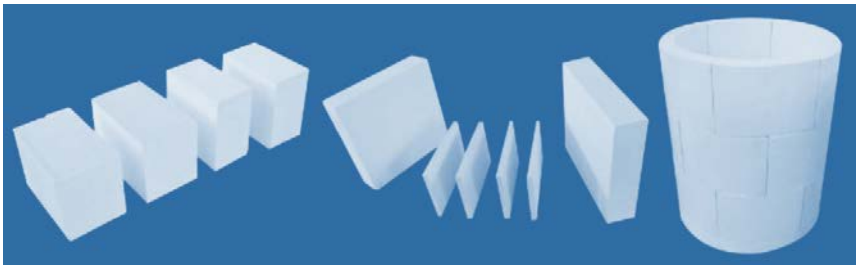
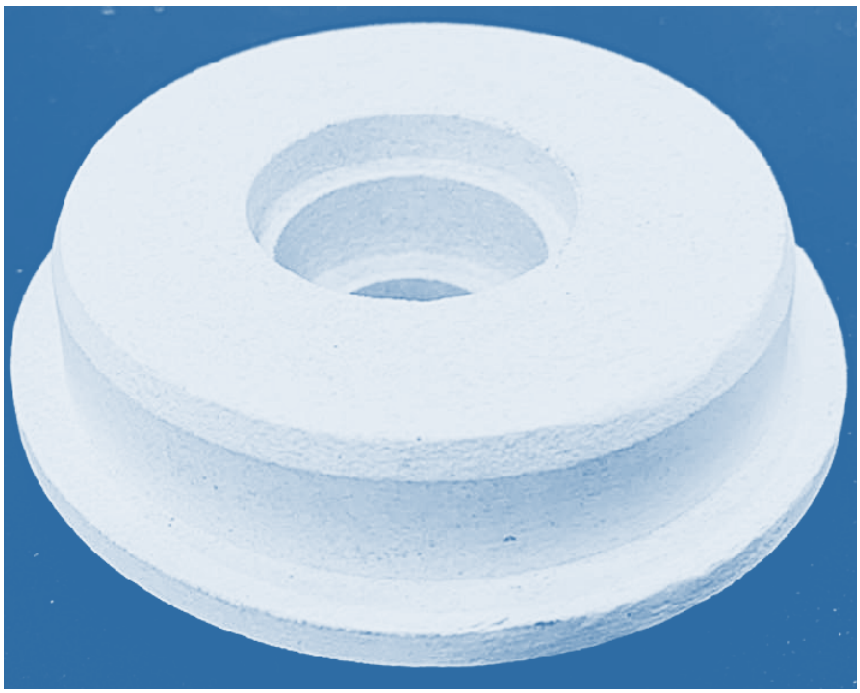
Wedge India

Calcium Silicate Boards

High Insulation | Fire Protection | Low Cost





High Insulation Performance
0.056 - 0.18 W/m K

Wide Temperature Resistance
600 ºC - 1350 ºC

High Fire Rating for Buildings
30 minutes - 240 minutes

Wide Range Strength
0.75 - 85 MPa

Wide Range Densities
220 - 1800 Kg/M^3

Wedge Heat Insulation Solutions

Improved solutions to heat problems are constantly required in most applications and processes starting from (-) 60 °C to 1750 °C to improve operational performance and durability of equipments, reduce heat loss, save energy, save space, and protect environment.

Finding heat insulation system with highest insulation performance (lowest thermal conductivity), high mechanical strength, high service temperature, easiest application, long lasting, and lowest cost is almost impossible. However, thanks to the modern insulation technologies and latest developments in combining wide range of technical properties making it available a wide range of insulation materials & systems to achieve optimized high performance at low cost and long lasting insulation systems at extremely low maintenance cost.

Heat insulating materials usually have a total porosity of at least 45%, in practice mostly from 60 to 90%, and in extreme cases up to 99%. Besides low thermal conductivity, high porosity causes reduced mechanical strength, high gas permeability and low corrosion resistance. The thermal conductivity not only depends on the total porosity of the material, but also on the pore size and shape, the structure composition and the mineralogical composition.

Depending on temperature, the factors responsible for the flow of heat – solid state conduction, convection and radiation – vary in influence. Maximum pore diameters of < 1 mm are necessary. Micro -porous insulating materials with pores < 0.1 µm have the lowest thermal conductivity.

Wedge manufactures and offers wide range of Insulation solutions designed in-house, manufactured with high quality raw materials, and fabricated to highest precision.

Wedge Insulation systems satisfy the demand for optimum planning, thermal profiles, ready to use shapes, lower thickness, easy installation, high insulation performance, long life, and lower maintenance cost. Our insulation materials are most suitable for all types of surfaces straight and cylindrical.

Our wide range of insulation products include: Microsilica, Fumed Silica, Nano-porous, Microporous, Millboards, Magnesium Silicate, Calcium Silicate, Perlite, Vermiculite, Refractory Fibre Cement, Ceramic Fibre, Glass Wool, Slag Wool, Foam Glass, Aerogel, Vacuum Insulation.

What is Insulation?

Insulation is a property of any material that explains the resistance to transfer or transmit any form of energy it could be sound, heat, electricity, fire, cooling, vibrations. In general term Insulation is used to describe material that creates barriers for transmission of electricity, heat, moisture, shock or sound.

What is thermal or heat Insulation?

Thermal insulation of any material (organic or inorganic) is the resistance to heat transfer or transmission. To understand insulation materials we need to understand the physics of heat transfer. Heat transfer can occur through conduction (solid & gaseous), convection and radiation. Usually the overall heat transfer comes from a combined effect of all of them. The driving force in this process is the temperature difference. In furnaces and plants with low mechanical load and without corrosion stress, a design with lightweight heat insulating materials has almost completely eliminated heavy designs with dense, refractory materials.

Heat insulating materials are products for the refractory lining of thermal industrial plants with the objective of reducing heat losses. Here the low thermal conductivity and the thermal capacity of air is used. Heat insulating materials usually have a total porosity of at least 45%, in practice mostly from 60 to 90%, and in extreme cases up to 99%. Besides low thermal conductivity, high porosity causes reduced mechanical strength, high gas permeability and low corrosion resistance. The thermal conductivity not only depends on the total porosity of the material, but also on the pore size and shape, the structure composition and the mineralogical composition. Depending on temperature, the factors responsible for the flow of heat solid state conduction, convection and radiation vary in influence. Maximum pore diameters of < 1 mm are necessary.

