



**Refractory castable shapes  
for boilers and fireplaces**



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**We are LAC**

We have more than 240 employees through whose hands more than 50,000 various types of refractory castable shapes have passed. Our technical sales managers will assist you in selecting a suitable shape and material for castable shapes for boilers, fireplaces and industrial purposes. Due to their experience, you avoid repeating the mistakes made by others. By providing such a consultation service in combination with the production of test casts, we reduce your initial investment in the production and development of castable shapes.

**Refractory concrete is not fire clay**

It is a much more stable, resistant and tougher material. However, poorly selected shapes or materials may cause cracking or premature wearing of castable shapes. We know how to cope with such problems and eliminate them.

**Expert advisory activities and partnership**

Do not require refractory concrete only. Require also services which cannot be offered by others. Even before we produce the first test cast, we are able to tell you whether the proposed shape is suitable for your application.

**We work in SolidWorks with Flow Simulation**

We are ready to cooperate on designing castable shapes and with the actual designs of the lining. Using the most advanced designing programs in the industry, we can create drawing documentation, including 3D models. This means that you can be sure everything will go smoothly even before production of the prototype shapes takes place.

**We already produce products as a single piece**

The use of vibration casting technology allows us to supply very different shapes and produce them both by the piece or in large series. We are able to quickly produce prototype castable shapes as well as moulds with complex shapes.

**Long-term service life**

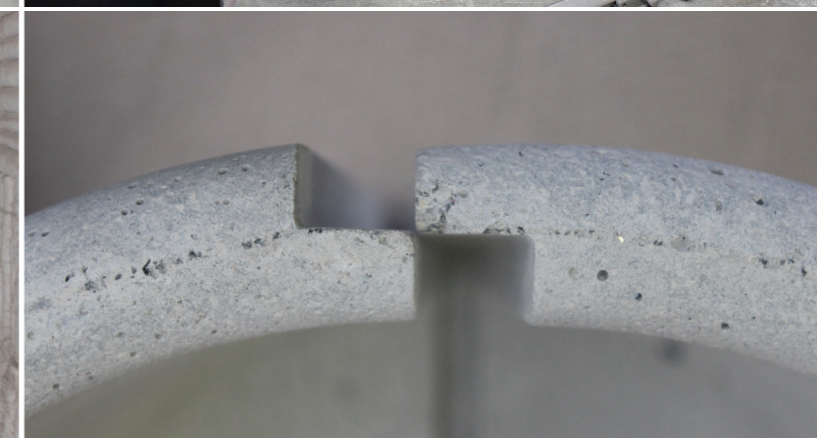
This is achieved through the careful selection of input raw materials. We use only the purest raw materials (Class A) for the production of our refractory castable shapes. Furthermore, the shapes are subjected to a number of inspections during production. To this end, we developed our own inspection system, which has reduced our rejection rate to the absolute minimum.

**We reduce the emissions and increase the efficiency of boilers and fireplaces**

We know from experience that you as manufacturers of boilers need equipment with emission values as low as possible. It is for this reason that we have focused on the reduction of emissions from your systems during the development of refractory castable shapes for boilers. It goes without saying that full utilization of system potential is the most important thing when it comes to boilers and fireplaces. That is why each of our castable shapes is designed so as to contribute to their efficiency.

