

THERMAX[®] Stove refractory

Environmentally compatible combustion technology
for stoves and heaters



Stove refractory

Effective and environmentally compatible: THERMAX® stove refractory for perfect combustion technology

THERMAX® refractory ensures that a stove produces healthy warmth while burning cleanly and economically. What distinguishes high quality from conventional stoves is the efficient combustion technology combined with selected stove materials.

The key to environmentally compatible combustion technology is a high combustion temperature. The higher the temperature, the more efficient and clean the combustion process is. Which means: You need less wood to produce the same heating performance. Virtually no soot particles are produced to soil the glass, which means less cleaning is required.

What is THERMAX® stove refractory made from?

THERMAX® products are based on a raw material called vermiculite, a natural mineral obtained from mining whose mineralogical composition is closely related to the better-known mica. Vermiculite poses no health hazards whatsoever, and is ecologically very valuable.

A special feature of this material is its ability to give off absorbed crystallisation water at a temperature of about 1000 °C while at the same time greatly increasing its volume. The resulting so-called expanded vermiculite is combined with inorganic bonding agents in a hot press to produce large THERMAX® boards or individual THERMAX® moulded parts.

What are the advantages of THERMAX® over other products?

Better combustion protects the environment:

As soon as the fire is lit, THERMAX® stove refractory starts improving combustion in the stove. These improvements are based on the following properties: The thermal conductivity of THERMAX® refractory is low. This low thermal conductivity ensures that the combustion chamber quickly heats up to the necessary temperature. Virtually no soot is produced; the process of burning the wood is environmentally compatible. THERMAX® refractory guarantees superb effectiveness with low emissions.



High quality
stove refractory
made of
THERMAX®

Attractive and environmentally compatible:
THERMAX® combustion chamber boards



THERMAX moulded parts





If conventional materials with a high degree of thermal conductivity are used, some of the heat is lost to the material itself, and to the outer stove walls. As such, the combustion temperature is lower during the heating-up phase, which can result in incomplete combustion. Poor combustion is manifested by increased soot production that soils the glass.

**Extremely resistant to temperature change,
less likelihood of breaking:**

THERMAX[®] boards and moulded parts are manufactured with a specially layered structure: The individual grains of vermiculite are interlinked with each other within the board, which is why THERMAX[®] boards are so good at compensating any stress produced by temperature changes. It is also the reason why they are less likely to break.

Optical advantages:

THERMAX[®] refractory has a smooth, even surface, which does not discolour, giving stoves with THERMAX[®] refractory a more attractive appearance. In addition, THERMAX[®] refractory can be dyed with Techno-Coat HT, a special coating for combustion chambers that is available in black, white or red.

Weight savings:

THERMAX[®] refractory reduces the overall weight of a stove. Replacing fireclay refractory with THERMAX[®] boards can reduce the weight of the refractory by as much as 65%.

Extremely flexible:

THERMAX[®] boards are particularly easy to work with. There is no need to keep a stock of different sets for different stoves since the boards can be cut to size or shaped with conventional woodworking tools. The only stocks required are standard boards, which can be cut to fit the stove in question. As such, quick and easy service is guaranteed if a customer requires new stove refractory.

Positive trend:

Market developments in recent years have shown that THERMAX[®] refractory represents a high quality, safe alternative. *Quality + innovation are the hallmarks of success.*



THERMAX[®] boards are precision-manufactured –
to ensure a perfect fit

Technical specifications

THERMAX®		SF 600	SF 750	SF 850	HD 1200	
Available formats (extract)	mm	2440 x 1250	2440 x 1250			
		1250 x 1000	1250 x 1000	1250 x 1000		
		1000 x 620	1000 x 620	1000 x 620	1000 x 610	
Thickness	mm ±0.5	20 – 50	8 – 40	20 – 30	20 – 80	
Classification temperature	°C	1100	1100	1100	1150	
Bulk density	kg/m³ ±5 %	625	750	850	1200	
Modulus of rupture	N/mm²	2.5	4.5	5.0	6.0	
Cold compressive strength	N/mm²	4.0	6.0	6.5	9.0	
Thermal conductivity	W/mK					
		200 °C	0.16	0.18	0.20	0.31
		400 °C	0.18	0.20	0.22	0.32
Thermal shrinkage	% after 12 h					
		1100 °C	< 2.0	< 2.0	< 2.0	
		1150 °C				< 2.0
Thermal expansion (linear)	% 20 – 700 °C	0.9	0.9	0.9	0.6	

THERMAX® Stove refractory. At a glance:

- Environmentally compatible
- Resistant to temperature change
- Fracture-proof
- Recyclable
- Flexible
- Low weight
- Superb quality

THERMAX® Stove refractory. The system:

- Boards
- Cut to size
- Moulded parts
- Adhesive sealant
- Chamber colour

Customised formats and thicknesses are available on request. We can manufacture stamped or milled parts or cut to size parts in accordance with your drawings. The classification temperature is not equal to the maximum application temperature, especially when physical conditions such as tensile or pressure loads are present. The information contained in this publication is for clarification purposes only; it does not constitute any contractual obligations. For further written information and advice on specific details of the products described above, please contact Techno-Physik Eng. GmbH (Germany). Techno-Physik Group strives to continuously improve its products and reserves the right to amend product specifications at any time without notice. It is therefore the customer's/user's responsibility to ensure that the material supplied by Techno-Physik Eng. GmbH is suitable for the specific intended purpose. All specifications are average figures from current production runs; they are for orientation purposes only and shall not form the basis for any warranty claims. We recommend testing the material prior to any application.