Wedge Micro Silica Aerogel Microporous FSMP insulating materials with pores < 0.1 µm have the lowest thermal conductivity. The thermal shock resistance of lightweight construction materials has a large influence on applications. High temperature wool products usually resist severe thermal shocks. Other lightweight construction materials are sensitive to thermal shock. The term “heat insulating bricks” covers those heat insulating materials which are applied up to 1000°C and which are often mistakenly referred to as rear insulation materials. These products are manufactured on the basis of naturally occurring lightweight raw materials (kieselguhr, vermiculite, perlite). They are assigned to the group of lightweight refractory bricks which are made out of refractory raw materials.

What is Heat transfer?

The heat energy transfer rate through a body is proportional to the temperature gradient across the body and its cross sectional area. In the limit of thickness and temperature difference, the fundamental law of heat transfer is:

Q = λA x dT / dx

Q is the heat transfer (W)
A is the cross-sectional area (m2)
dT/dx is the temperature/thickness gradient (K/m)
λ is defined as the thermal conductivity value (W/m.K)

Even the very best thermal insulation will not block heat completely. Every material will transfer some heat if a temperature gradient exists across its thickness. According to the known laws of thermodynamics, heat will always fl ow from a region of high temperature to one of lower temperature. This is simple physics. The effectiveness of a material as a thermal insulator can be expressed in terms of its thermal conductivity.

Solid Conduction Heat transfer

In a solid, a liquid, or a gas, as individual molecules heat up they vibrate more and more. In solid conduction heat energy is transferred from one adjacent molecule to another by this vibration. The transfer rate is related to the material's density or mass. The higher the mass, the higher the conduction will be. It is also related to the length and cross section of the conduction path. The rate of solid conduction is directly proportional to the cross sectional area of the conduction path, and inversely proportional to the length of that conduction path.

Convection Heat transfer

Convection is heat transfer by bulk movement within a heated fluid such as a liquid or a gas. Free convection is caused by expansion of gas or fluid when heated, causing hot regions to become less dense and buoyant and to rise. Circulation occurs as the hot fluid cools and sinks down again. Free convection systems can be very large and convey massive amounts of heat, for instance in weather systems and the circulation of molten rock inside the earth. The gas or liquid particles may be energised when passing by a warmer solid mass. A classic convector heater is a perfect example (hot air rises, and as it cools down, it falls). Convection currents are avoided by the inability of the air molecules to flow inside the microporous structure. Since a microporous material consists mostly out of entrapped air (> 95%), it cannot act as an intermediary solid material to allow convection of the surrounding air.

Radiation Heat transfer

All objects absorb and emit thermal radiation. Also called infrared radiation, the heat is transferred by the emission of electromagnetic waves. No particles are involved, unlike in the processes of conduction and convection, so radiation can even work through the vacuum of space. This is why we can still feel the sun's heat, although it's 150 million km away from the earth. The hotter an object is, the more infrared radiation it emits. The radiation rate is proportional to the fourth power of temperature, resulting in rapidly increasing heat loss when temperature rises.

Gaseous Conduction Heat transfer

All materials whether solid, liquid, or a gas, have mass and a thermal conductivity and can therefore conduct heat. When gas molecules are heated, the heat energy is converted to kinetic energy and they start moving faster. Gaseous conduction occurs when adjacent gas molecules collide and transfer their kinetic energy. The mean free path of a gas molecule is the average distance it will need to travel before it collides with another molecule. The mean free path of an air molecule at STP is around 93 nm (3.66 x 10-6 inches).



High Temperature Insulation

High temperature insulation materials also known as Industrial Thermal Insulation materials market is driven by growing demand in various end-use industries, such as petrochemical, ceramic, glass, aluminum, and iron & steel. High-temperature insulation materials operate at high-temperature ranges such as 600°C - 1600°C. Petrochemical is the largest and fastest-growing end-use industry of high temperature insulation materials. High temperature insulation materials such as ceramic fibers, insulating firebricks and calcium silicate, which are used in high-pressure steam piping, flanges, boilers, dryers, furnaces and turbines. Most common high temperature insulation materials are ceramic fiber, calcium silicate, insulating firebrick, and others and Ceramic fibers are the leading segment worldwide in the High Temperature Applications.

What is Thermal conductivity λ Lambda value?

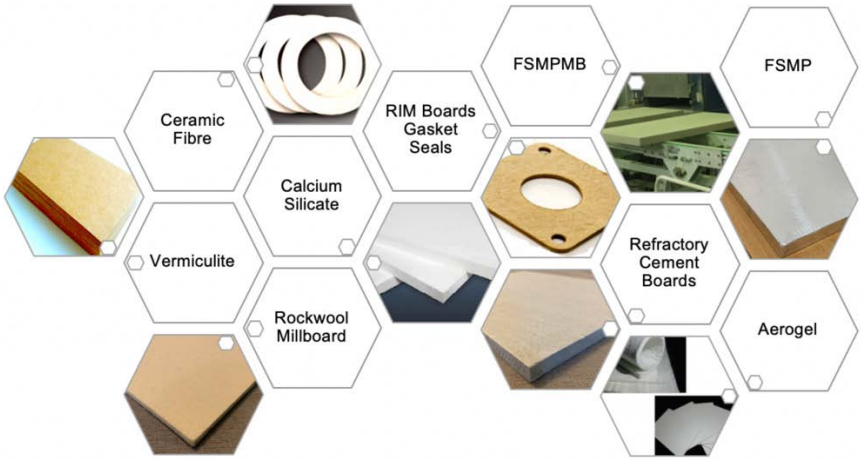
Thermal conductivity is the rate at which heat passes through a specified material, expressed as the amount of heat that flows per unit time through a unit area with a temperature gradient of one degree per unit distance. The thermal conductivity of a material is a measure of its ability to conduct heat. It is commonly denoted by k, \lambda, or \kappa. Heat transfer occurs at a lower rate in materials of low thermal conductivity than in materials of high thermal conductivity. A good high temperature insulator has a very low thermal conductivity at high temperatures. Not all materials transfer heat equally and the thermal conductivity (λ value) of a material is a physical property which describes its ability to transfer heat. The lower the thermal conductivity value, the more resistant a material is to the heat transmission. An insulator therefore has a low thermal conductivity, while a conductor has a high thermal conductivity. Examples of the thermal conductivity of some common materials or substances at ambient temperatures.

