

DOMESTIC FIREPLACES AND CHIMNEYS





With friendly assistance by CB-tec / CB-stone-tec.

MODERN MATERIALS FOR SUCCESSFUL CONSTRUCTION OF FIREPLACES.

SILCA is an internationally operating service and sales company of the CALSITHERM group specialized in high temperature materials as well as lightweight thermal insulation in different fields of application. Over the past years we have been the only German producer of calcium silicates to show that with innovative products you can continuously improve both the safety and productivity in the assembly of fireplaces. Our guarantee is the close contact to specialist craftsmen and the specialized trade and our treasure trove of experience obtained in the course of time, not least in the insulation in the industrial sector.

For the construction of domestic fireplaces SILCA offers two different calcium silicate boards, each especially adapted to its particular application. In addition, in Europe our SILCA® 250KM is a well-established thermal insulation board used for the protection of mounting walls and for the cladding of fireplaces. Our calcium silicate insulation board is authorized by the Deutsche Institut für Bautechnik Berlin (German Institute for Civil Engineering), national technical approval no. Z-43.14-117. The test results for the determination of the equivalent thicknesses according to the technical rules of the tiled stove and air heating building trade are shown in the following diagrams. The construction board for fireplaces SILCAHEAT® 600C combines the natural desire for thermal radiation in the operation of domestic fireplaces with the modern requirements on a construction material for easy and fast assembling of fireplaces.

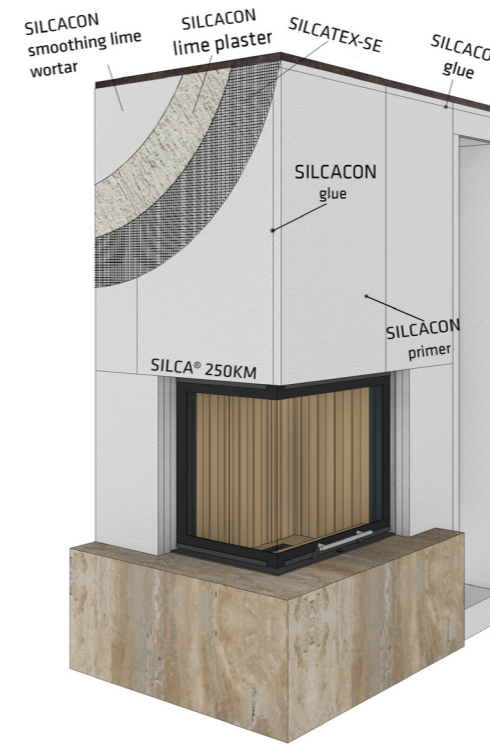
The main components of the SILCA calcium silicate boards are lime and sand. These are physiologically safe and classified as environmentally compliant construction material. This is guaranteed by our modern production facilities, permanent quality control, external supervision and certification according to DIN EN ISO 9001: 2008. The environmental compatibility is certified by the environmental product declaration according to ISO 14025 and EN 15804 issued by the Institut Bauen und Umwelt e.V. (German institute for construction and environment), declaration no. EPD-CSP-2013111-IAC2-DE

SILCA® 250KM

SILCA® 250KM is a real European champion. Thus the VKF Vereinigung Kantonaler Feuerversicherungen (Association of Swiss Cantonal Fire Insurance Underwriters) issued the Swiss Fire Prevention Approval no. 15202, the biggest Scandinavian research institute SINTEF issued certificate no. 120-0238, and for sure our **SILCA® 250KM** insulation board also achieves the results required by the new Austrian standard Ö-Norm B8311 in its issue 2013-12-15. Across the borders this means safety and untroubled pleasure in the building and heating of domestic fire places. According to standard EN 14 306:2010 **SILCA® 250KM** received the certificate no. 0432-CPD-420002242/2-6.

and not only for this reason guarantees more favorable results than comparable products. The required thickness of the insulation layer is determined on the basis of the assembly instructions of the stove manufacturers, the technical rules TR-OL and further national regulations. Depending on the individual case of application and where appropriate, an active air ventilation has to be provided.