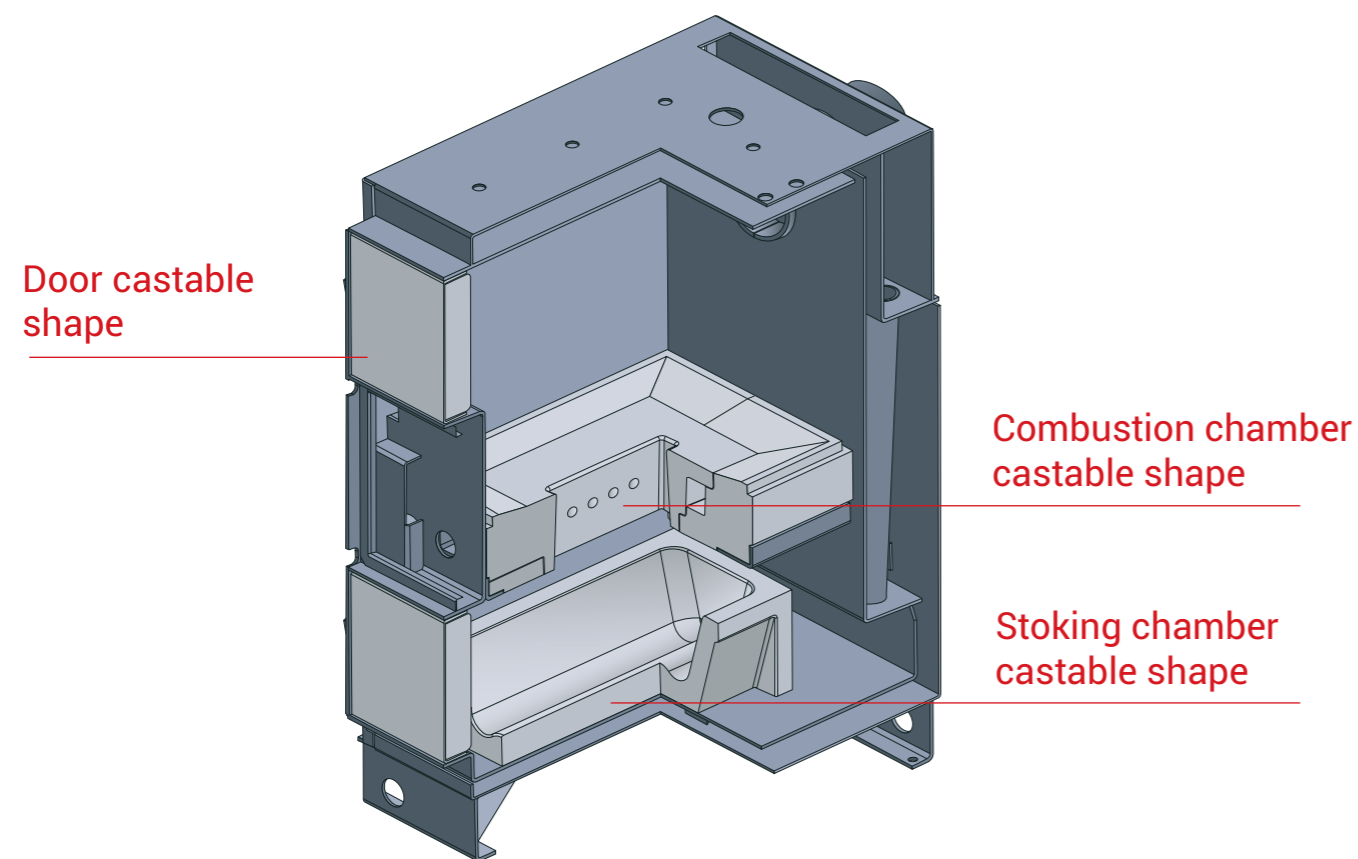
**Regular and reliable supplies**

This is second nature to us.



1. Our work starts with the production of a mould for castable shapes.
2. Due to refractory concrete casting in moulds, we are able to produce even very complex shapes.
3. We fire the castable shapes at a temperature of 950 °C, which gives them high strength and abrasion resistance, with no residual water.
4. Our production plant looks like this.
5. We have more than 4,400 m<sup>2</sup> of storage space where we not only store castable shapes, but also your moulds.
6. We developed our own inspection system for the verification of the quality of produced castable shapes, the success of which is reflected in our reduced rejection rates.
7. Refractory concrete is not fire clay. Our castable shapes are much more precise than fire clay components and fit on each other perfectly.
8. From us directly to you. Always within the agreed terms.

Your boilers will hold longer and be more efficient due to our castable shapes. A stable temperature and a slow thermal gradient is important for refractory castable shapes for the stoking and combustion chambers of boilers for the combustion of wood logs. It is only if these conditions are met that we can be sure that the combustion will be a high quality process, which in turn means that steel boiler bodies or castable shapes are not subjected to excessive wear.



-   
 Firing to 950 °C
-   
 More than 50,000 various shapes
-   
 Storage area larger than 4 400 m<sup>2</sup>
-   
 Traditional handcraft production
-   
 We produce testing castable shapes

**Stoking chamber castable shapes**

For stoking chamber castable shapes with a primary air supply, it is important to avoid causing damage during the loading of logs. Cracks not only cause the progressive degradation of shapes, but also violate the air flow towards the nozzle. As a result, the mixing of the primary air and the gases does not take place uniformly. This affects the burning process, whereby the combustion chamber does not reach its operational temperature. This reduces overall boiler efficiency. Of similar importance is resistance to alkalis which arise during wood combustion. Alkalis can affect a shapes structure chemically and cause it to progressively degrade.

**LACfire 1800/20** **up to 1,600 °C**  
 Corundum refractory concrete with the addition of silicon carbide to increase hardness. This refractory material endows shapes with excellent abrasion resistance and high resistance to recurrent temperature changes.

**LACfire 1550/30** **up to 1,450 °C**  
 Combined mullite refractory concrete with the addition of silicon carbide to increase hardness. Castable shapes made of this refractory material are characterized by their high strength, low permanent length changes and good abrasion resistance. It is for this reason that they are often used for combustion boilers for alternative fuels such as wood pellets, wood chips and biomass.

**Combustion chamber castable shapes**

You will achieve lower emission values in wood combustion boilers with our refractory castable shapes. They ensure the uniform mixing of the secondary air with the flame, thereby increasing the temperature in the combustion chamber for the necessary final burning of volatile substances. Furthermore, they extend the thermal gradient so that the boiler has a longer holding time and stabilizes the temperature better.

**LACfire 1500** **up to 1,350 °C**  
 Dense liquefied refractory concrete on a mullite basis with micro-reinforcement as standard, and without micro-reinforcement upon request. Refractory castable shapes made of LACfire 1500 are suitable for places subject to mechanical and thermal stress. They have dimensional stability and lower thermal conductivity. As a result, they are commonly used for stoking and combustion chambers or gasification nozzles.

**Door castable shapes**

Manufacturers of wood combustion boilers prefer refractory concrete to vermiculite or ceramic fibre insulation. This is in particular due to its high mechanical resistance and its ability to increase the temperature in combustion chambers, which results in higher boiler efficiency and a longer service life. Stoking chamber door castable shapes are used as insulation shielding and protection against mechanical and chemical damage. We recommend both types of shapes – insulation and accumulation - for combustion chamber doors.