Formula to calculate Thermal Conductivity of any material.
K or λ = Qd / A (T1 - T2)
K = thermal conductivity
Q = amount of heat transferred
d = distance between the two isothermal planes
A = area of the surface
T1-T2= difference in temperature

λ value Copper = an excellent conductor 401 W/m.K
λ value Carbon steel = 54 W/m.K
λ value Glass = 1.05 W/m.K
λ value Air 0.026 = W/m.K
λ value Wedge Microporous insulation = 0.021 W/m.K
λ value Wedge HVIP (High Vaccum Insulation Boards) = < 0.0035 W/mK
λ value of Wedge Aerogel WAG650 = 0.015 W/m.K

Wedge Insulation Products

- High Performance Aerogel Insulation Boards, Panels, Blanket, Silica Gel Powder
- Calcium Silicate Board, Calcium Silicate Building Boards, Fire Resistant Calcium Silicate, High Density Calcium Silicate Boards
- Centrifugal Casting Millboards, Ceramic Millboards Discs
- Ceramic Braided Rope Textile, Ceramic Cloth & Fabric, Ceramic Fibre Blanket, Ceramic Fibre Boards, Ceramic Fibre Insulation, Ceramic Paper, Ceramic Wool Bulk Fibre
- Fire Resistant Rockwool Boards, Fire Sleeve, Glass Wool / Fibreglass, Heat Loss Calculator
- Insulation Bricks WETON, Intumescent Fire Door Seal
- MgO Boards for High Temperature Insulation, Fire Door Manufacturing, Partitions, Wall, Roof
- WEDGE RIMB Steel Plant and Aluminium Ladle insulation Boards
- High Performance Low Cost Microporous Insulation, Microporous Pipe Insulation
- Millboard, Non Asbestos Millboards Gaskets, Strips, Discs for Stainless Steel Plant Roller
- Low Density High Strength Perlite Insulation for Cryogenic and High Temperature insulation
- Rigid Foam Spray PUF / PIR Insulation for Wall, Roof,SIP, Cold Storage
- Rigid Insulation Board for Steel Plant Ladles and Tundish Insulation
- Rockwool Insulation, Rockwool Insulation Boards HD for Fire Door Insulation
- Vacuum Insulated Cold Box, Vacuum Insulation Panel Board for Cold Chain Insulation
- Vermiculite Board for Ladle Insulation, Fire Door, Steel Structure Fire Protection
- WAIFLEX Rubber Foam for AC Pipe Insulation, XPLPE Foam Insulation



Case Study | Heat Loss Reduction in Oven Furnace

How to achieve 40 °C Cold Face Skin Temperature?

Steady state heat transfer calculation plane wall - vertical

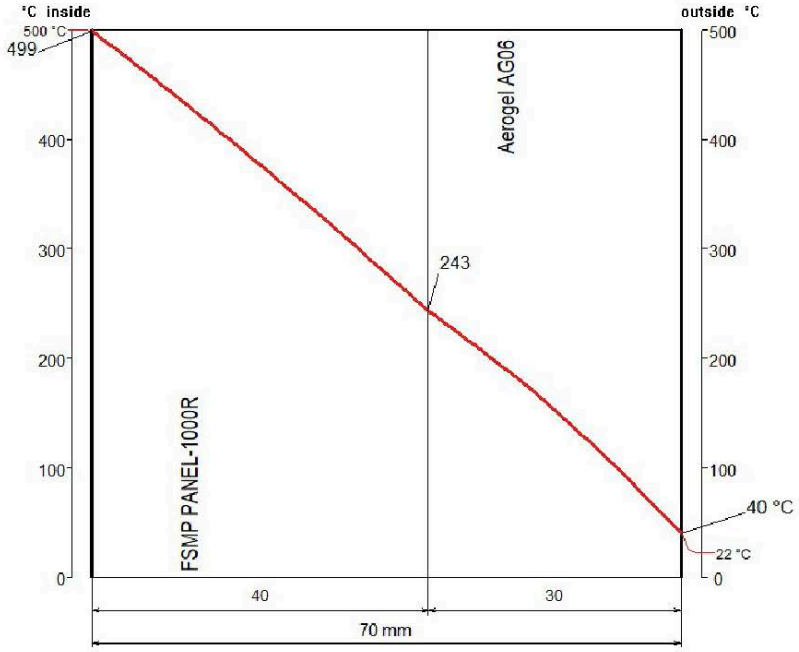
Offer/Order No.		Name	
Customer	Foodtech Ventures	Date	30.04.2022
Project	500C Oven Insulation	Revis.Name	
Location		Revis.Date	

Calculation

	inside	outside		unit	lining characteristics
Ambient temperature	500	22		°C	164.8 W/m2 Heat loss
Surface temperature	498.9	39.9		°C	3.807 MJ/m2 heat storage
Heat transition coefficient	150	9.221	(1)	W/m2K	16.2 kg/m2 weight
					70 mm total thickness

