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ENGLISH

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FORMULA 12-R

Formerly Formula 12

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 - Abrasion Resistant - Non-Wetting - Fast Setting - Fast Curing

PACKAGING		
Unit Equivalent	Bags: 2	Jugs: 1
Bag Weight*	45 lbs	20.4 kg
Jug Weight*	8 lbs	3.6 kg
Drum Weight*	400 lbs	181.4 kg
Unit Weight*	98 lbs	44.3 kg
Yield / Unit*	0.53 ft3	0.015 m3
Units / Ton*	20.49 short	22.59 metric
Board Feet / Unit*	6.3 bd ft	
Wet to Dry Ratio*	8.4% - 9.3%	
Liquid Activator	FORMULA	
Bags Per Pallet	48	
Drums Per Dry Pallet	1	

APPLICATION	
Data based on	Ramming

BULK DENSITY**		
As Placed	185 lbs/ft3	2963 kg/m3
After 1500F (816C)	180 lbs/ft3	2883 kg/m3

MAXIMUM RECOMMENDED SERVICE TEMP**		
Hot Face	2700 F	1482 C

ABRASION RESISTANCE** (ASTM C-704)	
After 1500F (816C)	< 6 cc loss

MOLTEN METAL CONTACT	
- Aluminum - Zinc	

COMPRESSIVE STRENGTH**			
1500F (816C)	10000 psi	703 kg/cm2	69 N/mm2
2000F (1093C)	18000 psi	1266 kg/cm2	124 N/mm2
2500F (1371C)	10000 psi	703 kg/cm2	69 N/mm2

PERMANENT LINEAR CHANGE**	
1500F (816C)	-0.20%
2000F (1093C)	-0.32%
2500F (1371C)	1.50%

TYPICAL CHEMICAL ANALYSIS (After 1500F (816C))**	
Al2O3	83.71%
SiO2	6.81%
Fe2O3	0.81%
P2O5	3.79%
Other	4.88%
Total	100.00%

THERMAL CONDUCTIVITY**		
600F (316C)	14.0 Btu-in/hr-ft2-F	2.02 W/m K
1200F (649C)	15.0 Btu-in/hr-ft2-F	2.16 W/m K
1800F (982C)	15.5 Btu-in/hr-ft2-F	2.24 W/m K
2400F (1316C)	16.0 Btu-in/hr-ft2-F	2.31 W/m K

COLD MODULUS OF RUPTURE**			
1500F (816C)	2500 psi	176 kg/cm2	17 N/mm2
2000F (1093C)	4000 psi	281 kg/cm2	28 N/mm2
2500F (1371C)	2450 psi	172 kg/cm2	17 N/mm2

HOT MODULUS OF RUPTURE**			
1500F (816C)	2330 psi	164 kg/cm2	16 N/mm2

*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.