

Data sheet

ENGLISH

# IFB Insulation Range: Temperatures 1350 - 1650°C (2450 - 3000°F)

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## Description

The Insulation Range of IFB for applications where temperatures are 1350°C - 1650°C (2450°F - 3000°F).

The IFB range is manufactured via cast (K<sup>®</sup>) and slinger (JM<sup>™</sup>) processes, is a market leader in applications such as Petrochemical and Ceramics where the ability to operate in environments above 1000°C (1800°F) is critical. The range also provides low thermal conductivity due its unique manufacturing process.

Our IFBs deliver energy savings for multiple markets and our global manufacturing footprint enables Morgan to meet your regional and global application demands.

## Type

Insulating firebricks.

## Classification temperature

1350°C (2450°F)

1370°C (2500°F)

1430°C (2600°F)

1540°C (2800°F)

1650°C (3000°F)

## Maximum continuous use temperature

The maximum continuous use temperature depends on the application. Please contact your local Morgan Advanced Materials representative for technical advice and guidance.

## Features:

- Produced mainly by slinger process, our IFB's have stronger mechanical properties while maintaining some of the lowest thermal conductivity on the market
- The light weight and low thermal conductivity reduce heat absorption, producing significant energy savings and reducing emissions
- Low iron and alkali flux content gives high refractoriness under load in operating conditions
- Available in multiple sizes, up to 700 mm (27½") in length, which can be machined into special shapes or installed, reducing the need for multiple sections and joints
- Low heat storage
- High levels of purity due to premium quality raw material
- High hot compressive strength
- A comprehensive range of mortars is available to enable long last joints with superior performance

## Typical Applications

Hot face refractory lining or as back-up insulation in:

- 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)
- Lime and cement kilns
- Glass industry



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Metric and Imperial information

# IFB Insulation Range: Temperatures 1350 - 1650°C (2450 - 3000°F)

	JM™25 SL	K®25	K®26	JM™26	JM™28	JM™30
<b>ISO 2245 Classification</b>	-	-	-	I40 0.8L	I50 0.9L	I60 1.0L
<b>Manufacturing Method</b>	Slinger	Cast	Cast	Slinger	Slinger	Slinger
<b>Manufacturing Location</b>	Italy	US	US	Italy	Italy	Italy
<b>Properties</b>						
<b>Classification Temperature (°C)</b>	1350	1370	1430	1430	1540	1650
<b>Classification Temperature (°F)</b>	2450	2500	2600	2600	2800	3000
<b>Density (kg/m³) (ASTM C-133)</b>	720	617	617	800	890	1020
<b>Density (pcf) (ASTM C-133)</b>	44.93	38.50	38.50	49.92	55.54	63.65
<b>Modulus of Rupture (MPa) (ASTM C-133)</b>	1	0.95	0.9	1.5	1.8	2
<b>Modulus of Rupture (psi) (ASTM C-133)</b>	145	137.75	130.5	217.5	261	290
<b>Cold Crushing Strength (MPa) (ASTM C-133)</b>	1.3	1.3	1.3	1.6	2.1	2.1
<b>Cold Crushing Strength (psi) (ASTM C-133)</b>	188.5	188.5	188.5	232	304.5	304.5
<b>Perm Linear Shrinkage (ASTM C-210) % after 24 hrs Soak</b>						
@ 1290°C (2354°F)	-0.5	-	-	-	-	-
@ 1350°C (2462°F)	-	-0.3	-	-	-	-
@ 1400°C (2552°F)	-	-	-0.3	-0.2	-	-
@ 1510°C (2750°F)	-	-	-	-	-0.4	-
@ 1620°C (2948°F)	-	-	-	-	-	-0.8
<b>Reversible Linear Expansion, maximum %</b>	0.55	0.8	0.7	0.7	0.8	0.8
<b>Deformation Under Hot Load (ASTM C-16) % after 90 min.</b>						
JM Brick tested	1200°C @ 0.069 (2192°F @ 10 psi)	2	0.2	0.2	-	-
according to ISO 3187	1260°C @ 0.069 (2300°F @ 10 psi)	-	-	-	0.2	0.1
	1320°C @ 0.069 (2408°F @ 10 psi)	-	-	-	-	0.1
	1370°C @ 0.069 (2498°F @ 10 psi)	-	-	-	-	0.5
<b>Thermal Conductivity (W/m·K) (ASTM C-182)</b>						
@ 260°C	-	0.15	0.16	-	-	-
@ 400°C	0.22	-	-	0.25	0.3	0.38
@ 540°C	-	0.18	0.19	-	-	-
@ 600°C	0.25	-	-	0.27	0.32	0.39
@ 800°C	0.29	-	-	0.3	0.34	0.4
@ 815°C	-	0.2	0.21	-	-	-
@ 1000°C	0.34	-	-	0.33	0.36	0.41
@ 1100°C	-	0.22	0.24	-	-	-
@ 1200°C	-	-	-	0.35	0.38	0.42
@ 1370°C	-	-	0.27	-	-	-
<b>Thermal Conductivity (BTU·in/hr·ft²·°F) (ASTM C-182)</b>						
@ 500°F	-	1.04	1.11	-	-	-
@ 752°F	1.53	-	-	1.73	2.08	2.64
@ 1004°F	-	1.25	1.32	-	-	-
@ 1112°F	1.73	-	-	1.87	2.22	2.71
@ 1472°F	2.01	-	-	2.08	2.36	2.78
@ 1499°F	-	1.39	1.46	-	-	-
@ 1832°F	2.36	-	-	2.29	2.50	2.84
@ 2012°F	-	1.53	1.67	-	-	-
@ 2192°F	-	-	-	2.43	2.64	2.91
@ 2498°F	-	-	1.87	-	-	-
<b>Specific Heat Capacity (kJ/kg·K) (ASTM C-182)</b>	1.10	1.07	1.07	1.10	1.10	1.10
<b>Chemical Composition %</b>						
Al <sub>2</sub> O <sub>3</sub>	48	47	48	58	67.1	73.4
SiO <sub>2</sub>	47	38	36	38.8	30	24.6
Fe <sub>2</sub> O <sub>3</sub>	0.9	0.2	0.3	0.7	0.6	0.5
TiO <sub>2</sub>	0.5	1.4	1.2	0.3	0.5	0.5
CaO	0.1	13.5	12.3	0.1	0.1	Trace
MgO + Na <sub>2</sub> O + K <sub>2</sub> O	1.9	0.5	0.4	1.9	1	0.9
<b>CO Attack (popouts after 200 hrs) (ASTM C-288)</b>	-	-	-	Class A	Class A	Class A

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