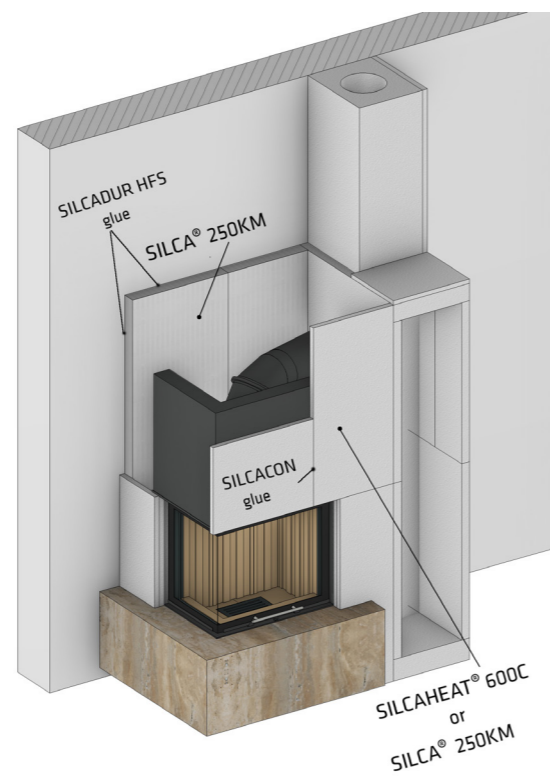
The calcium silicate insulation board has been certified with the environmental product declaration by Institut Bauen und Umwelt e.V. (IBU, Institute for Construction and Environment) in accordance with ISO 14025 and EN 15804. **SILCA® 250KM** can be disposed of as construction rubble in accordance with the European waste catalogue code EWC 170101.



Material designation SILCA® 250KM

Approval in Germany	National technical approval no Z-43.14-117 valid for fireplace and tiled stove construction
Approval in Switzerland	Fire Prevention Approval no. 15202
Approval SINTEF NBL	120-0238 (50mm)
CE-Certificate	0432-CPD-420002242/2-6
Reaction to fire	Non-combustible A1 by DIN EN 13501-1
Bulk density (± 10%)	250 kg/m ³
Porosity	approx. 90%
Compressive strength	> 1,4 MPa
Thermal resistance (board thickness 40 mm)	≥ 0,5 m ² K/W
Thermal conductivity at 200 °C	< 0,1 W/m K
Thermal expansion at 500 °C	< 0,2 %
Standard dimensions in mm	3.000x1.250, 2.000x1.250, 1.250x1.000, 1.250x500, 1.000x625, 625x500
Standard thicknesses in mm	30-100

The properties indicated are typical values obtained in serial testing and determined by acknowledged test methods. Product specific spreading of results should be taken into account. The indications do not represent guaranteed properties and cannot be used for any warranty claim. Subject to technical modifications.

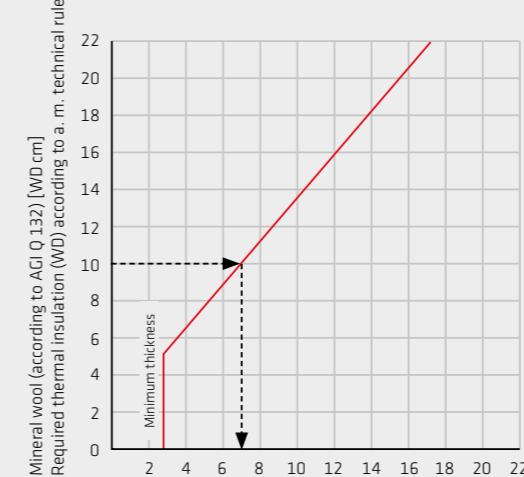


SPECIAL FEATURES

- space saving due to thin insulation thickness
- non-combustible
- environmentally compliant construction material
- physiologically safe
- fire protecting wall and thermal insulation in one single construction material
- large-size boards
- easy handling and assembling
- easy disposal as building waste
- applicable for insulation and construction

For application according to the regulations of the tiled stove and air heating trade

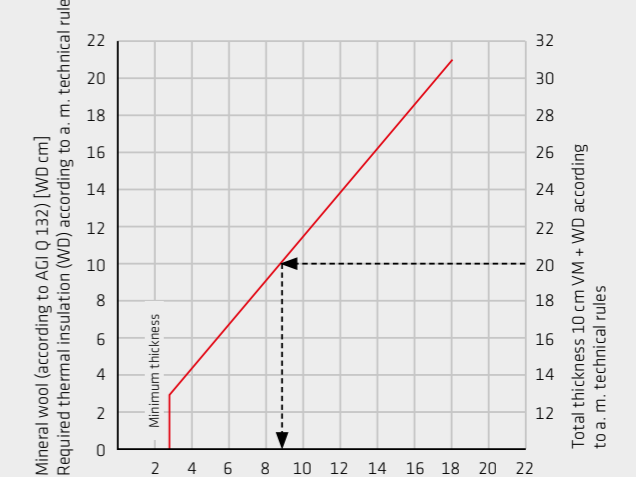
a) As substitute for thermal insulation



Example:
Required thermal insulation (WD) with mineral wool (according to AGI Q 132) according to manufacturer instruction: 10 cm