(1) Calculation method ASTM C680, issue 2004 Emissivity=0.89 - wind =0 m/s

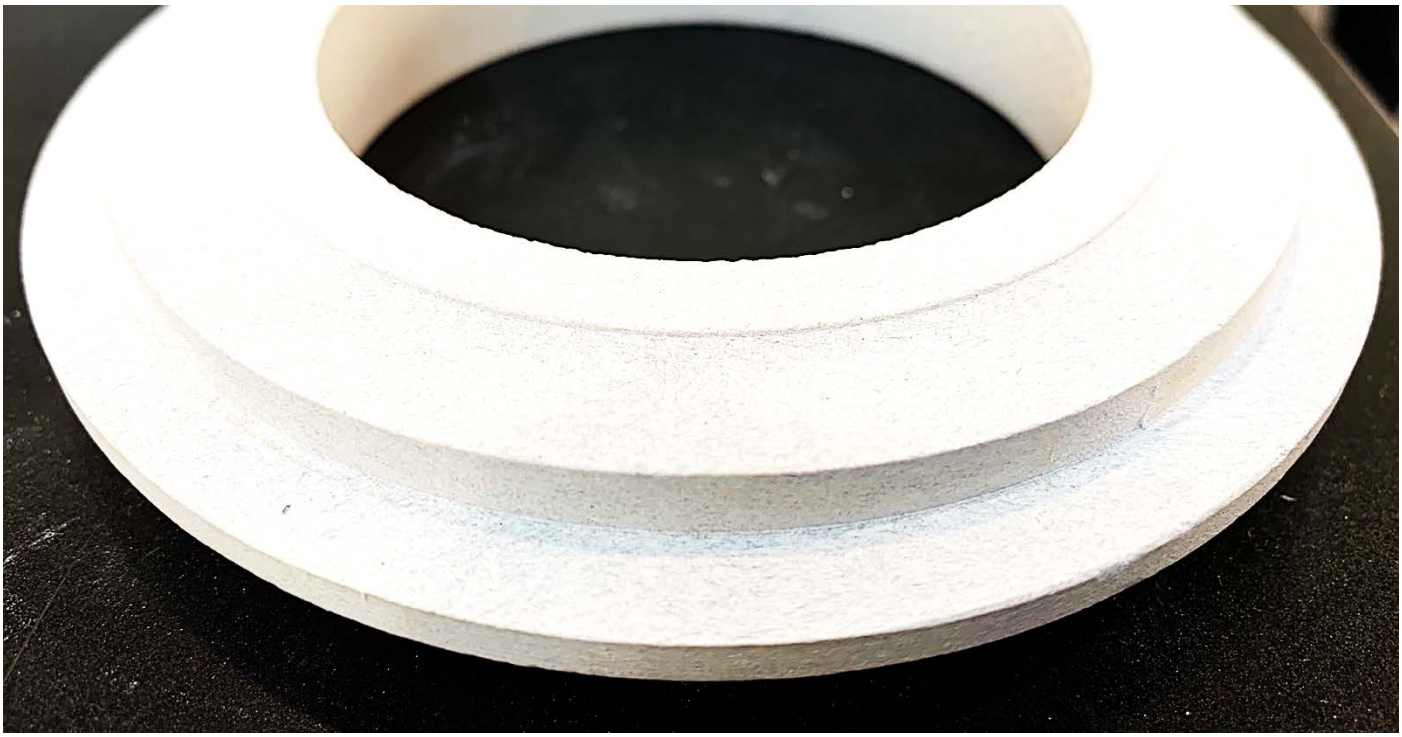
wall layers from inside to outside		Thickn.	Density	Classif.	temperature border	temperature mean	K mean
	Material	mm	kg/m3	°C	°C	°C	W/mK
1	FSMP PANEL-1000R	40	240	1000	498.9	375	0.0256
2	Aerogel AG06	30	220	500	243	149	0.024
					39.9		



Wedge Calcium Silicate Insulation Products

Low Density Calcium Silicate Board

Wedge lightweight low density & medium density Calcium Silicate Boards are manufactured with Filter Press & Gel Tank Technology to achieve low density, high strength, high temperature insulation, machinability. These boards and machined ready to use designs are most suitable as thermal insulation for processes in various industrial applications.



High Density Calcium Silicate Board

Wedge high density Calcium Silicate Boards are manufactured with Filter Press Technology to achieve very high strength, high temperature insulation, high machinability, and non-wettability to molten metals. These boards and machined ready to use designs are most suitable as thermal insulation for processes in direct contact with molten aluminium such as transfer ladle, casting, holding, metal bath furnace in launders, spouts, floats, hot top ring headers, and holding furnaces for die-casting.

Fire Resistant Calcium Silicate Board

Wedge high density fire resistant Calcium Silicate Boards are non-combustible engineered mineral board reinforced with selected Fillers and Fibres. These boards are most suitable for building applications to protect from fire.

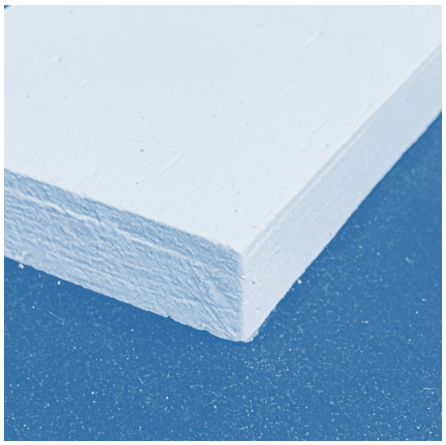
- Fire Resistance: 120 - 240 Minutes
- Longer Guarantee Life: More than 30 Years
- High Insulation: Acoustic & Thermal

W-LD 650, 900, 1000, 1100 | Low Density Calcium Silicate Boards

Wedge lightweight low density & medium density Calcium Silicate Boards are manufactured with Filter Press & Gel Tank Technology to achieve low density, high strength, high temperature insulation, machinability. These boards and machined ready to use designs are most suitable as thermal insulation for processes in various industrial applications.

Features and Advantages

- Low thermal conductivity.
- Resistant to H2, CO, CH4, NH3, N2.
- Low density & lightweight.
- High thermal resistance.
- High mechanical strength.
- Vibration resistant.
- Resistant to moisture and chemicals.
- Low heat storage.



Applications

- High temperature insulation and heat protection.
- Steel industry: smelting, heat distortion and heat treatment plants.
- Ceramic industry: chamber and tunnel furnaces.
- Glass industry: melting furnaces and cooling channels.
- Cement industry: heat exchangers and cyclone separators.
- Chemical and petrochemical industry: thermal cracking. reactors and processing plants.