**LACfire 1200 IZO** **up to 1,100 °C**  
 Dimensionally stable insulation refractory concrete which has very low thermal conductivity. Castable shapes made of this material are suitable as additional insulation for combustion chambers because, unlike fibrous insulation, it is not absorptive and does not leak combustion product.

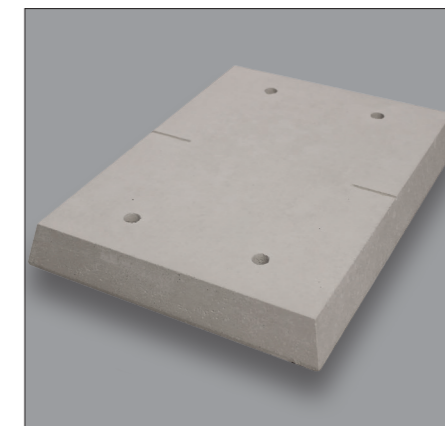
**LACfire 1800/20** **up to 1,600 °C**  
 Corundum refractory concrete with the addition of silicon carbide to increase hardness. This refractory material endows shapes with excellent abrasion resistance and high resistance to recurrent temperature changes.



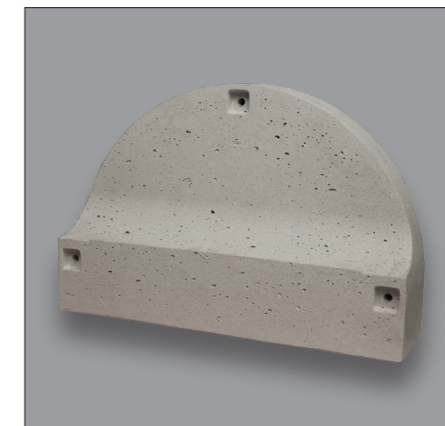
Stoking chamber castable shap



Combustion chamber castable shape

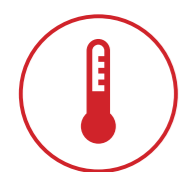
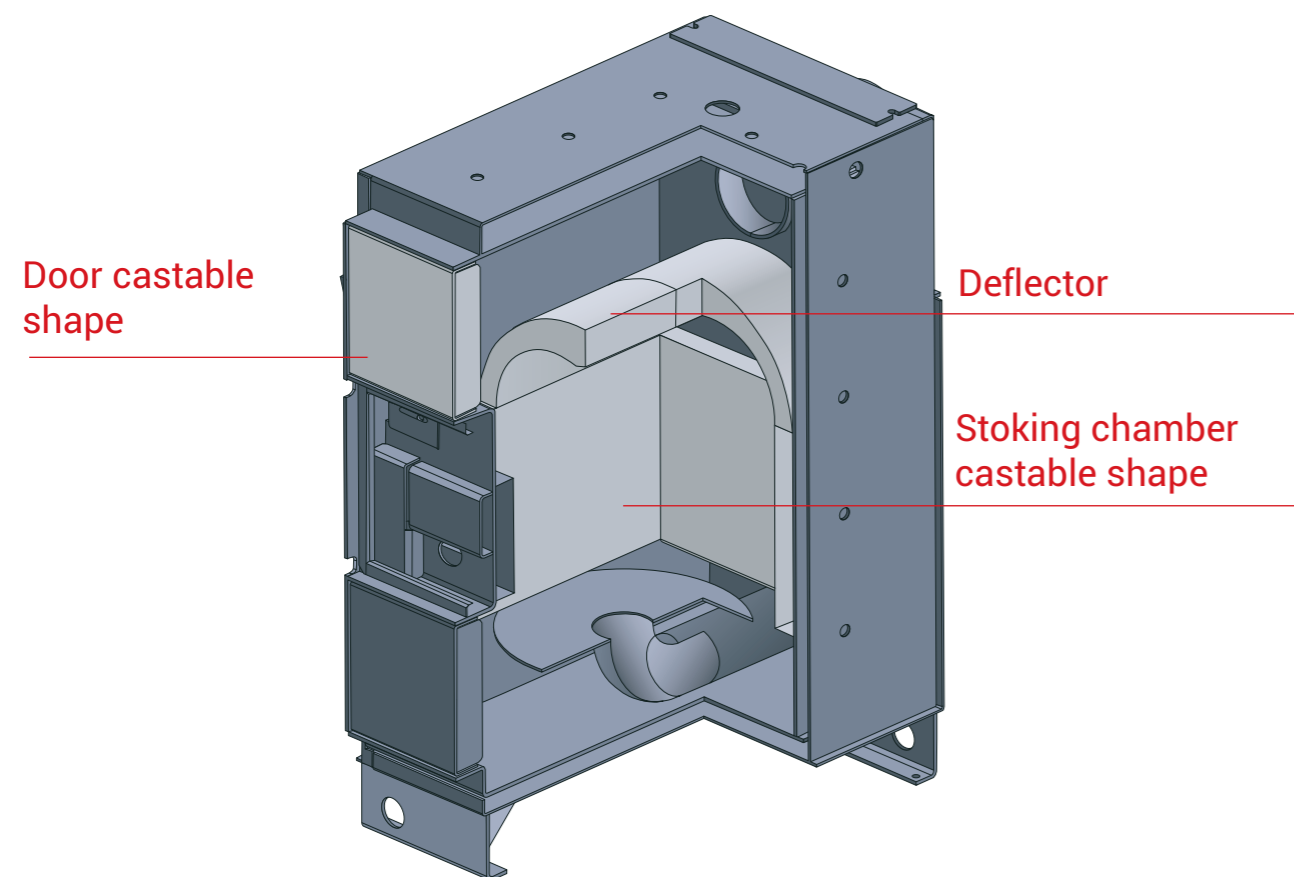


Door castable shape



Door castable shape

We design the refractory castable shapes for pellet combustion boilers on the basis of whirling the gas flow, which helps to burn the dust particles. This eliminates clogging of the route for the combustion product, increases the efficiency of the system and extends its service life. If high quality pellets are burnt in the boiler, maintenance is very simple.



