

Typical Data

SPECIAL GRADES

Properties		C-22 Z	BNZ-24	BNZ-25	BNZ-26 HS
Temperature Use Limit (Normal oxidizing atmosphere)	°F	2300	2400	2500	2600
	°C	1260	1316	1371	1427
Density, Avg. ASTM C 134	lb/ft <sup>3</sup>	46	37	45	57
	kg/m <sup>3</sup>	737	593	721	913
	lb/BEq	2.7	2.2	2.6	3.3
	kg/str.	1.2	1.0	1.2	1.5
Modulus of Rupture ASTM C 133	lb/in <sup>2</sup>	210	120	150	360
	MPa	1.4	0.8	1.0	2.5
	kg/cm <sup>2</sup>	14.8	8.5	10.6	25.4
Cold Crushing of Strength ASTM C 133	lb/in <sup>2</sup>	320	130	260	580
	MPa	2.2	0.9	1.8	4.0
	kg/cm <sup>2</sup>	22.5	9.2	18.3	40.8
Permanent Linear Change ASTM C 210 24 hrs at soaking temp: °F (°C)	%				
	2250 (1232)	0.0	-	-	-
	2350 (1290)	-	-0.4	-	-
	2450 (1343)	-	-	-0.4	-
	2550 (1399)	-	-	-	-0.7
	2750 (1510)	-	-	-	-
	2800 (1538)	-	-	-	-
	2950 (1621)	-	-	-	-
	3150 (1732)	-	-	-	-
	Reversible Linear Thermal Expansion at 2000°F (1093°C)	%			
		0.5	0.6	0.6	0.6
Hot Load Strength ASTM C 16 10 psi load for 11/2 hours: °F (°C)	% deformation				
	2000 (1093)	0.1	0	-	-
	2200 (1204)	-	-	0.3	0.1
	2400 (1316)	-	-	-	-
Thermal Conductivity ASTM C 182 Mean temperature, °F (°C)	Btu-in/ft <sup>2</sup> , hr, °F (W/mk)				
	500	1.5	0.9	1.8	1.9
	(260)	0.22	0.13	0.26	0.27
	1000	1.8	1.1	2.1	2.2
	(538)	0.26	0.16	0.30	0.32
	1500	2.2	1.4	2.5	2.5
	(816)	0.32	0.20	0.36	0.36
	2000	2.5	1.6	2.8	2.8
	(1093)	0.36	0.23	0.40	0.40
	To convert Btu-in/ft <sup>2</sup> , hr, °F °F to Kcal-m <sup>2</sup> , hr, °C, multiply by 0.124.				
Chemical Analysis					
	Alumina – Al <sub>2</sub> O <sub>3</sub>	35	40.0	34.0	44.7
	Silica – SiO <sub>2</sub>	60.1	47.2	63.0	49.9
	Ferric Oxide – Fe <sub>2</sub> O <sub>3</sub>	1.1	0.5	0.7	0.6
	Titanium Oxide – Ti <sub>2</sub> O <sub>2</sub>	1.3	1.5	1.4	1.6
	Calcium Oxide – CaO	2.1	10.3	0.3	0.6
	Magnesium Oxide – MgO	0.0	0.2	0.1	0.1
	Alkalies, as Na <sub>2</sub> O & K <sub>2</sub> O	0.4	0.3	0.5	2.5

\*ASTM C 113