



www.thermbond.com

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ENGLISH

Revision 03/18/2010 (Check www.thermbond.com for updates)

FORMULA 4-R

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

P R E L I M I N A R Y D A T A

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 ft ³	0.012 m ³
Units / Ton*	26.46 short	29.16 metric
Board Feet / Unit*	5.1 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	Ramming

BULK DENSITY**		
As Placed	178 lbs/ft ³	2851 kg/m ³
After 1500F (816C)	168 lbs/ft ³	2691 kg/m ³

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

ABRASION RESISTANCE** (ASTM C-704)	
After 1500F (816C)	<7 cc loss

MOLTEN METAL CONTACT	
- Aluminum - Zinc - Iron - Steel	

COMPRESSIVE STRENGTH**			
1500F (816C)	5500 psi	387 kg/cm ²	38 N/mm ²
2000F (1093C)	5000 psi	352 kg/cm ²	34 N/mm ²
2500F (1371C)	6300 psi	443 kg/cm ²	43 N/mm ²

PERMANENT LINEAR CHANGE**	
1500F (816C)	-0.20%
2000F (1093C)	-0.30%
2500F (1371C)	-1.40%

TYPICAL CHEMICAL ANALYSIS (After 1500F (816C))**	
Al ₂ O ₃	87.34%
SiO ₂	2.16%
Fe ₂ O ₃	0.77%
P ₂ O ₅	3.76%
Other	5.97%
Total	100.00%

THERMAL CONDUCTIVITY**		
600F (316C)	10.1 Btu-in/hr-ft ² -F	1.46 W/m K
1000F (538C)	10.2 Btu-in/hr-ft ² -F	1.47 W/m K
1200F (649C)	10.3 Btu-in/hr-ft ² -F	1.49 W/m K
1800F (982C)	11.2 Btu-in/hr-ft ² -F	1.62 W/m K

COLD MODULUS OF RUPTURE**			
1500F (816C)	1400 psi	98 kg/cm ²	10 N/mm ²
2000F (1093C)	1200 psi	84 kg/cm ²	8 N/mm ²
2500F (1371C)	1850 psi	130 kg/cm ²	13 N/mm ²

HOT MODULUS OF RUPTURE**			
1500F (816C)	1850 psi	130 kg/cm ²	13 N/mm ²

*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.