Firing to 950 °C



More than 50,000 various shapes



Storage area larger than 4 400 m<sup>2</sup>



Traditional handcraft production



We produce testing castable shapes

**Combustion chamber castable shapes**

The shielding and protection of heat exchanging surfaces of the boiler body is one of the key functions of our castable shapes for combustion chambers. It extends the service life of the complete boiler because the steel shell is not attacked by the aggressive substances that are released during the combustion of pellets, which would otherwise cool down the combustion chamber and thereby reduce the output of the boiler.

**LACfire 1800/20**

**up to 1,600 °C**

Corundum refractory concrete with the addition of silicon carbide to increase hardness. This refractory material endows shapes with excellent abrasion resistance and high resistance to recurrent temperature changes.



Stoking chamber castable shape

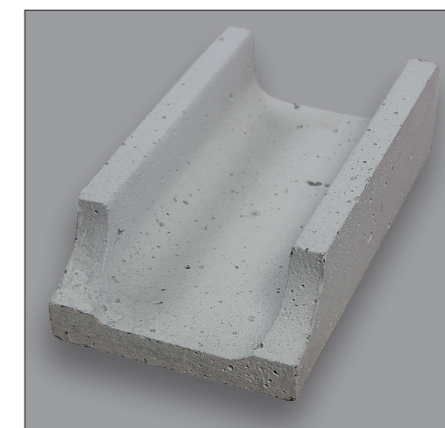
**Deflector**

The basic function of refractory concrete deflectors is to shield the route for the combustion product and to create a whirling motion of gases above the burner. They assist in the optimal burning of flying particles, thereby reducing the dust content in the combustion product and emissions. Deflectors are important for protecting the route for the combustion product against clogging with ash, thereby preventing the reduction of boiler draft and the overall functioning of the system. It is for this reason that we pay special attention to their production. Our deflectors have a longer thermal gradient in order to prevent degradation due to ash substances sintering on their surface.

**LACfire 1800/20**

**up to 1,600 °C**

Corundum refractory concrete with the addition of silicon carbide to increase hardness. This refractory material endows shapes with excellent abrasion resistance and high resistance to recurrent temperature changes.

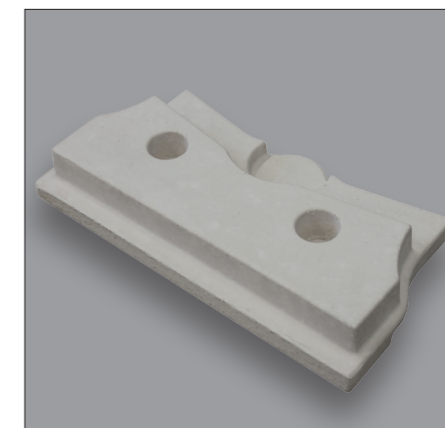


Deflector

**LACfire 1550/30**

**up to 1,450 °C**

Combined mullite refractory concrete with the addition of silicon carbide to increase hardness. Castable shapes made of this refractory material are characterized by their high strength, low permanent length changes and good abrasion resistance. It is for this reason that they are often used for combustion boilers for alternative fuels such as wood pellets, wood chips and biomass.



Door castable shape

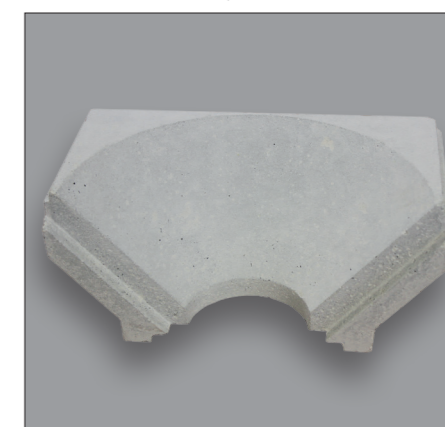
**Door castable shapes**

Manufacturers of boilers for pellets prefer refractory concrete to vermiculite or ceramic fibre insulation. This is in particular due to its high mechanical resistance and its ability to increase the temperature in combustion chambers, which results in higher boiler efficiency and a longer service life.