Technical Properties

Quality		W-LD 650	W-LD 900	W-LD 1000	W-LD 1100
Color		White	White	White	White
Service temperature	°C	650	900	1000	1100
Bulk density	kg/m3	220 - 240	245	255	255
Open Porosity	%	90	90	90	90
Reversible thermal expansion	m/m K		5.4x10-6	5.4x10-6	5.5x10-6
Cold compressive strength	MPa	0.75	1.5	1.6	1.6
Flexural strength	MPa	0.35	0.5	0.5	0.5
Linear shrinkage @ Service Temperature	%	1.8	0.9	1	1
Thermal conductivity					
200 °C	W/m K	0.062	0.075	0.075	0.075
400 °C	W/m K	0.095	0.105	0.105	0.105
600 °C	W/m K		0.145	0.145	0.145
800 °C	W/m K		0.175	0.175	0.185
Specific heat capacity at 400 °C	kJ/kg K		1.03	1.03	1.05
Protective gas-resistance			CO, NH3, H2, CH4, N2 atmosphere		
Standard Sizes					
Length	mm	1000 - 600	1000 - 600	1000 - 600	1000 - 600
Width	mm	600 - 300	600 - 300	600 - 300	600 - 300
Thickness	mm	25 - 100	25 - 100	25 - 100	25 - 100

HD150, 280, 850, L23, T1000 | High Density Calcium Silicate Boards

Wedge high density Calcium Silicate Boards are manufactured with Filter Press Technology to achieve very high compressive strength at high temperature, high temperature insulation, and high machinability. These boards and machined ready to use designs are most suitable as thermal insulation for hot tank support base insulation, pipe support, die-casting, heat shield to concrete.

Features and Advantages

- Low thermal conductivity.
- High mechanical strength.
- Resistant to moisture and chemicals.
- Excellent machinability to close tolerances.
- Dust free surface & Asbestos free.
- High electrical strength.
- High arc resistance.

Applications

- Heat protection, Load-bearing pipe columns.
- Dryer, ventilation and air conditioning technology.
- Insulating cut sections for industrial applications.
- Special applications for the construction of fireplaces.
- Furnace construction, special parts for induction furnaces.
- Machine and apparatus construction.
- Precision parts for machine and apparatus construction.
- Thermal and electrical insulation, Arc chutes.
- Oven and drier walls/cladding, Platen press insulation, Load bearing pipe supports.
- Heat shields, Thermal breaks, Furnace bottom.
- Working lining in low energy aluminium die cast holding.

Technical Properties

Quality		HDL23	HD150	HD280	HDT1000	HD850
Colour		White	White	White	White	White
Classification temperature	ºC	350	900	1000	1000	1000
Bulk density	kg/m3	1800	750	950	1400	900
Cold compressive strength	MPa	85	15	28	55	18
Bending strength	MPa	32	7	10	16	8
Hardness	Shore D					55
Shrinkage at CT 12 hour		0.5	0.4	0.4	0.25	0.20
Thermal conductivity						
200 ºC	W/(m K)	0.5	0.16	0.28	0.56	0.20
400 ºC	W/(m K)		0.19	0.30	0.54	0.22
600 ºC	W/(m K)		0.20	0.31	0.52	0.24
800 ºC	W/(m K)		0.22	0.32	0.49	0.28
Specific heat capacity	kJ/kg K		0.96	1.03	1.05	0.92
Standard Sizes						
Length	mm			100 - 3000		
Width	mm			100 - 1500		
Thickness	mm			6 - 100		

HD 900, 1000, Z140, M1000, C45 | High Density Calcium Silicate Boards

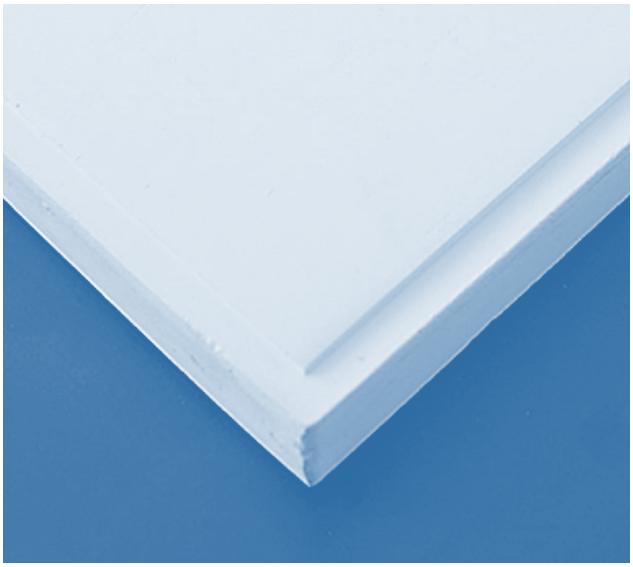
Wedge high density Calcium Silicate Boards are manufactured with Filter Press Technology to achieve very high strength, high temperature insulation, high machinability, and non-wettability to molten metals. These boards and machined ready to use designs are most suitable as thermal insulation for processes in direct contact with molten aluminium such as transfer ladle, casting, holding, metal bath furnace in launders, spouts, floats, hot top ring headers, and holding furnaces for die-casting.

Advantages

- Low thermal conductivity, Low heat capacity Molten aluminium can be transferred with minimal reduction in temperature.
- Used for the lining of the holding furnace, energy savings can be achieved by raising temperature in a shorter time than conventional castable.
- Excellent machinability for variety of shapes such as floats, spouts, hot top ring headers, etc.
- It is non-wettable with molten aluminium, so it is easy to remove solidified metal.

Applications

- Molten aluminium launders.
- Molten aluminium baths for holding furnaces
- Floats, spouts, stopper pins.
- Hot top ring headers, Floats, Spouts, etc.
- Distribution boxes, dams, baffles, filter boxes.
- Troughs, head boxes.
- Working lining in low energy aluminium die cast holding.



Technical Properties

Quality		HD900	HD1000	Z140	M-1000	C45
Colour		White	White	White	White	White
Classification temperature	ºC	1000	1000	1000	1000	1000
Bulk density	kg/m3	860	1000	840	800	1000
Cold compressive strength	MPa	19	28	1% @2.3	1% @2.7	> 30
Bending strength	MPa	7	12	8.8	9.3	> 8
Hardness	Shore D	55	68	64	64	
Shrinkage						
at 750 ºC after 12h Linear	%	0.2	0.1	@ 24hr 0.4	@ 24hr 0.4	0.1
at 750 ºC after 12h Thickness	%	0.6	0.6	@ 24hr 1.1	@ 24hr 1.1	
at 1000 ºC after 12h Linear	%	0.3	0.15	@ 24hr 0.9	@ 24hr 0.6	
at 1000 ºC after 12h Thickness	%	1.1	1.8	@ 24hr 4.6	@ 24hr 2.0	
Thermal conductivity						
200 ºC	W/(m K)	0.24	0.25	0.2	0.19	0.25
400 ºC	W/(m K)	0.25	0.26	0.2	0.2	0.26
600 ºC	W/(m K)	0.25	0.28	0.2	0.2	0.27
800 ºC	W/(m K)	0.27	0.29	0.2	0.2	0.27
Specific heat capacity	kJ/kg K	0.96	0.97			0.97
Reversible thermal expansion						
(20–750 °C)	K-1 x 10-6	7	4.5			6-7x10-6
Chemical analysis						
CaO	%	38–52	38–52			38–52
SiO2	%	45–55	45–55			45–55
Al2O3	%	1.4	1.4			1.4
Fe2O3	%	< 1.1	< 1			< 1
LOI	%	< 5	< 5			< 5
Standard Sizes						
Length	mm			100 - 3000		
Width	mm			100 - 1500		
Thickness	mm			12.7 - 101.6		