Corresponds 7,3 cm SILCA® 250KM

b) As substitute for fire protecting wall and thermal insulation



Example:
Required thermal insulation (WD) with mineral wool (according to AGI Q 132) according to manufacturer instruction: 10 cm
Required fire protection wall (VM) according to technical regulation: 10 cm
Total thickness according to DIN 18892: 20cm

Corresponds 8,9 cm SILCA® 250KM

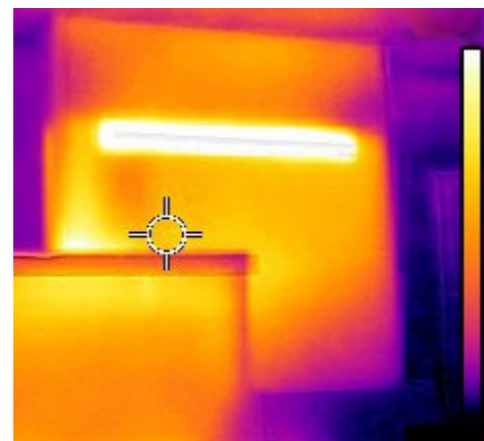
SILCAHEAT® 600C

SILCAHEAT® 600C is an innovative board for the construction of fireplaces. It combines the natural desire for thermal radiation in the operation of domestic fireplaces with the modern requirements on a construction material for easy and fast assembling of fireplaces. **SILCAHEAT® 600C** is a high temperature resistant hybrid material composed of calcium silicate and graphite. Due to the high proportion of graphite the construction board has excellent heat conducting properties for the cladding of fireplaces. SILCAHEAT® 600C is not an insulation board!

SILCAHEAT® 600C meets the requirements of the technical rules for the stove and air heating construction on TR-OL, according to section 3.1 as construction material and component in the heating chamber resp. convection chamber. **SILCAHEAT® 600C** will also fulfill the requirements according to DIN EN 14306. SILCA® 250KM calcium silicate insulation boards have proved to work very well in the insulation of the mounting surface as well as in the construction of domestic fire places. The easy and fast handling of the calcium silicate insulation board allows a safe and economic assembling of the fireplace. The design options are nearly unlimited. The high quality of SILCA® 250KM as insulation board is the only feature that involves certain natural limitations regarding the heat radiation in the room of the fireplace.

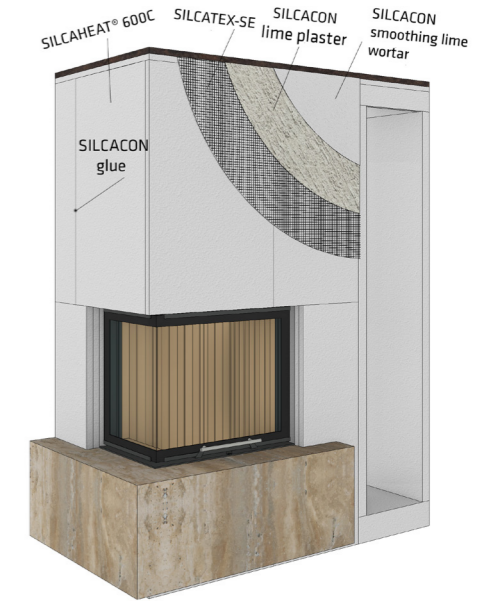
Our newest SILCA product innovation shows that our customers' desires and suggestions can be realized and even surpassed. Our longtime experience as only German producer of calcium silicate boards for the application in domestic fireplaces enabled us to develop the construction board for fireplaces **SILCAHEAT® 600C**. The European Patent Office issued patent number EP251634781 for our innovation. **SILCAHEAT® 600C** is certified by the Materialprüfungsamt NRW (Materials Testing Office of North Rhine Westphalia).

The treatment of **SILCAHEAT® 600C** is easy, fast and safe. The solid self-supporting construction boards for fireplaces can be treated with standard wood machining tools and bonded with SILCACON adhesive. Countersunk screws can be used without pre-drilling, this multiplies the possibilities of assembling. According to the customers' desires **SILCAHEAT® 600C** construction boards for fireplaces may be plastered or decorated with natural stone or stove tiles after mounting.



