

REFRAL[®] 50 & 50P & 60

Refractory fireclay bricks
for anode bake furnaces



		refral 50	refral 50P	refral 60	
Bulk Density: <i>ISO 5017/ EN 993-1</i>	.....Kg/m ³	2350	2400	2550
	.....lbs/cu.ft.	147	150	159
Apparent Porosity: <i>ISO 5017/ EN 993-1</i>	.....%	16	15	16
Thermal Shock Resistance: <i>DIN 51068</i>	.....number of cycles	50	50	50
Cold Crushing Strength: <i>ISO 10059-1/ EN 993-5</i>	.....MPa	55	55	60
	.....psi	7975	7975	8700
Hot Modulus of Rupture <i>ISO 5013/ EN 993-7</i>	at 1200°C.....MPa	12	12		
	.....psi	1740	1740	
	at 1300°C.....MPa	≥ 6	10		
	.....psi	≥ 870	1450	
	at 1350°C.....MPa	-		≥ 6	
	.....psi	-		≥ 870
Cold Modulus of Rupture <i>EN 993-6</i>	at 20°C.....MPa	7	7	11	
	.....psi	1015	1015	1595
Refractoriness under load <i>EN ISO 1893</i>	T _{0.5}.....°C	≥ 1480	≥ 1500	≥ 1600	
Creep in Compression: <i>EN 993-9</i>	Z ₂₅ @ 1280°C %	≤ 0.3	≤ 0.3	≤ 0.3	
	V ₁₅₋₂₅ @ 1280°C. %/h	≤ 0.005	≤ 0.005	≥ 0.003	
Thermal Expansion: <i>DIN 51045</i>	at 1000°C.....%	0.6	0.6	0.6	
Thermal Conductivity: <i>EN 993-15</i>	W/(m·K)	@ 600°C.....	1.94	1.94	2.15
		@ 800°C.....	1.85	1.85	2.16
		@ 1000°C.....	1.97	1.97	2.32
		@ 1200°C.....	2.08	2.08	2.28
	Btu(sq.ft.h°F/in.)	@ 1112°F.....	13.45	13.45	14.91
		@ 1472°F.....	12.83	12.83	14.98
		@ 1832°F.....	13.66	13.66	16.09
		@ 2192°F.....	14.42	14.42	15.81

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Chemical Analysis: <i>EN ISO 12677</i>	SiO ₂%	45.0	45.0	38
	Al ₂ O ₃%	50.0	50.0	60
	Fe ₂ O ₃%	1.2	1.0	1.2
CO resistance <i>ASTM C 288</i>	.....	A	A	A
Indicative Tolerances	height..... mm	± 1	± 1	± 1
	width..... *			
	length..... *			
* According to individual requirements.				
HS Tariff Number: (Harmonized Commodity Description and Coding System)	.....	690220		

Physical and thermal values are based upon regular, average test results.

No Warranty or guarantee is implied on the data, which are given in good faith.

Storage Instructions:

Magnesia products, lightweight refractory bricks, precast materials and all unburnt chemically bonded bricks have to, as a general rule, be stored in dry and well ventilated spaces. Burnt high-alumina, alumina and fireclay bricks can be stored in the open air, provided that the surface on which they are stacked is level and dry and that the bricks are covered with weatherproof tarpaulins. In the nature of things basic bricks tend to become destroyed by hydration when getting in contact with water. The seaworthy packing REFRA-Pack offers optimum protection against any damages during transport and damages caused by splashing water. Despite the fact hydration cannot be excluded with extremely warm and humid weather conditions prevailing. Such conditions may already lead to hydration after half a year. Therefore, especially in tropical/subtropical climate zones, the maximum storage time should be optimally adapted to the prevailing climatic conditions. In any case, a "First in – First out" stock management is advisable.

Hydrated bricks being characterized by cracks often extending like a net-work over the surface cannot be used anymore and must therefore be disposed of according to local regulations. Burnt high-alumina, alumina and fireclay bricks that have got wet can likewise be used quite suitably after thorough drying. Besides, these bricks can permissibly be dried with the aid of warm air. Unburnt chemically bonded brick grades may absorb moisture from the air even when properly stored. As a result, the bricks may appear somewhat moist on the surface, and they give off a dull sound when struck with a hammer. However, their serviceability is not impaired. The bricks need not be dried before use. In doubtful cases bricks and precast materials that have got wet and been dried can be sent to our laboratory for testing as to their suitability for use.

Mortars and concretes have to, as a general rule, be stored in dry, well ventilated spaces. Concretes and mortars are rendered unfit for use if they get wet or are stored for too long.

For safety reasons maximum stacking heights for high-alumina and fireclay bricks such as ALUBAR and REFRA is 2-5 pallets.

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Producer:
REFRATECHNIK Ceramics GmbH
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An ISO-9001/50001 certified company

