

## Insulating Firebricks JM



Datasheet Code 1-11-10 E 7/04

MSDS Code

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**Type**  
Insulating firebricks

### Description

Morgan Thermal Ceramics produces six grades of insulating firebricks with limiting temperatures of use ranging from 1260°C to 1790°C. Each grade is formulated to meet specific thermal and physical requirements.

JM Firebricks are made from high-purity refractory clays, with graduated additions of alumina for the higher temperature products, and a carefully graded organic filler, which burns out during manufacture to give a uniform, controlled pore structure.

Each brick is machined to precise tolerances on all six faces.

Morgan Thermal Ceramics also produces a range of mortars to suit the different grades of brick.

**Classification Temperatures From**  
1260°C up to 1790°C

**Maximum Continuous Use Temperature**  
The maximum continuous use temperature depends on the application. In case of doubt, refer to your local Morgan Thermal Ceramics distributor for advice.

**Features**  
**Low thermal conductivity**  
Gives good thermal insulation, enabling the use of thin-walled constructions.

**Low heat storage**  
Due to their light weight and low thermal conductivity, JM bricks absorb minimal heat, giving significant energy savings in cyclically-operated kilns.

**Purity**  
The very low iron and alkali flux content confers good refractoriness and the high alumina content contributes to their stability in reducing atmosphere.

**High hot compressive strength**

**The accurate dimensions**  
Enable the bricks to be laid more quickly, with thin, uniform joints, allowing the construction of strong and stable structures.

**Large bricks or slabs**  
They are available in sizes 230 x 610 x 64 or 76mm and 250 x 640 x 64mm. These can be machined into special shapes, incurring fewer sections and joints.

**Purpose-designed packaging**  
Protects the bricks in transit (in cartons containing 4 to 25 item, depending on shape) and facilitates on-site handling.

**Typical Applications**  
Recommended for use as a primary hot face refractory lining or as back-up insulation behind other refractories in furnaces, kilns, flues, refining vessels and heaters, regenerators, gas producers and main, soaking pits, stress relieving furnaces, reactor chambers and similar high temperature industrial equipment.

**Special Shapes**  
In addition to the standard brick sizes, JM insulating firebricks are available in pre-machined special shapes. The blanks for very large shapes are formed by mortaring together two or more JM slabs, the unique large sizes of these slabs ensuring the least number of sections and joints in the finished article.

A Morgan Thermal Ceramics distributor will be pleased to review your requirements.

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### Main properties

		JM 23	JM 26	JM 28	JM 30	JM 32	Insalcor*
ISO 2245 classification		125 0.5L	140 0.8L	150 0.9L	160 1.0L	170 1.2L	180 1.3L
IFB classification temperature	°C	1260	1430	1540	1650	1760	1790
<b>Properties Measured at Ambient Conditions (23°C/50% RH)</b>							
Density (ASM C-134-84)	kg/m <sup>3</sup>	480	800	890	1020	1250	1310
Modulus of rupture (ASTM C-93-84)	MPa	1.0	1.5	1.8	2.0	2.1	3.1
Cold crushing strength (ASTM C-93-84)	MPa	1.2	1.6	2.1	2.1	3.5	6.3
<b>High Temperature Performance</b>							
Permanent linear change (ASTM C-210) after 24 hours soaking at temperature							
1230°C	%	-0.2	-	-	-	-	-
1400°C	%	-	-0.2	-	-	-	-
1510°C	%	-	-	-0.4	-	-	-
1620°C	%	-	-	-	-0.8	-	-
1730°C	%	-	-	-	-	+0.6	+0.4
Reversible linear thermal expansion (max)	%	0.5	0.7	0.8	0.9	1.1	1.1
Hot load strength % deformation after 90 mins (ASTM C-16)							
1100°C at 0.034 MPa (5psi)	%	0.1	-	-	-	-	-
1260°C at 0.069 MPa (10psi)	%	-	0.2	0.1	-	-	-
1320°C at 0.069 MPa (10psi)	%	-	-	0.2	0.1	-	-
1370°C at 0.069 MPa (10psi)	%	-	-	-	0.5	0.2	-
1450°C at 0.069 MPa (10psi)	%	-	-	-	-	-	+0.1
Thermal Conductivity (ASTM C-182) at mean temperature of							
400°C	W/m.K	0.12	0.25	0.30	0.38	0.49	0.79
600°C	W/m.K	0.14	0.27	0.32	0.39	0.50	0.81
800°C	W/m.K	0.17	0.30	0.34	0.40	0.51	0.90
1000°C	W/m.K	0.19	0.33	0.36	0.41	0.53	1.03
1200°C	W/m.K	-	0.35	0.38	0.42	0.56	1.17
1400°C	W/m.K	-	-	-	-	0.60	1.32
Specific heat at 1000°C	kJ/kg.K	1.05	1.10	1.10	1.10	1.10	1.10

The values given herein are typical values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Therefore, the data contained herein should not be used for specification purposes. Check with your Thermal Ceramics office to obtain current information.

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		JM 23	JM 26	JM 28	JM 30	JM 32	Insalcor*
<b>Chemical composition (tr = trace)</b>							
Al <sub>2</sub> O <sub>3</sub>	%	37.0	58.0	67.1	73.4	77.0	77.0
SiO <sub>2</sub>	%	44.4	39.1	31.0	25.1	21.5	21.0
Fe <sub>2</sub> O <sub>3</sub>	%	0.7	0.7	0.6	0.5	0.3	0.4
TiO <sub>2</sub>	%	1.2	0.1	0.1	0.1	tr	0.6
CaO	%	15.2	0.1	0.1	tr	tr	tr
MgO	%	0.3	0.2	0.1	tr	0.1	tr
Na <sub>2</sub> O + K <sub>2</sub> O	%	1.1	1.7	0.9	0.9	0.9	0.2

### Availability and Packaging

Insulating firebricks JM are packed in cartons on shrink film wrapped pallets, INSALCOR is supplied on double faced pallets and stabilized.

Quantity of bricks per carton															
L1	xL2														x thick
	110	114	124	152	165	172	178	187	220	230	25	305	610	640	
220	25	-	-	-	16	-	-	-	12	-	-	-	-	-	60
230	-	25	-	20	-	20	16	-	-	15	-	10	5	-	64
230	-	20	-	16	-	16	13	-	-	12	-	8	4	-	76
250	-	-	25	-	-	-	-	16	-	-	12	-	-	5	64

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