CMA, C18, CCG4, WL100 | Graphite Reinforced Calcium Silicate Boards

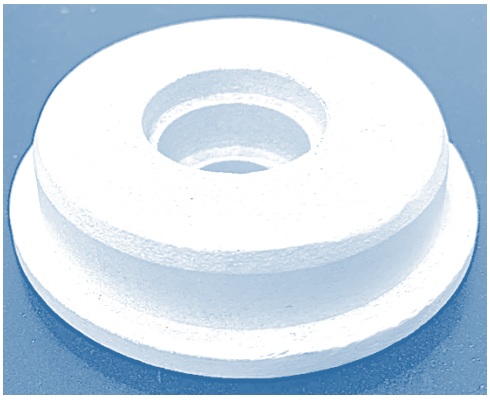
Wedge graphite reinforced boards and designs combines the mechanical and physical properties of graphite and calcium silicate that provides very high load carrying capacity. With these boards and designs you can achieve very low shrinkage, less oil absorption, less out gassing when in metal contact, high non-wetting with molten metal, excellent machinability due to improved toughness and strength. After contact with the aluminium metal almost zero sticking of metal to the surface of boards and design parts. This can also reduce the transport of oxides into the casted part as well as the overall consumption of metal alloy.

Features and Advantages

- Very low shrinkage.
- Less oil absorption.
- Less out gassing when in metal contact.
- High non-wetting with molten metal.
- Excellent machinability.

Applications

- Transfer & transport launders, ladles.
- Bushings, hot top rings.
- transition plates, tips, snouts, filter boxes.
- head boxes, headers, floats and spouts.



Technical Properties

Quality		W-CMA	W-C18	W-CCG4	WL-101
Classification temperature	ºC	1000	850	1000	1000
Bulk density	kg/m3	1040	816 - 818	1100 - 1150	800
Cold compressive strength	MPa	17	16	22 - 24	1% @2.7
Bending strength	MPa	9.5	8	10 - 11	9.3
Hardness	Shore D	60		65 - 70	64
Shrinkage					
at 750 ºC after 12h Linear	%	0.1	0.1	0.25 - 0.3	@ 24hr 0.4
at 750 ºC after 12h Thickness	%	0.8	0.6	0.8	@ 24hr 1.1
Thermal conductivity					
200 ºC	W/(m K)	0.2	0.2		0.19
400 ºC	W/(m K)	0.2	0.2	0.64 - 1.2	0.2
600 ºC	W/(m K)	0.21	0.21	0.52 - 0.92	0.2
800 ºC	W/(m K)	0.22	0.22	0.37 - 0.62	0.2
(20–750 °C)	K-1 x 10-6		7	6.2 - 6.7	
Chemical analysis					
Calcium Silicate	%	82-85		90 - 95	
Graphite	%			4 - 8	
Standard Sizes					
Length	mm		100 - 3000		
Width	mm		100 - 1500		
Thickness	mm		12.7 - 101.6		

Installation SOPs: A double wall of high-density Calcium silicate the third walls a low-density Calcium Silicate as backing insulation is used. One also can apply Vermiculite, microporous material or vacuum formed ceramic fibre boards. The thickness depends what wall temperature you will allow on the outside wall. Heat treatment of the high-density material will influence mostly the amount of shrinkage during the first heat treatment cycles of the furnaces. Some of our customers request shrinking of the boards, others request the lowest shrinkage possible. Then you have to use heat treated boards. Heat treatment is less importance of costs but more important to the furnace design.

HSI 1200 | High Density Wollastonite Calcium Silicate Boards

Wedge HSI 1200 are Calcium Silicate based Refractory Insulation Boards made of high quality refractory mineral fibers and calcium silicate bonded with high temperature clays. These insulation boards possess unique combination of properties for various industrial applications in furnace backup insulation, high temperature gasketing & seals, high temperature electrical insulation, etc.

Applications

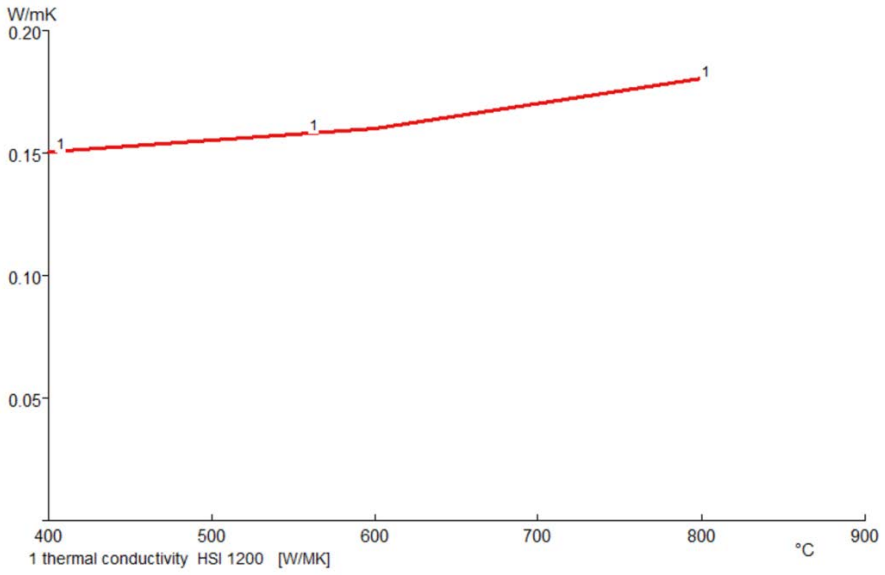
- Ladle & Tundish Insulation.
- Lime Kiln and Cement Kiln Insulation.
- High temperature gasket & sealings.
- Boiler & Furnace Insulation.
- Oil & Gas Burners Insulation.
- Furnace, Dryer, and Oven Insulation.
- Pipe & duct Insulation.
- Metal clad Gaskets fillers.
- Gaskets for centrifugal casting.
- Glass rollers as washers on mandrel.
- Stainless Steel Plant Rollers Insulation.
- Electrical & home appliances insulation gaskets.
- Fire Resistant Doors, Lifts, Safes, Cupboards.

