mm <sup>2</sup>
2500F (1371C)	2350 psi	165 kg/cm <sup>2</sup>	16 N/mm <sup>2</sup>

HOT MODULUS OF RUPTURE**			
1500F (816C)	2150 psi	151 kg/cm <sup>2</sup>	15 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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