

Technical Data Sheet

Insulation Firebricks

General Description:

Insulation Firebricks (IFB) are light weight refractory product with low thermal conductivity. These products can be widely used as refractory thermal insulation layer in various high temperature industrial units, which improves energy saving and thermal efficiency.

Dirgodaz Amol Industries Co, manufactures different grades of insulating firebricks (SD-B series) for maximum service temperature up to 1650°C. These products are designed according to ASTM C155 classification and other special requirements.

Manufacturing process and features:

These products are formulated from different high purity and low iron oxide content main raw materials such as clays, alumina silicates, alumina, and organic pore formers, which are processed with high temperature sintering. This manufacturing process enables to production of high quality product with stable structural and phase characteristics and homogenous porous microstructure which provides reliable thermal insulation performance and long term service life.

These products are characterized by following technical properties:

high purity, low alkali flux and iron oxide content, low thermal shrinkage and high dimensional stability, high thermal stability, low thermal conductivity, high compression and flexural strength, good thermal shock and spalling resistance, good resistance to chemical corrosion in reducing atmospheres (carbon monoxide and etc.) and precise dimensions.

Typical Applications:

Insulation Firebricks can be widely used in various high temperature industrial units, as thermal preservation layer, such as hot face insulation lining, or back-up insulation lining and in combination with other refractory products. These products can be used in various heat processing units of following industrial applications:

- chemical & petrochemical (olefin, methanol)
- ferrous metals (iron ore pelletizing, iron ore direct reduction, steel, cast iron)
- non-ferrous metals (aluminum, copper)
- ceramic (tile, porcelain, glass, cement)

Geometrical Dimensions:

These products are cut to precise dimensions and available with the following sizes. Also other sizes can be produced to achieve the different arches shapes. Precise dimensional tolerance leads to tight insulation refractory lining, which resulting in lower heat loss through the joints. Suspended roof bricks with dimensions of (230/230/130-150) and (230/260/130-150) mm can be produced with jointing of bricks with refractory mortars and machining, for applications such as ceramic kiln

Dimensions	length	width	thickness
values (mm)	230	114	64-76
	230	152-172-178	76
	250	124	64-76

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Technical Specification:

The following data represents typical average values of each physical, chemical and mechanical quality properties for standard and special grades of insulation firebricks, which also are subject to normal tolerances. These parameters are characterized according to standard procedures. Also new products can be developed to achieve the specific customer technical specification and design requirements for some types of industrial applications.

Standard grades:

Standard grades of insulating firebricks are designed for maximum service temperature range of 1260°c to 1650 °c according to ASTM C155.

Standard Grades Description:

SD-B23/1 and SD-B23/2 are standard grades (G23) with service temperature of 1260 °c. SD-B23/1 has lower density and thermal conductivity, and SD-B23/2 has higher density and strength.

SD-26 is standard grade (G26) with service temperature of 1430°c. This brick has good chemical corrosion resistance, for applications which are subject to alkali materials, such as suspended roof brick in ceramic industries.

SD-28 and SD-30 are respectively contributes to G28 and G30 standard grades.

Property	unit	IFB Classification- standard grades				
Classification		B3	B3	B4	B5	B6
Purchase code		SD-23/1	SD-23/2	SD-26	SD-28	SD-30
Standard grades, ASTM	C155	G23	G23	G26	G28	G30
Max service temperature	°c	1260	1260	1430	1540	1650
Bulk density ASTM C134	g/cm ³	0.60	0.75	0.80	0.90	1.05
Cold Crushing Strength ASTM C133	kg/cm ²	12	20	20	25	30
Permanent linear change ASTM-C210	%	0.2	0	0.75	0.75	1
	condition	1230°c 24h	1230°c 24h	1400°c 24h	1510°c 24h	1620°c 24h
Thermal Conductivity (w/m.k) ASTM-C182	600 °c	0.20	0.28	0.28	0.34	0.42
	800 °c	0.23	0.33	0.31	0.37	0.45
	1000 °c	0.25	0.35	0.33	0.39	0.47
	1200 °c	-	-	-	0.41	0.50
Chemical analysis (%)	Al ₂ O ₃	≥ 35	≥ 35	≥ 52	≥ 65	≥ 70
	SiO ₂	≤ 60	≤ 60	≤ 43	≤ 31	≤ 26
	Fe ₂ O ₃	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
	Others	≤ 4	≤ 4	≤ 4	≤3	≤3

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Special grades:

Special grades of insulating firebricks are designed for maximum service temperaturerange of 1200 °c to 1500°c.

Special Grades Description:

SD-20/1 and SD-20/2 are special grades withlower alumina content and service temperature of 1200 °c. SD-20/1 has lower density and thermal conductivity, and SD-20/2 hashigher density and strength.

SD-25/1 and SD-25/2 are special grades withservice temperature of 1320 °c. SD-25/1 has lower density and thermal conductivity, and SD-25/2 hashigher density and strength.

SD-28/S is special grade with service temperatures of 1500°c, and has the combination properties of high strength, good wear resistance, good chemical corrosion resistance to alkali materials and superiorthermal shock resistance. This brickcan be used for various applicat ionswhich are subject to thermal stress and thermal shock impacts, such as for suspended roof bricks, burner and flue gas opening.

Property	unit	IFB Classification- special grades				
Classification		B2	B2	B3	B3	B5
Purchase code		SD-20/1	SD-20/2	SD-25/1	SD-25/2	SD-28/S
Max service temperature	°c	1200	1200	1320	1320	1500
Bulk density ASTM C134	g/cm ³	0.60	0.80	0.60	0.75	0.95
Cold Crushing Strength ASTM C133	kg/cm ²	12	16	12	20	25
Permanent linear change ASTM-C210	%	0.5	0.3	0.5	0.2	0.5
	condition	1170°c 24h	1170°c 24h	1290°c 24h	1290°c 24h	1470°c 24h
Thermal Conductivity (w/m.k) ASTM-C182	600 °c	0.21	0.29	0.19	0.27	0.35
	800 °c	0.25	0.35	0.21	0.31	0.39
	1000 °c	0.27	0.37	0.23	0.33	0.42
Chemical analysis (%)	Al ₂ O ₃	≥ 25	≥ 25	≥ 38	≥ 38	≥ 55
	SiO ₂	≤ 70	≤ 70	≤ 57	≤ 57	≤ 40
	Fe ₂ O ₃	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
	Others	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4