

Data sheet

ENGLISH

IFB Insulation Range: Temperatures 1100 - 1315°C (2000 - 2400°F)

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Description

The Insulation Range of Insulating Fire Brick (IFB) for applications where temperatures are 1100°C - 1650°C (2000°F - 3000°F).

The K[®] and JM[™] IFB ranges, manufactured via cast process, are market leaders in applications such as Petrochemical and Ceramics where the ability to operate in environments above 1000°C (1800°F) is critical.

With low thermal conductivity, due to the unique manufacturing process, the IFB's deliver the perfect balance of low density and homogenous porosity. Our IFB range delivers big energy savings for many markets and our global manufacturing footprint enables Morgan to meet your regional and global application demands.

Type

Insulating firebricks.

Classification temperature

1100°C (2000°F)

1260°C (2300°F)

1315°C (2400°F)

Maximum continuous use temperature

Please contact your local Morgan Advanced Materials representative for technical advice and guidance.

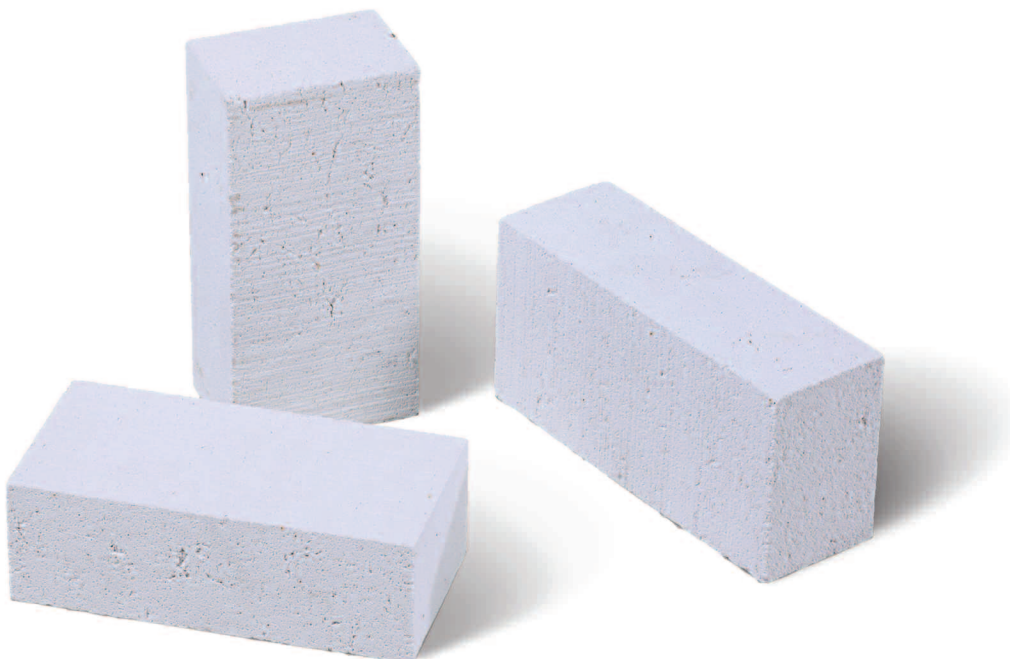
Features:

- IFB production by casting delivers products with superior thermal insulation. This support the design of thinner insulation layers
- Properties are achieved by casting, such as reduced weight and low thermal conductivity reduce heat absorption, contributing to significant energy savings
- Low iron and alkali flux content gives high refractoriness under load in operating conditions
- Available in large size up to 230 x 610 x 76mm (9 x 24 x 3") and 250 x 640 x 64mm (10 x 25 x 2½") which can be machined into special shapes, limiting the need for multiple sections and joints
- Low thermal conductivity
- Low heat storage
- Purity
- High hot compressive strength
- A comprehensive range of mortars is available to enable long last joints with superior performance

Typical Applications

While commonly used in back-up insulation they may also be used as hot face in selected applications. Overall uses include:

- Aluminium (anode bake furnaces, primary electrolytic cells, holding and melting furnaces and secondary re-melt furnaces)
- Petrochemical (kilns, flues, refining vessels and heaters and reactor chambers)
- Iron and steel industry (heat treatment and galvanising)
- Coke and iron making (blast furnaces, hot blast stoves, hot blast and bustle main)
- Hobby and laboratory kilns
- Ceramic industry (including kilns for domestic use)
- Glass industry



