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ENGLISH

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# FORMULA 2104-AL

Formerly 2104-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

## PRELIMINARY DATA

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*	0.51 ft <sup>3</sup>	0.015 m <sup>3</sup>
Units / Ton*	20.49 short	22.59 metric
Board Feet / Unit*	6.2 bd ft	
Wet to Dry Ratio*	8.4% - 9.3%	
Liquid Activator	FORMULA	
Bags Per Pallet	48	
Drums Per Dry Pallet	1	

COMPRESSIVE STRENGTH**			
1500F (816C)	22000 psi	1547 kg/cm <sup>2</sup>	152 N/mm <sup>2</sup>
2300F (1260C)	22000 psi	1547 kg/cm <sup>2</sup>	152 N/mm <sup>2</sup>

PERMANENT LINEAR CHANGE**	
1500F (816C)	-0.20%
2300F (1260C)	0.30%

TYPICAL CHEMICAL ANALYSIS (After 1500F (816C))**	
Al <sub>2</sub> O <sub>3</sub>	81.26%
SiO <sub>2</sub>	4.88%
Fe <sub>2</sub> O <sub>3</sub>	0.78%
P <sub>2</sub> O <sub>5</sub>	4.34%
Other	8.74%
Total	100.00%

APPLICATION	
Data based on	Casting

BULK DENSITY**		
As Placed	190 lbs/ft <sup>3</sup>	3044 kg/m <sup>3</sup>
After 1500F (816C)	180 lbs/ft <sup>3</sup>	2883 kg/m <sup>3</sup>

THERMAL CONDUCTIVITY**		
600F (316C)	14 Btu-in/hr-ft <sup>2</sup> -F	2 W/m K
1200F (649C)	15 Btu-in/hr-ft <sup>2</sup> -F	2 W/m K
1800F (982C)	16 Btu-in/hr-ft <sup>2</sup> -F	2 W/m K
2400F (1316C)	16 Btu-in/hr-ft <sup>2</sup> -F	2 W/m K

MAXIMUM RECOMMENDED SERVICE TEMP**		
Hot Face	2500 F	1371 C

ABRASION RESISTANCE** (ASTM C-704)	
After 1500F (816C)	<3 cc loss

MOLTEN METAL CONTACT
- Aluminum - Zinc - Iron - Steel

\*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.