**LACfire 1200 IZO**

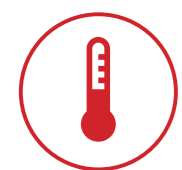
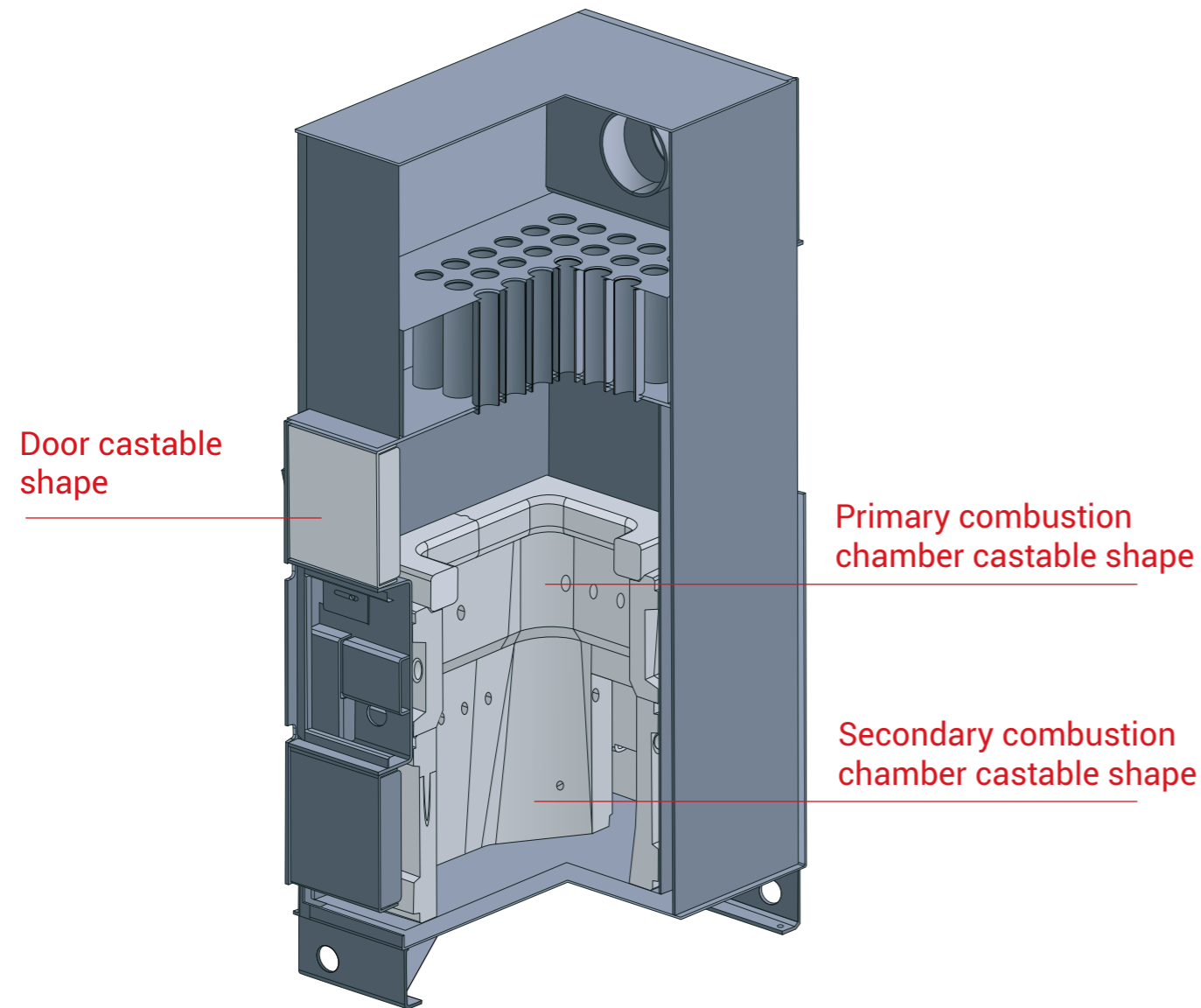
**up to 1,100 °C**

Dimensionally stable insulation refractory concrete which has very low thermal conductivity. Castable shapes made of this material are suitable as additional insulation for combustion chambers because, unlike fibrous insulation, it is not absorptive and does not leak combustion product.



Burner

For wood chip combustion boilers it is very important that the refractory castable shapes for the combustion chambers are robust. In the case of refractory castable shapes for wood chip combustion boilers, we utilize the excellent accumulation properties of refractory concrete to enable quick heating of the boiler body and provide it with a slow thermal gradient. The mass of the castable shapes ensures that the wood chips dry, which enables the boilers to burn the chips more efficiently, thereby producing lower emissions.



Firing to 950 °C



More than 50,000 various shapes



Storage area larger than 4 400 m<sup>2</sup>



Traditional handcraft production



We produce testing castable shapes

**Primary combustion chamber castable shapes**

In order for the combustion chamber to operate effectively, it is necessary for the mass of the castable shapes to be sufficiently thick so as to ensure optimal pre-heating of primary air. Our refractory castable shapes are able to supply air to the combustion chamber along two axes, thereby supporting the whirling motion of gases and guaranteeing optimal burning. However, the most valuable benefit of our castable shapes for combustion chambers is their resistance to both oxidization and atmosphere reduction.

**LACfire 1550/30**

**up to 1,450 °C**

Combined mullite refractory concrete with the addition of silicon carbide to increase hardness. Castable shapes made of this refractory material are characterized by their high strength, low permanent length changes and good abrasion resistance. It is for this reason that they are often used for combustion boilers for alternative fuels such as wood pellets, wood chips and biomass.



Primary combustion chamber castable shape

**Secondary combustion chamber castable shapes**

We design the castable shapes for secondary combustion chambers so that the air can be supplied along two axes. This method supports the whirling motion of gases and optimal burning, which increases the performance of your boilers and reduces emissions. The mass of the castable shapes is essential; it ensures optimal pre-heating of both the primary and secondary air and, at the same time, makes it resistant to both oxidization and atmosphere reduction.