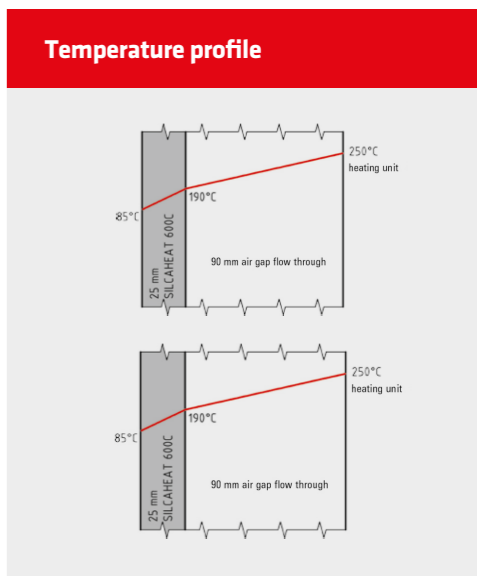
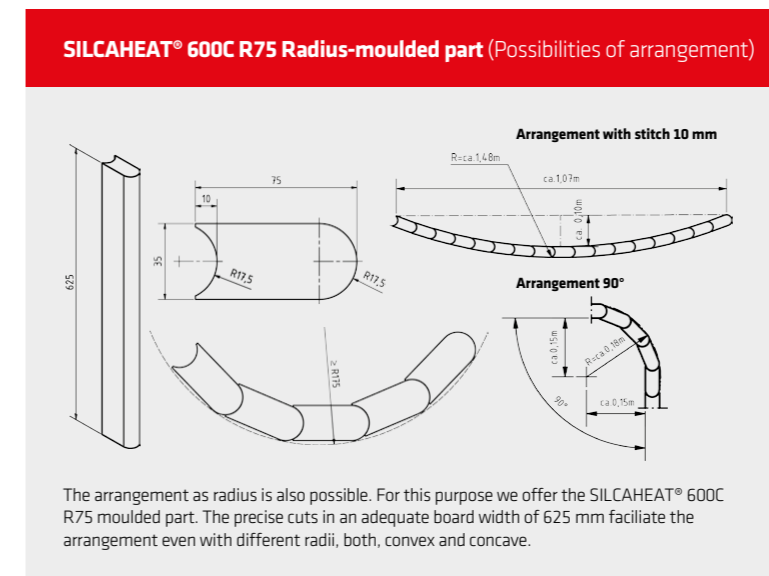
SILCACON lime plaster and SILCACON smoothing lime can be used for plastering of the **SILCAHEAT® 600C** construction board for fireplaces. Due to the high temperatures SILCACON first coat shall not be applied. However, a pre-treatment of the board with SILCADUR HTI impregnation is recommended. The plaster is reinforced with heat-resistant SILCATEX-SE glass mesh fabric.

SILCAHEAT® 600C is a construction board for fireplaces of the newest generation. Being applicable up to 1000 °C it convinces with a light weight and at the same time high compressive strength and excellent edge stability. The radiant heat is given off to the room in a comfortable and homogeneous way. **SILCAHEAT® 600C** is thermal shock resistant, precisely treatable and despite its good thermal conductivity has only a very low thermal expansion. Of course the construction board for fireplaces is free of asbestos. Cuttings and residues can be disposed of as building waste.



SILCAHEAT® 600C technical data	
Product standard	DIN EN 14306
Bulk density	650 kg/m³
Reaction to fire	A1 non-combustible
Application temperature	1,000 °C
Compressive strength	7.0 MPa
Flexural strength	3.0 MPa
Thermal expansion at 500 °C	- 0.03%
Dimensions	1000x625; 1250x500; 1250x1000 mm

- SPECIAL FEATURES**
- extremely light
 - optimum stability
 - good storage capability
 - very good dimensional accuracy
 - good radiation properties
 - extremely low thermal expansion
 - non-combustible
 - self-supporting and dimensionally stable
 - not soluble in water – suitable for wet and dry cutting
 - assembly with adhesive and / or screws
 - enormous saving of time on assembly
 - optimum material combination with SILCA® 250KM
 - environmentally compatible





ACCESSORIES

SILCA® 250KM allows a fast, simple and safe cladding of fireplaces with inactive surface. According to the customer's desire SILCA® 250KM may be plastered or decorated with natural stone or stove tiles. In this case the large-sized insulation board is used as construction board and applied in the area of blankets, side claddings or wooden panels. Even special individual customer demands like e.g. the installation of flat screens can be easily realized. The separation distances within the heating chambers and the ventilation grids have to be

executed according to the manufacturer instructions and technical rules. The SILCACON system consists of different components which complement one another. Therefore, it meets the most different customers' desires regarding the surface finish.

