Harbison-Walker Refractories Limited
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Product Description

KS4

DESCRIPTION

KS4 is a dense, fine grained, hydraulic bonded castable for use up to 1400°C.

APPLICATIONS

KS4 combines strength with abrasion resistance. It can be used as complete furnace linings or for pouring special shapes.

CHEMICAL ANALYSIS - Calcined Basis

Silica – SiO_2	40.0%
Alumina – Al_2O_3	45.0%
Iron Oxide – Fe_2O_3	4.0%
Titania – TiO_2	2.0%
Lime - CaO	8.0%
Magnesia - MgO	0.4%
Alkalies – $Na_2O + K_2O$	0.5%

Ref. 40/8/2/02

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. These results cannot be taken as maximum or minimum requirements for specification purposes.

Manufacturer of **AP Green** Brands.

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PHYSICAL PROPERTIES

MAXIMUM RECOMMENDED TEMPERATURE	2550°F	1400°C
QUANTITY REQUIRED – Net	118 lb/ft³	1890 Kgs/m³
BULK DENSITY	lb/ft³	Kgs/m³
Cured and Then Dried at 220°F(105°C)	122 - 134	1950 - 2150
Heated at 1500°F(820°C)	114 - 120	1825 - 1920
WATER REQUIRED FOR MIXING	Approximately	
per 100 Kgs	3.1 galls	14 Litres
MAXIMUM TIME FROM ADDING WATER TO PLACING MATERIAL		
Minutes	20	
PERMANENT LINEAR CHANGE – ASTM C113 AND C865		
Expansion or Shrinkage		
Cured and Then Dried at 220°F(105°C)	<0.05% Shr	
Heated at 1500°F(820°C) and Then Cooled	0 - 0.2% Shr	
Heated at 2000°F(1100°C) and Then Cooled	0 - 0.3% Shr	
Heated at 2300°F(1260°C) and Then Cooled	0 - 0.5% Shr	
Heated at 2500°F(1370°C) and Then Cooled	0 - 2.5% Exp	
MODULUS OF RUPTURE – ASTM C133 AND C865	lb/in²	MPa
Cured and Then Dried at 220°F(105°C)	580 - 1160	4.0 - 8.0
Heated at 1500°F(820°C) and Then Cooled	218 - 580	1.5 - 4.0
Heated at 2000°F(1100°C) and Then Cooled	218 - 580	1.5 - 4.0
COLD CRUSHING STRENGTH – ASTM C133 AND C865		
Cured and Then Dried at 220°F(105°C)	1885 - 3625	13.0 - 25.0
Heated at 1500°F(820°C) and Then Cooled	1450 - 2320	10.0 - 16.0
Heated at 2000°F(1100°C) and Then Cooled	1160 - 1885	8.0 - 13.0
PARTICLE SIZE – ASTM C92		
Retained on 5 Mesh Tyler Screen (4 mm)		
	Less than 5%	
THERMAL CONDUCTIVITY	Btu-in ft²hr°F	W/mK
at a Mean Temperature of		
400°F(205°C)	5.88	0.85
800°F(425°C)	5.95	0.86
1200°F(650°C)	6.01	0.87
1600°F(870°C)	6.11	0.88
2000°F(1095°C)	6.24	0.90

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