**LACfire 1800/20**

**up to 1,600 °C**

Corundum refractory concrete with the addition of silicon carbide to increase hardness. This refractory material endows shapes with excellent abrasion resistance and high resistance to recurrent temperature changes.



Secondary combustion chamber castable shape

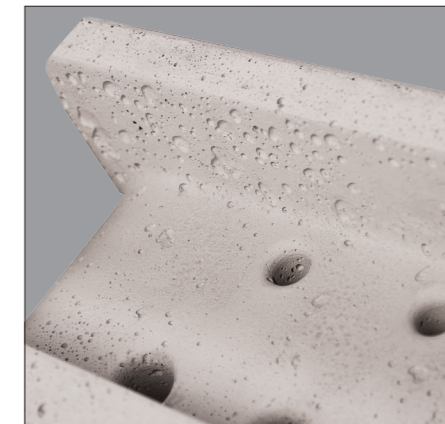
**Door castable shapes**

Manufacturers of boilers for wood chip combustion prefer refractory concrete to vermiculite or ceramic fibre insulation. This is in particular due to its high mechanical resistance and its ability to increase the temperature in combustion chambers, which results in higher boiler efficiency and a longer service life.

**LACfire 1200 IZO**

**up to 1,100 °C**

Dimensionally stable insulation refractory concrete which has very low thermal conductivity. Castable shapes made of this material are suitable as additional insulation for combustion chambers because, unlike fibrous insulation, it is not absorptive and does not leak combustion product.

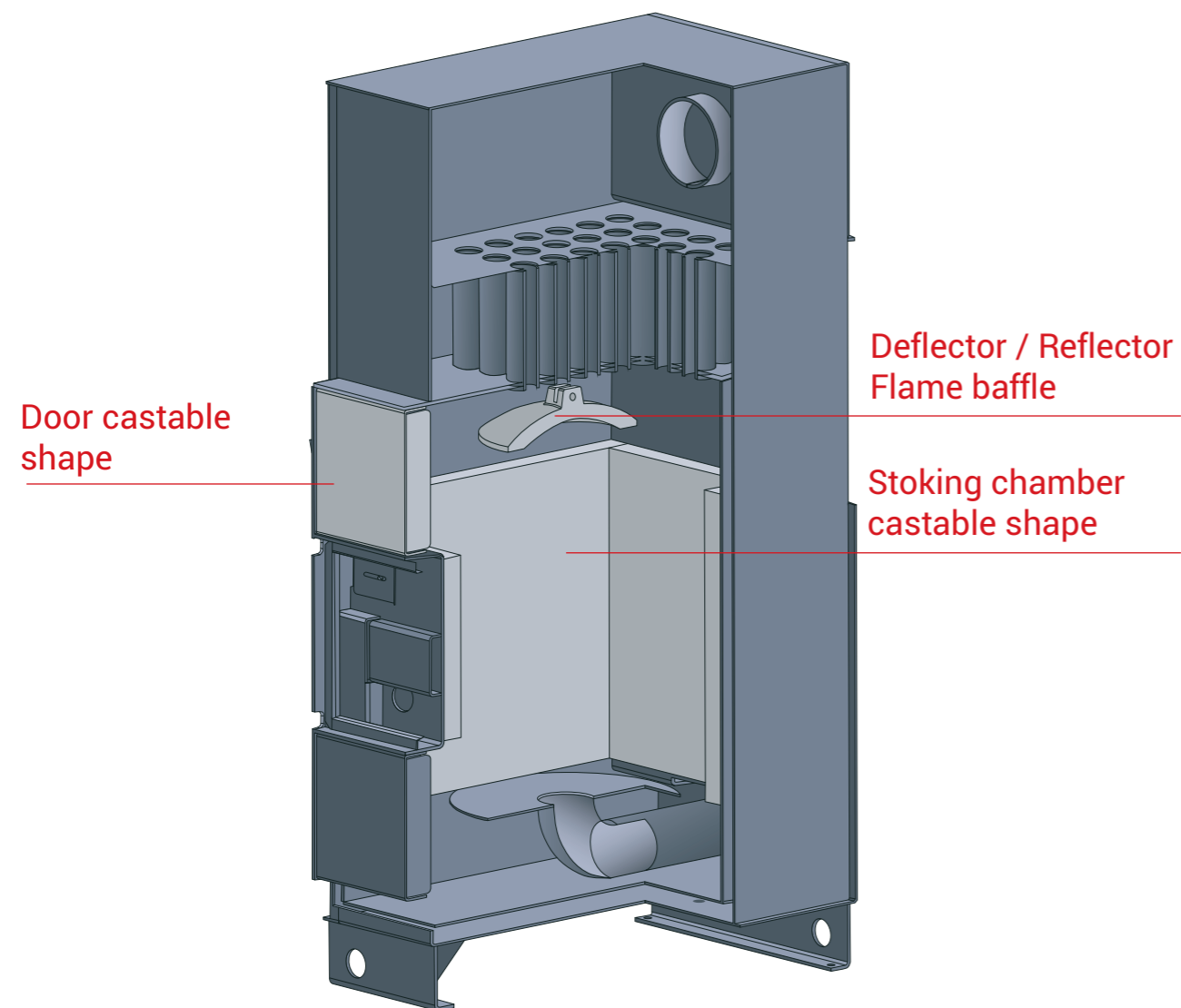


Secondary combustion chamber castable shape



Door castable shape

We develop and produce deflectors and refractory castable shapes that protect the boiler bodies of coal combustion boilers. The deflectors ensure the whirling motion of the combustion product, which improves the flow and the quality of the combustion process, which in turn supports optimal burning. In addition, plate castable shapes for the protection of boiler bodies mitigates the corrosion of the steel in the combustion chamber by slowing down the formation of a layer of precipitated tar substances on the heat-exchanging surface.