SILCACON – simple, fast and safe cladding of modern fireplaces!

SILCACON adhesive

SILCACON adhesive is a high-quality adhesive mortar which is ready for use after mixing with water and hardens hydraulically. It is a pre-mixed hydraulically setting dry mortar with cement according to DIN 1164 and with high-quality filler additives which has to be mixed with clean water. It serves to bond SILCA® 250KM insulation boards applied in the exterior (cold) construction of fireplaces and tiled stoves.

Please make sure that **SILCACON adhesive** is never applied for the installation of SILCA® 250KM insulation boards in the interior stove. In order to obtain the required fire and heat protection of the protective wall from inside our SILCADUR HFS adhesive which is technically approved has to be applied in the interior stove.

SILCACON adhesive is also applicable to any mineral material for wall construction and grounds suitable for plaster, e. g. brickwork of materials with hydraulically hardened binders according to DIN 1164, DIN 1060, DIN 4211 as well as brickwork of natural materials which are standardised or approved by the construction supervising board according to DIN 1053 (e.g. porous concrete, common bricks and lime sand brick).



SILCACON first coat

SILCACON first coat / deep primer serves to treat the surface of the SILCA® 250KM insulation boards before applying the lime plaster and smoothing lime and should also be applied to the surface before bonding different boards. The first coat reduces the capillary activity of the SILCA® 250KM board and thereby slightly hardens the surface. SILCACON first coat is diluted with clean water in a ratio of 1:2 / 1:3 and can be applied by brush, roll or spraying device. The treated surface becomes slightly blue, for further treatment the surface must be dry. The working environment must be sufficiently ventilated. As long as the first coat has not dried, the working equipment can be cleaned with water.





SILCACON lime plaster – natural white

SILCACON lime plaster with a grain diameter of 0 – 1,2 mm is applied to the surface of the boards pre-treated with SILCACON first coat and well dried. For the connection of boards and for general reinforcement we suggest inserting additionally SILCATEX-SE glass mesh fabric. The lime plaster can be coated in one or two steps. The first plaster layer should be in a range of 5 – 10 mm. According to the certificate of national technical approval the maximum thickness of the total layer is specified to be 15 mm.



SILCACON smoothing lime – natural white

SILCACON smoothing lime can be applied either directly onto the first coated SILCA® 250KM board or as last layer onto the lime plaster in order to smooth the surface. The maximum thickness of layer is 1 mm; according to the certificate of national technical approval it is limited to a total thickness of 2 mm. For further details regarding the handling of our SILCACON products please pay attention to our instructions on the corresponding packaging.

SILCADUR-HTI impregnation

SILCADUR-HTI is a high-temperature resistant impregnation for application on our calcium-silicate products for surface consolidation and dust bonding. The impregnation is inorganic, odour-neutral and suitable for additional surface treatment of the SILCA® 250KM boards in the heating chamber. The impregnation is not suitable as first coat for subsequent plastering and bonding in the constructive area – for this application SILCACON first coat is to be applied. **SILCADUR-HTI** is very easy to handle, it is ready for use and can be applied by brush or spraying device.