Features & Benefits

- Very Strong Boards with high compressive strength.
- High temperature resistance up to 1200°C.
- Low Thermal Conductivity at high temperatures.
- High Electrical Resistance at high temperature.
- High fire resistance and heat shield properties.
- Easy to cut and punch.
- Available in pipe section for pipe insulation.

Technical Properties

Properties	HSI 1200
Base Materials	Calcium Silicate & Refractory Fibre
Classification Temperature, °C	1200
Density, Kg/M3	1000
Thermal conductivity, W/m.K	
400 °C	0.15
600 °C	0.17
800 °C	0.18
Tensile Strength, Mpa	5
Flexural Strength, Mpa	6
Shrinkage % @ 1000 °C	< 1
Compressive Strength, Mpa	8 - 10
Loss on Ignition %	7



HSI 1100 | High Density Wollastonite Calcium Silicate Boards

Wedge HSI 1100 are calcium silicate & wollastonite fibres based boards ideal for high temperature backup insulation, fire protection, fire doors, electrical home appliances, electrical arcs, furnace backup insulation, high temperature gasketing, duct fire protection, pipe insulation, fire & insulation seals, high temperature electrical insulation, etc.

Applications

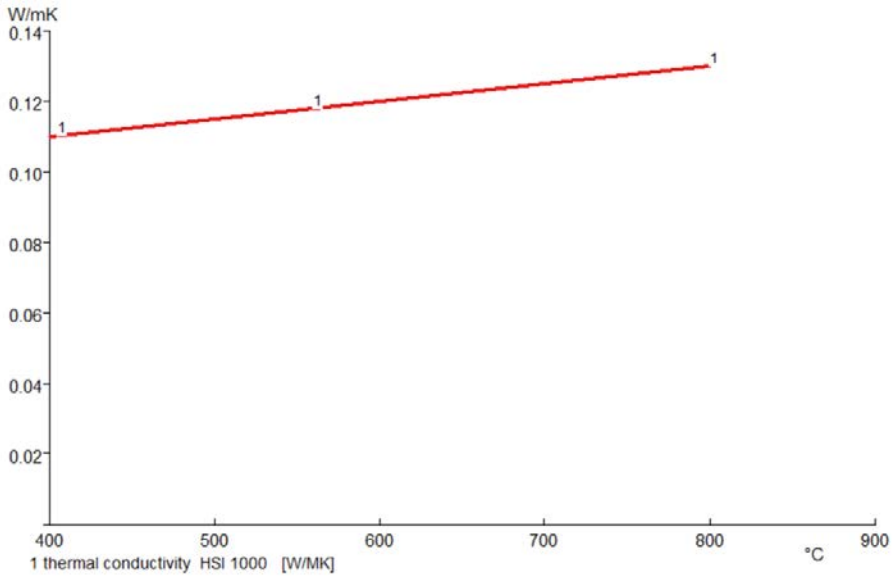
- Ladle & Tundish Insulation.
- Lime Kiln and Cement Kiln Insulation.
- High temperature gasket & sealings.
- Boiler & Furnace Insulation.
- Oil & Gas Burners Insulation.
- Furnace, Dryer, and Oven Insulation.
- Pipe & duct Insulation.
- Metal clad Gaskets fillers.
- Gaskets for centrifugal casting.
- Glass rollers as washers on mandrel.
- Stainless Steel Plant Rollers Insulation.
- Electrical & home appliances insulation gaskets.
- Fire Resistant Doors, Lifts, Safes, Cupboards.

Features & Benefits

- Very Strong Boards with high compressive strength.
- High temperature resistance upto 1100°C.
- Low Thermal Conductivity at high temperatures.
- High Electrical Resistance at high temperature.
- High fire resistance and heat shield properties.
- Easy to cut and punch.
- Available in pipe section for pipe insulation.

Technical Properties

Properties	HSI 1100
Base Materials	Wollastonite fibres & Calcium Silicate
Classification Temperature, °C	1000
Density, Kg/M3	1000
Thermal conductivity, W/m.K	
400 °C	0.11
600 °C	0.12
800 °C	0.14
Tensile Strength, Mpa	5
Flexural Strength, Mpa	6
Shrinkage % @ 1000 °C	< 1
Compressive Strength, Mpa	8 - 10
Loss on Ignition %	8

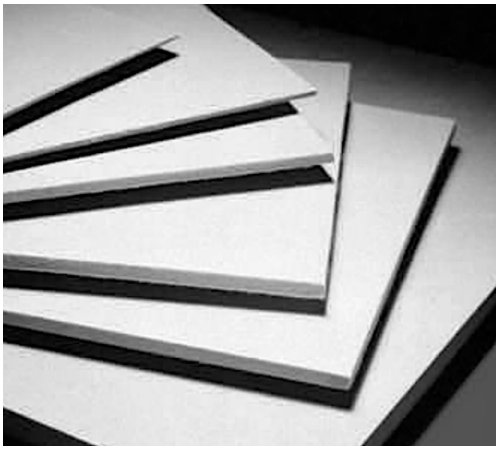


RIMB | High Temperature Millboards & Gaskets

Wedge RIMB are Refractory Grade High Temperature Resistant Insulation Millboards sheet, gaskets, and seals are made of high quality refractory mineral fibers such as wollastonite, calcium silicate, rockwool bonded with high temperature clays. These insulation boards possess unique combination of properties for various industrial applications in furnace backup insulation, high temperature gasketing & seals.

Features & Benefits

- Very Strong Boards with high compressive strength.
- High temperature resistance from 1000 to 1200°C.
- Very low Thermal Conductivity at high temperatures.
- High Electrical Resistance at high temperature.
- High fire resistance and heat shield properties.
- Easy to cut and punch.
- Adaptable by wet moulding for pipe insulation.