Firing to 950 °C



More than 50,000 various shapes



Storage area larger than 4 400 m<sup>2</sup>



Traditional handcraft production



We produce testing castable shapes

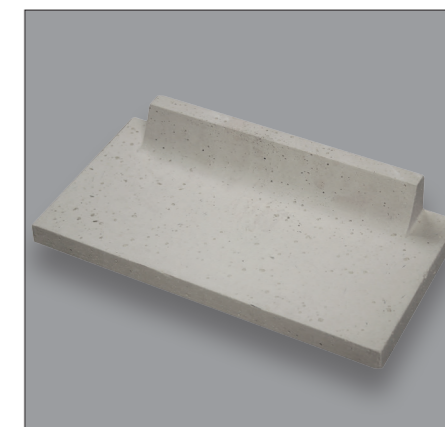
**Combustion chamber castable shapes**

We design castable shapes for combustion chambers so that they optimally shield and protect the heat-exchanging surfaces of the boiler body. This extends the service life of the complete boiler because the steel shell is not attacked by the aggressive substances that are released during the combustion of coal, which would otherwise cool down the combustion chamber, thereby preventing the reduction in boiler output.

**LACfire 1500**

**up to 1,350 °C**

Dense liquefied refractory concrete on a mullite basis with micro-reinforcement as standard, and without micro-reinforcement upon request. Refractory castable shapes made of LACfire 1500 are suitable for places subject to mechanical and thermal stress. They have dimensional stability and lower thermal conductivity. As a result, they are commonly used for stoking and combustion chambers or gasification nozzles.



Stoking chamber castable shape

**Deflector/reflector/flame baffle**

These castable shapes are used to shield the route for the combustion products and for flame distribution in order to effect efficient burning of volatile substances, a reduction in dust content in the combustion products and improve emissions, on which constantly increasing demands are placed. At the same time, these castable shapes prevent the route for the combustion products from clogging with ash substances, which can reduce boiler draft and result in the deterioration in the operation of the complete system.

**LACfire 1800/20**

**up to 1,600 °C**

Corundum refractory concrete with the addition of silicon carbide to increase hardness. This refractory material endows shapes with excellent abrasion resistance and high resistance to recurrent temperature changes.



Deflector

**LACfire 1550/30**

**up to 1,450 °C**

Combined mullite refractory concrete with the addition of silicon carbide to increase hardness. Castable shapes made of this refractory material are characterized by their high strength, low permanent length changes and good abrasion resistance. It is for this reason that they are often used for combustion boilers for alternative fuels such as wood pellets, wood chips and biomass.



Reflector

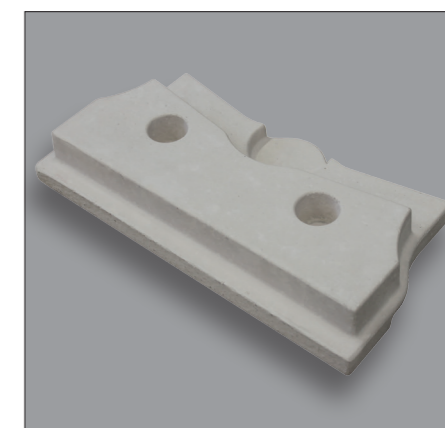
**Door castable shapes**

Manufacturers of boilers for coal combustion prefer refractory concrete to vermiculite or ceramic fibre insulation. This is in particular due to its high mechanical resistance and its ability to increase the temperature in combustion chambers, which results in higher boiler efficiency and a longer service life.