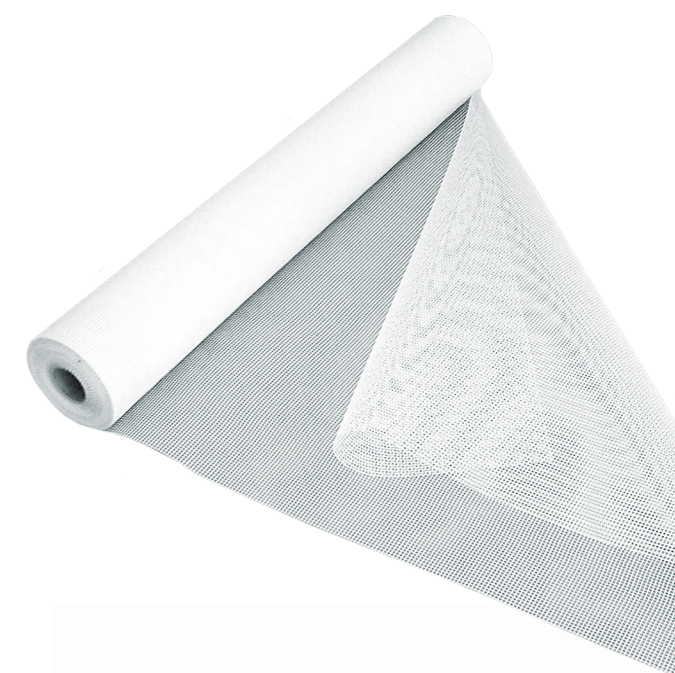


SILCATEX-SE glass mesh fabric

SILCATEX-SE glass mesh fabric is an e-glass with special finish for low-flammability and resistance to lateral movement. It serves to reinforce the plaster and concrete surface. SILCATEX-SE is alkali-resistant, dimensionally stable, and rot-proof and does not contain any caustic or irritating substances.

Material designation	
assification temperature	550 °C
composition of blackening	> 350 °C
Surface weight	approx. 165 kg/m ³
Mesh width	4 x 4 mm
Roll dimension	50 x 1 / 10 x 1 m

The properties indicated are typical values obtained in serial testing and determined by acknowledged test methods. Product specific spreading of results should be taken into account. The indications do not represent guaranteed properties and cannot be used for any warranty claim. Subject to technical modifications.



SILCAWOOL

SILCAWOOL is a high temperature fibre with an increased bio-solubility and is therefore an alternative to the established aluminium silicate wool (ceramic fibre). SILCAWOOL is a spun fibre on the basis of calcium magnesium silicate with high thermal stability, high tensile strength as well as good elasticity. Due to the high biosolubility it is not classified as dangerous material.

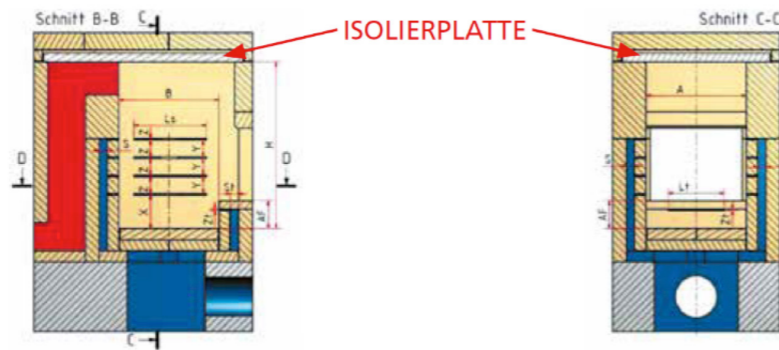
SILCAWOOL fibres

SILCAWOOL fibres are converted into mats, boards, paper and cords or delivered as loose wool.



SILCAWOOL Board HFS

SILCAWOOL Board HFS are solid insulation boards consisting of SILCAWOOL fibres with selected inorganic filling materials and organic and inorganic bonding materials. Due to their light weight they have low heat storage. They can be treated with a cutter knife very easily and with little dust only. The boards are used in industrial furnace construction but also especially in the tiled stove construction.



Illustrations courtesy of the Austrian Kachelofenverband.

Material designation	
Classification temperature	1.150 °C
Bulk density (± 10%)	ca. 360 kg/m ³
Linear shrinkage 24 h - 1.000 °C	< 1,5 %
Thermal conductivity at 600 °C	0,12 W/ (m K)
Dimensions in mm	1.000 x 600 x 25/40

The properties indicated are typical values obtained in serial testing and determined by acknowledged test methods. Product specific spreading of results should be taken into account. The indications do not represent guaranteed properties and cannot be used for any warranty claim. Subject to technical modifications.

SILCAWOOL 120P bio-soluble mats and strips

SILCAWOOL mats are characterized by good tensile strength, are needed on both sides and have no organic bonding materials with unpleasant odour. They provide certain elasticity, e. g. as expansion gap between heating gas flues and tiled wall or other movable components.

Material designation		
Classification temperature		1.200 °C
Bulk density (± 10%)		128 kg/m ³
Mats	Dimensions in mm	14.640 x 610 x 13
		7.320 x 610 x 25
		5.500 x 610 x 6
Strips	Dimensions in mm	5.500 x 50 x 6

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SILCAWOOL 120 paper

SILCAWOOL 120 Paper contains an acrylic bonding agent. Apart from the standard material we also deliver ready-cut stripes with an organic self-adhesive film on one side for easy assembling. These serve primarily as elastic separation between the refractory material and the metallic built-in components such as support frames.