Applications

- Ladle & Tundish Insulation.
- Lime Kiln and Cement Kiln Insulation.
- High temperature insulation Gaskets.
- Boiler & Furnace Insulation.
- Oil & Gas Burners Insulation.
- Furnace, Dryer, and Oven Insulation.
- High temperature Pipe Insulation.
- Refractory insulation expansion joints.
- Metal clad Gaskets fillers.
- Gaskets for centrifugal casting.
- Glass rollers as washers on mandrel.
- Stainless Steel Plant Rollers Insulation.
- Electrical & home appliances insulation gaskets.
- Fire Resistant Doors, Lifts, Safes, Cupboards.

Technical Properties

Properties		RIMB 1000 A	RIMB 1100 A	RIMB 1260 A
Colour		Brown / White	Buff	White
Classification Temperature, °C		1000	1100	1260
Density, Kg/M3		1000	1000	1000
Thermal conductivity, W/m.K				
	400 °C	0.11	0.12	0.11
	600 °C	0.12	0.13	0.12
	800 °C	0.14	0.14	0.13
Electrical Resistance, ΩXx109 /cm2		7.9	4.2	2.4
Tensile Strength, MPa		5	5	5
Flexural Strength, MPa		7	6	6
Shrinkage % @ 1000 °C		2	1.8	1.6
Compression Strength, MPa		8	12	12
Loss on Ignition %		11	8	7

FP1000, SP1150 | High Density Fire Resistant Calcium Silicate Board

FP1000 and SP1150 Insulating boards are made of high temperature resistance fireproof materials, cement, and calcium silicate based asbestos free minerals. These boards are large sized and very easy to handle and work for the production of mechanically strong, self-supporting constructions.

Features & Benefits

- Maximum short term temperature resistance up to 1200 Degree C.
- High fire resistance up to 240 Minutes with maximum 10 mm thickness.
- Continuous operating temperature resistance up to 450 Degree C.
- Longer guarantee life more than 15 Years.
- Good thermal insulation.
- High acoustic insulation.
- Unaffected by humidity.

Applications

- Structural steel protection, Self-supporting ceilings.
- Dryers & Oven Insulation.
- Industrial Furnaces, Apparatus Construction.
- Wet and Damp Rooms.
- Timber floor protection, upgrading of timber floors.
- Cladding to steel ducts, self-supporting ducts.
- M&E services enclosure, Smoke barrier, parapet/spandrel wall.
- Access panels and hatches, fire doors.
- Tunnel lining, concrete/brick floor and wall upgrading.
- Fire Door manufacturing for FD30, FD60, FD120, FD240.

Technical Properties

Properties		FP1000	SP1150
Color		White / Grey	White / Light Brown
Short Term Service Temperature °C		1200	1000
Classification Temperature °C		400	100
Density, Kg/M3		880 – 900	1150
Thermal conductivity, W/m.K			
	20 °C	0.16	0.18
	100 °C	0.18	
	200 °C	0.20	
Tensile Strength, Mpa		5	4
Flexural Strength, Mpa		8	8
Shrinkage % @ 400 °C, 24 h		0.25	-
Compression Strength, Mpa		10	8
Fire Rating for 10 mm thick board, Minutes		240	120
Building material class		A1, Non-Combustible	A1, Non-Combustible
Sizes, mm		2500 x 1220	2500 x 1220
Thicknesses, mm		4 – 30	4 – 30
Thickness Tolerances, for < 12 mm		+/- 0.7	+/- 0.7
Water content, %		< 10	< 10
Moisture Movement		< 0.25	< 0.25

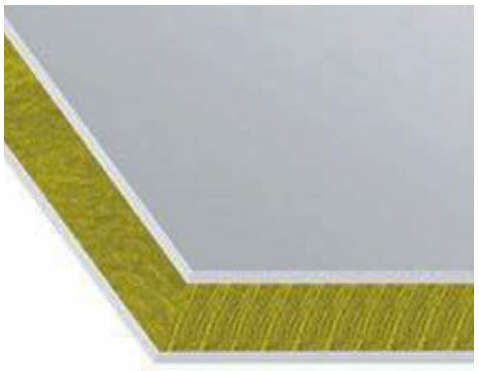
HDSP450 | Calcium Silicate Insulation Sandwich Panel

Wedge CalSil HD450 insulating boards are produced with a special cement technology, calcium silicate based and purely mineral, asbestos-free. These large-sized insulating boards are easy to work and have a favourable combination of special technical properties for the production of mechanically strong, self-supporting constructions.

Their physical behaviour permits combining techniques for thermal insulating, drying technology, humidity, ventilation, fire protection, noise protection, these materials are harmless and not subject to any classification.

Feature & Advantages

- Harmless in terms of working hygiene.
- Large-sized, self-supporting.
- Good insulating effect.
- High permanent temperature resistance.
- Minimum thermal bridges.
- Corrosion and rot-resistant.
- Good chemical resistance.
- Vibration-proof.
- Secure and variable fixings and connections.
- Uncomplicated breakthroughs producible.
- Diffusion open, no condensates.
- Long service life.
- Energy-saving.
- Dimensionally stable, low thermal expansion.
- Variable surface coatings are possible.
- Cost-reducing thanks to ready-to- assemble systems and easy processing.



Application

- Industrial Dryers.
- Apparatus construction.
- Wet and damp rooms.
- Industrial furnaces.
- Hospitals for partition Insulation.
- Fire Protection Walls.
- Fire Resistant Partitions.
- Heat Shield Barriers.
- Interior wall heat Insulation.
- Acoustic Insulation.
- Noise Reduction.
- Heat and moisture protection in industrial plants.
- Replacement for asbestos containing boards.

Technical Properties

Product Name	HDSP450
Color	Light grey / White
Classification temperature	450°C
Shrinkage @ 400 °C – 24h full soak	0.25
Bulk density ρ	870 kg / m 3
Compressive strength	9.3 N/ mm 2
Thermal conductivity λ	0.16 W/ m K
Length mm	2440
Width mm	1220
Thickness mm	6, 8, 9, 10, 12, 15, 20, 25

Wedge India

Wedge Industries Limited
14th Floor 143, Building No. 120
Silver Oaks Tower, DLF Phase 1
Gurugram - 122002, Haryana, India
Tel: + 91 124 4144480
Email: info@wedge-india.com
Web: www.wedge-india.com