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ENGLISH

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FORMULA 4-A

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 Purity - High Alumina - Very Dense - Abrasion Resistant - Non-Wetting - Fast Setting - Fast Curing -

PACKAGING

Unit Equivalent	Bags: 1	Jugs: 1
Bag Weight*	68 lbs	30.8 kg
Jug Weight*	8 lbs	3.6 kg
Drum Weight*	400 lbs	181.4 kg
Unit Weight*	76 lbs	34.3 kg
Yield / Unit*	0.42 ft3	0.012 m3
Units / Ton*	26.46 short	29.16 metric
Board Feet / Unit*	5.0 bd ft	
Wet to Dry Ratio*	11.2% - 12.3%	
Liquid Activator	FORMULA	
Bags Per Pallet	48	
Drums Per Dry Pallet	1	

APPLICATION

Data based on	Casting
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BULK DENSITY**

As Placed	180 lbs/ft3	2883 kg/m3
After 1500F (816C)	170 lbs/ft3	2723 kg/m3

MAXIMUM RECOMMENDED SERVICE TEMP**

Hot Face	3100 F	1704 C
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ABRASION RESISTANCE** (ASTM C-704)

After 1500F (816C)	<6 cc loss
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MOLTEN METAL CONTACT

- Aluminum - Zinc - Iron - Steel -

COMPRESSIVE STRENGTH**

1500F (816C)	8000 psi	562 kg/cm2	55 N/mm2
2000F (1093C)	8500 psi	598 kg/cm2	59 N/mm2
2500F (1371C)	8500 psi	598 kg/cm2	59 N/mm2

PERMANENT LINEAR CHANGE**

1500F (816C)	-0.17%
2000F (1093C)	-0.18%
2500F (1371C)	-1.41%

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

Al2O3	86.90%
SiO2	2.23%
Fe2O3	0.82%
P2O5	4.70%
Other	5.35%
Total	100.00%

THERMAL CONDUCTIVITY**

600F (316C)	16.9 Btu-in/hr-ft2-F	2.43 W/m K
1200F (649C)	14.3 Btu-in/hr-ft2-F	2.06 W/m K
1800F (982C)	13.5 Btu-in/hr-ft2-F	1.95 W/m K
2400F (1316C)	13.9 Btu-in/hr-ft2-F	2.00 W/m K

COLD MODULUS OF RUPTURE**

1500F (816C)	2331 psi	164 kg/cm2	16 N/mm2
2000F (1093C)	2300 psi	162 kg/cm2	16 N/mm2
2500F (1371C)	2400 psi	169 kg/cm2	17 N/mm2

HOT MODULUS OF RUPTURE**

1500F (816C)	2150 psi	151 kg/cm2	15 N/mm2
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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.