Material designation	
SILCAWOOL 120 paper	1.000 x 10.000 x 3
Standard dimensions in mm	1.000 x 10.000 x 4
	1.000 x 10.000 x 5
Stripe dimensions in mm (self-adhesive)	10.000 x 50 x 5 (further dimensions on request)

Die genannten Eigenschaften sind typische Werte aus Reihenprüfungen, die nach anerkannten Prüfmethode ermittelt wurden. Werkstoff- und produktspezifische Streuungen sind zu berücksichtigen. Die Angaben stellen keine zugesicherten Eigenschaften dar und können nicht für eine Gewährleistung herangezogen werden. Technische Änderungen behalten wir uns vor.





SILCAWOOL AST

SILCAWOOL AST are fittings for chimneys consisting of the biosoluble SILCAWOOL fibre. Due to their special shaping the fittings adapt excellently to the inner tube of the chimney. The enlarged opening on the side of the furnace enables the introduction of a double wall lining. **SILCAWOOL AST** can be processed with a cutter knife. The installation is carried out in consultation with the responsible master chimney sweep.

Material designation			
Classification temperature		°C	1.100
Upper application limit temperature (max.)		°C	950
Bulk density		kg/m ³	350
Colour			Beige
Shrinkage after 24 h at	1000 °C	%	1,5
	1100 °C		< 3,0
Specific thermal capacity	20 - 1000 °C	kJ/(kg K)	1,04
Thermal conductivity λ at t _m	400 °C	W/(m K)	0,20
	600 °C		0,25
	800 °C		0,29
	1000 °C		0,32
Chemical reference analysis	Al ₂ O ₃	%	10*
	SiO ₂		61
	Fe ₂ O ₃		< 0,5
	CaO		25
	MgO		3
Dimensions of the flue tube connection	for Ø 150 mm	mm	100 x Øi160 x Øa200
	for Ø 160 mm		100 x Øi170 x Øa210
	for Ø 180 mm		100 x Øi190 x Øa230
	for Ø 200 mm		100 x Øi210 x Øa250

* this content of aluminium oxide is only contained in the binding agent and the fillers, thus not in the SILCAWOOL wools.

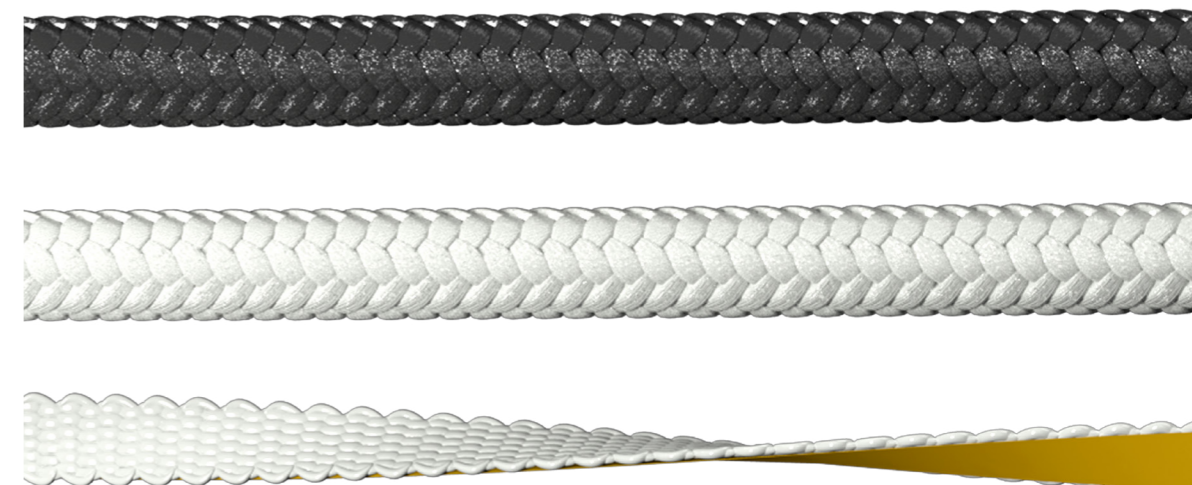
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SILCAVER 55 tapes

SILCAVER 55 tapes are used in different applications for thermal separation or sealing. They are available in white and black colour. Furthermore, for easy assembling we also offer the tapes with an organic self-adhesive film on one side.