Data sheet

Metric and Imperial information

IFB Insulation Range: Temperatures 1100 - 1315°C (2000 - 2400°F)

	TJM™20	JM®23-400	TJM™23	JM™23	JM®24	K®23
ISO 2245 Classification	-	I25 0.5L	-	I25 0.5L	-	-
Manufacturing Method	Extrusion	Cast	Extrusion	Cast	Cast	Cast
Manufacturing Location	China	Italy	China	Italy	Italy	US
Properties						
Classification Temperature (°C)	1100	1260	1260	1260	1300	1315
Classification Temperature (°F)	2000	2300	2300	2300	2400	2400
Density (kg/m³) (ASTM C-133)	500	390	500	480	510	513
Density (pcf) (ASTM C-133)	31.20	24.34	31.20	29.95	31.82	32.01
Modulus of Rupture (MPa) (ASTM C-133)	0.7	0.8	0.7	1	0.8	0.79
Modulus of Rupture (psi) (ASTM C-133)	101.5	116	101.5	145	116	114.55
Cold Crushing Strength (MPa) (ASTM C-133)	0.8	0.8	1	1.2	1	1
Cold Crushing Strength (psi) (ASTM C-133)	116	116	145	174	145	145
Perm Linear Shrinkage (ASTM C-210) % after 24 hrs Soak						
@ 1070°C (1958°F)	-0.2	-	-	-	-	-
@ 1230°C (2245°F)	-	-0.4	-0.2	-0.2	-0.1	-
@ 1290°C (2354°F)	-	-	-	-	-0.3	-
Reversible Linear Expansion, maximum %	0.6	0.55	0.6	0.5	0.6	0.7
Deformation Under Hot Load (ASTM C-16) % after 90 min.						
JM Brick tested	1100°C @ 0.034 (2012°F @ 5 psi)	0.1	0.18	0.1	0.1	-
according to ISO 3187	1100°C @ 0.069 (2012°F @ 10 psi)	-	-	-	-	0.2
	1200°C @ 0.034 (2192°F @ 5 psi)	-	-	-	-	0.1
Thermal Conductivity (W/m·K) (ASTM C-182)						
@ 200°C	0.15	-	0.15	-	-	-
@ 260°C	-	-	-	-	-	0.13
@ 400°C	0.18	0.1	0.18	0.12	0.14	-
@ 540°C	-	-	-	-	-	0.17
@ 600°C	0.22	0.12	0.22	0.14	0.16	-
@ 800°C	-	0.15	0.27	0.17	0.18	-
@ 815°C	-	-	-	-	-	0.2
@ 1000°C	-	-	0.32	0.19	0.2	-
@ 1100°C	-	-	-	-	-	0.24
Thermal Conductivity (BTU·in/hr·ft²·°F) (ASTM C-182)						
@ 392°F	1.04	-	1.04	-	-	-
@ 500°F	-	-	-	-	-	0.90
@ 752°F	1.25	0.69	1.25	0.83	0.97	-
@ 1004°F	-	-	-	-	-	1.18
@ 1112°F	1.53	0.83	1.53	0.97	1.11	-
@ 1472°F	-	1.04	1.87	1.18	1.25	-
@ 1499°F	-	-	-	-	-	1.39
@ 1832°F	-	-	2.22	1.32	1.39	-
@ 2012°F	-	-	-	-	-	1.67
Specific Heat Capacity (kJ/kg·K) (ASTM C-182)	-	1.05	-	1.05	1.05	1.07
Chemical Composition %						
Al ₂ O ₃	43	37	45	37	44.5	38.3
SiO ₂	50	44.4	48	44.4	41.2	44.3
Fe ₂ O ₃	1	0.7	1	0.7	0.7	0.3
TiO ₂	0.8	0.8	0.8	1.2	0.9	1.6
CaO	0.8	15.2	0.8	15.2	11.6	15
MgO + Na ₂ O + K ₂ O	1.7	1.1	1.7	1.4	1.1	0.5
CO Attack (popouts after 200 hrs) (ASTM C-288)	-	Class A	-	Class A	Class A	-

Contact

Europe:

Telephone:
+44 (0) 151 334 4030

E-mail:
marketing.tc@morganplc.com

North America:

Telephone:
+1 (706) 796 4200

E-mail:
northamerica.tc@morganplc.com

South America:

Telephone:
+54 (11) 4373 4439

E-mail:
marketing.tc@morganplc.com

Asia:

Telephone:
+65 6595 0000

E-mail:
asia.mc@morganplc.com

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