



TECHNICAL DATASHEET: FIREBRICKS

*The measurements displayed in this document have been conducted by the National Center of Scientific Research "Demokritos", Institute of Materials Science, after corresponding BS EN ISO standards. For further information, you may contact Roka Refractories Research and Development department at: rd@roka-refractory.com



White Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO
1,0	0,7	12,1	55,6	1,3	3,7	20,3	0,7	0,3	3,5	0,3	0,5

2. Physical & Mechanical Properties

Apparent Density:	2.14 g/cm ³
Real Density:	2.65 g/cm ³
Open Porosity:	19.32 % p.v.
Water Absorption:	9.02 % p.w.
Cold Crushing Strength	41.87 Mpa
Flexural Strength (M.O.R)	9.5 Mpa

3. Thermal Properties

Refractoriness:	>1150°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	1.27 W/m·K
Thermal Conductivity @ 400°C:	1.15 W/m·K
Heat Capacity:	0.75 J/g·K
Thermal Diffusivity @ 200°C	7.9·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	7.2·10 ⁻⁷ m/s



Stil de Grain Yellow Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO
1,5	0,7	16,6	67,9	0,6	3,7	1,9	2,2	0,4	3,8	0,4	0,4

2. Physical & Mechanical Properties

Apparent Density:	1.98 g/cm ³
Real Density:	2.54 g/cm ³
Open Porosity:	22.11 % p.v.
Water Absorption:	11.16 % p.w.
Cold Crushing Strength	34.39 Mpa
Flexural Strength (M.O.R)	3.76 Mpa

3. Thermal Properties

Refractoriness:	>1170°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	0.81 W/m·K
Thermal Conductivity @ 400°C:	0.83 W/m·K
Heat Capacity:	0.67 J/g·K
Thermal Diffusivity @ 200°C	6.1·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	6.3·10 ⁻⁷ m/s



Buff Yellow Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO	ZnO
1,0	0,7	12,0	55,0	1,2	3,6	20,3	0,7	0,3	4,0	0,3	0,4	0,4

2. Physical & Mechanical Properties

Apparent Density:	2.15 g/cm ³
Real Density:	2.67 g/cm ³
Open Porosity:	19.21 % p.v.
Water Absorption:	8.99 % p.w.
Cold Crushing Strength	42.03 Mpa
Flexural Strength (M.O.R)	9.54 Mpa

3. Thermal Properties

Refractoriness:	>1170°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	1.28 W/m·K
Thermal Conductivity @ 400°C:	1.16 W/m·K
Heat Capacity:	0.76 J/g·K
Thermal Diffusivity @ 200°C	7.9·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	7.2·10 ⁻⁷ m/s



Firebrick Red Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO
1,6	2,0	16,8	59,2	-	3,6	2,3	1,5	0,8	11,3	0,5	0,5

2. Physical & Mechanical Properties

Apparent Density:	2.01 g/cm ³
Real Density:	2.59 g/cm ³
Open Porosity:	22.41 % p.v.
Water Absorption:	11.16 % p.w.
Cold Crushing Strength	23.30 Mpa
Flexural Strength (M.O.R)	4.06 Mpa

3. Thermal Properties

Refractoriness:	>1120°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	0.92 W/m·K
Thermal Conductivity @ 400°C:	0.94 W/m·K
Heat Capacity:	0.62 J/g·K
Thermal Diffusivity @ 200°C	7.4·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	7.6·10 ⁻⁷ m/s



Cardinal Red Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO
1,0	0,7	12,2	55,3	1,2	3,6	20,2	0,7	0,3	4,0	0,3	0,4

2. Physical & Mechanical Properties

Apparent Density:	2.16 g/cm ³
Real Density:	2.67 g/cm ³
Open Porosity:	19.16 % p.v.
Water Absorption:	8.98 % p.w.
Cold Crushing Strength	42.15 Mpa
Flexural Strength (M.O.R)	9.65 Mpa

3. Thermal Properties

Refractoriness:	>1150°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	1.32 W/m·K
Thermal Conductivity @ 400°C:	1.20 W/m·K
Heat Capacity:	0.74 J/g·K
Thermal Diffusivity @ 200°C	8·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	7.3·10 ⁻⁷ m/s



Grey Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO
0,5	1,2	11,7	45,4	1,8	2,9	18,0	0,7	8,8	8,1	0,6	0,5

2. Physical & Mechanical Properties

Apparent Density:	2.03 g/cm ³
Real Density:	2.82 g/cm ³
Open Porosity:	27.82 % p.v.
Water Absorption:	13.67 % p.w.
Cold Crushing Strength	38.29 Mpa
Flexural Strength (M.O.R)	9.45 Mpa

3. Thermal Properties

Refractoriness:	>1100°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	1.16 W/m·K
Thermal Conductivity @ 400°C:	1.05 W/m·K
Heat Capacity:	0.75 J/g·K
Thermal Diffusivity @ 200°C	7.6·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	6.9·10 ⁻⁷ m/s



Black Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO	C
0,5	1,2	11,4	45,3	1,8	3,0	17,9	0,7	8,7	8,2	0,6	0,5	0,4

2. Physical & Mechanical Properties

Apparent Density:	2.07 g/cm ³
Real Density:	2.86 g/cm ³
Open Porosity:	27.41 % p.v.
Water Absorption:	13.45 % p.w.
Cold Crushing Strength	38.44 Mpa
Flexural Strength (M.O.R)	9.53 Mpa

3. Thermal Properties

Refractoriness:	>1100°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	1.15 W/m·K
Thermal Conductivity @ 400°C:	1.04 W/m·K
Heat Capacity:	0.76 J/g·K
Thermal Diffusivity @ 200°C	7.7·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	7.0·10 ⁻⁷ m/s



Chocolate Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO
1,1	1,5	16,0	53,1	0,6	4,0	2,1	1,4	6,1	11,8	1,2	1,2

2. Physical & Mechanical Properties

Apparent Density:	1.94 g/cm ³
Real Density:	2.67 g/cm ³
Open Porosity:	27.24 % p.v.
Water Absorption:	14.02 % p.w.
Cold Crushing Strength	17.45 Mpa
Flexural Strength (M.O.R)	2.61 Mpa

3. Thermal Properties

Refractoriness:	>1100°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	0.88 W/m·K
Thermal Conductivity @ 400°C:	0.90 W/m·K
Heat Capacity:	0.74 J/g·K
Thermal Diffusivity @ 200°C	6.1·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	6.3·10 ⁻⁷ m/s



Granite Firebricks

1. Chemical Composition

Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	NiO	CuO
2,5	0,8	14,4	64,9	0,5	3,6	0,9	1,1	5,2	4,2	0,9	1,1

2. Physical & Mechanical Properties

Apparent Density:	1.96 g/cm ³
Real Density:	2.64 g/cm ³
Open Porosity:	25.77 % p.v.
Water Absorption:	13.15 % p.w.
Cold Crushing Strength	27.04 Mpa
Flexural Strength (M.O.R)	4.44 Mpa

3. Thermal Properties

Refractoriness:	>1120°C
Permanent Linear Change:	<1%
Thermal Conductivity @ 200°C:	0.88 W/m·K
Thermal Conductivity @ 400°C:	0.86 W/m·K
Heat Capacity:	0.70 J/g·K
Thermal Diffusivity @ 200°C	6.4·10 ⁻⁷ m/s
Thermal Diffusivity @ 300°C	6.3·10 ⁻⁷ m/s