Material designation		
Classification temperature	550 °C	
Standard dimensions	Thickness	2/3 mm
	Roll width	10/20/50 mm
	Roll length	50 m

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SILCAVER 55 sealing cords for ovens

SILCAVER sealing cords consist of e-glass and are available in different qualities, e.g. as braided cord with soft core in solid plaited packing (square or round). The softer knitted quality is mostly used in fireplaces and tiled stoves construction. It is available in white and black colour. A further quality is a twisted cord lace-made with brass wire.

Material designation		
Classification temperature	550 °C	
Quality	Diameter	Length
Twisted cord lace-made with brass wire	6/8/10/12/15 mm	6 - 12 mm = 100 m
Knitted cord, black	6/8/10/12/15/20/25/30 mm	15 mm = 50 m
Knitted cord, untreated (white)		20 mm = 25 m
		25 - 30 mm = 10 m

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SILCADUR-HFS adhesive

SILCADUR-HFS adhesive is used as bonding material for SILCA® 250KM boards. The adhesive is provided ready to use in buckets or tubular bags and can be applied directly after stirring or kneading. For further details regarding handling, storage etc. please pay attention to our bonding instructions on the corresponding packaging of the boards.

Material designation	
Classification temperature	950 °C
Package size	Bucket 6,5 kg, Bag 900 g
Frost-free storage in closed package	18 months
Working temperature	10 – 25 °C

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SILCADUR-CSMH adhesive

SILCADUR-CSMH is a repair adhesive on inorganic basis with a classification temperature of 1.300 °C. It serves for the bonding of dense calcium silicates and other mineral building materials among each other as well as for repairing cracks, fractures, etc. in refractory and vermiculite material within the fireplace.

The drying time depends on the layer thickness and the environment (temperature, humidity). In general, the drying time should not take less than 24 hours and the subsequent heating-up has to be effected slowly. In case that the adhesive is not completely hardened, steam bubbles may occur on heating-up. **SILCADUR-CSMH adhesive** is available in resealable cans of 500 ml and in cartridges of 310 ml.



SILCASIL 320 high-temperature silicone

SILCASIL 320 has an excellent adhesive strength and a high temperature-resistance up to 320 °C. It is used for sealing and bonding, e.g. for the bonding of cords or tapes. It can be applied on most firm, clean and dust-free surfaces, e.g. metal, ceramics or mineral materials. Exposure to high temperature is only permitted after complete hardening auf SILCASIL 320. The product is available in resealable tubes of 100 ml and cartridges of 310 ml.



Material designation	
Temperature resistance	max. 320 °C (1.000 h)
Density at 20 °C	1,15 g/cm ³
Hardness	20 Shore A
Working temperature	5 – 40 °C
Film formation on surface	after 10 minutes
Hardening, layer thickness 3 mm	after 24 h
Colour	grey
Packing unit	100 ml tubes, 310 ml cartridges

The properties indicated are typical values obtained in serial testing and determined by acknowledged test methods. Product specific spreading of results should be taken into account. The indications do not represent guaranteed properties and cannot be used for any warranty claim. Subject to technical modifications.



SILCA MORE THAN 30 YEARS OF KNOW-HOW AND INNOVATION

SILCA is an internationally operating service and sales company of the CALSITHERM group specialized in high temperature materials as well as lightweight thermal insulation in different fields of application. Over the past years we have been the only German producer of calcium silicates to show that with innovative products you can continuously improve both, safety and productivity. In refractory technologies we cover all areas in a wide variety of industries, ranging from aluminium casting over domestic fire places and chimneys to heat treatment plants. In addition to the supply of material we also offer a comprehensive service regarding technical demands and innovations. This service includes technical consultation, engineering, material supply, complete service including the assembly of high temperature facilities.

With our companies SILCA Italia, SILCA Insulation (SEA) Malaysia, SILCA South Africa, SILCA Mexico as well as SRS Amsterdam we are operating on a worldwide basis.

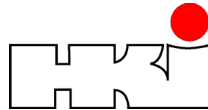
Consistent quality requires the systematical cooperation of all parties involved in the processes of production, sales and application. Thus we develop efficient products that meet our customers high quality requirements. The basis for our quality and innovation is our know-how gained from more than 30 years of experience.

The main keys of our success are the exceptional quality of our products, the high level of customer satisfaction as well as our motivated and qualified employees.



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