**LACfire 1200 IZO**

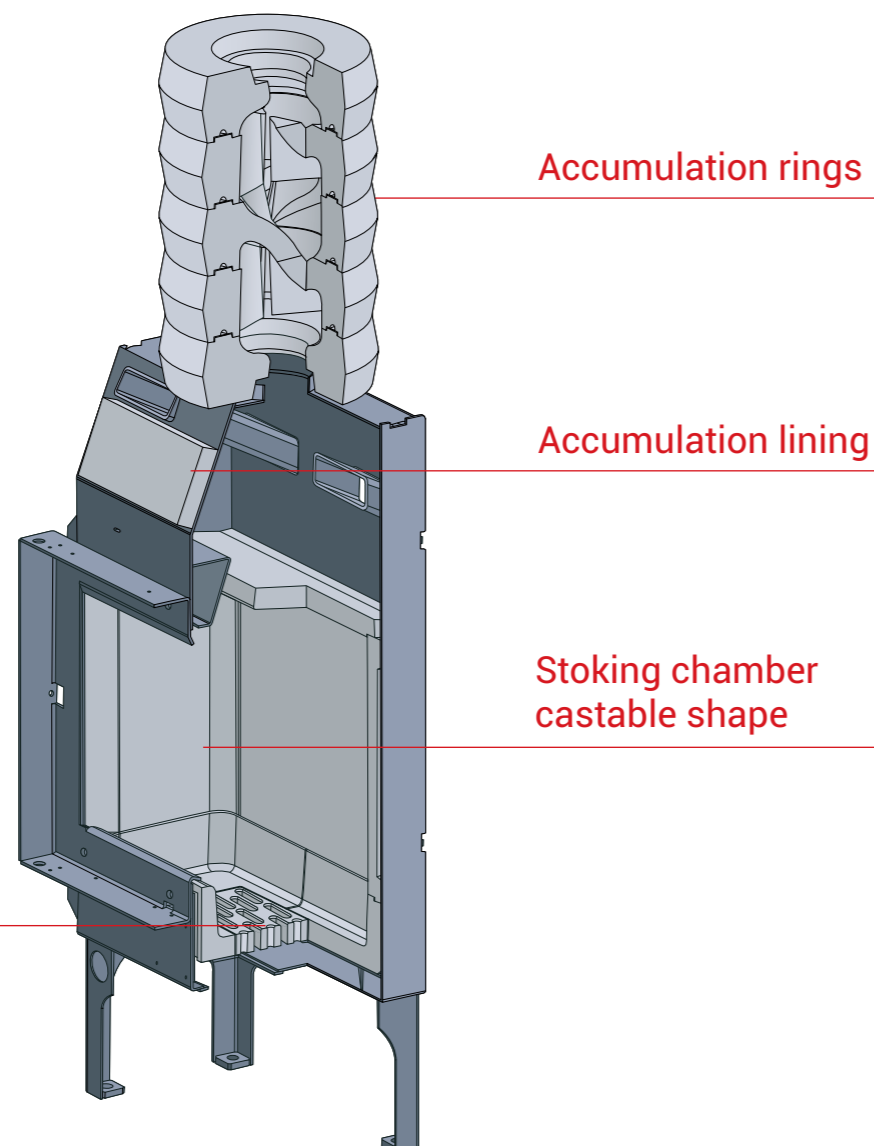
**up to 1,100 °C**

Dimensionally stable insulating refractory concrete which has very low thermal conductivity. Castable shapes made of this material are suitable as additional insulation for combustion chambers because, unlike fibrous insulation, it is not absorptive and does not leak combustion product.



Door castable shape

Long-term experience has taught us that refractory castable shapes for fireplaces for wood combustion must be durable. The refractory lining is subjected to considerable mechanical stress during the continuous stoking of logs. LAC castable shapes increase fireplace efficiency and allow optimum burning, which results in the reduction of fuel consumption because the system utilizes its potential to the maximum extent. Furthermore, due to the excellent accumulation properties of our castable shapes, the combustion chamber maintains its operational temperature for a long period of time.



-   
 Firing to 950 °C
-   
 More than 50,000 various shapes
-   
 Storage area larger than 4 400 m<sup>2</sup>
-   
 Traditional handcraft production
-   
 We produce testing castable shapes

### Combustion chamber castable shapes

In the case of castable shapes for combustion chambers, we place great emphasis on excellent mechanical resistance. The use of vibration casting technology allows us to produce a great number of components of various complexity. Contact us and our design office will assist you in developing the most suitable prototypes. The combustion chamber should also include a deflector, which acts as a shield for the combustion chamber. Our customers have frequently faced the problem of the flame striking the castable shape and scattering so that it cannot be routed correctly. It is for this reason that we design our deflectors to extend the flow of gases into the route for the combustion products under high temperature so that the flame can be directed, spread out and guided precisely, as is demanded by our customers.

**KZB 7** up to 1,100 °C  
 Insulation refractory concrete with dimensional stability and very low thermal conductivity, which is suitable for the lining of fireplaces, the lining of fireplace liners or the lining of open fireplaces.

**KZB 2** up to 1,350 °C  
 Castable shapes made of KZB 2 refractory concrete are ideal for places that are subjected to mechanical and thermal stress. They have dimensional stability, excellent thermal soaking and good accumulation properties.

### Grate

Our customers prefer refractory concrete over cast iron because of its excellent accumulation properties. The key effect of a reinforced concrete grate is an improvement in the quality of the combustion process because it pre-heats the air supplied under the grate, which is subsequently fed into the combustion chamber. Even if cast iron is cheaper, it has a considerably shorter service life than our refractory concrete. If you are considering purchasing grates, we recommend you first consulting our technical office.

**KZB 3** up to 1,450 °C  
 The material has high strength, small permanent length changes and good resistance to mechanical abrasion and impacts. It is used in places subjected to mechanical and thermal stress in combination with the demand for shape and dimensional stability of the combustion shapes.

**KZB 4** up to 1,600 °C  
 Refractory castable shapes made of KZB 4 are extremely resistant to changes in temperature and abrasion. They are used in the places where high demands are placed on the accumulation properties of castable shapes.

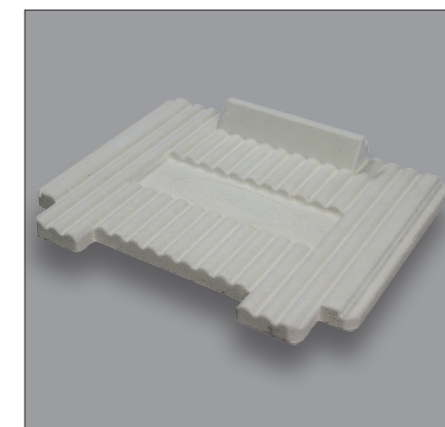
### Accumulation lining

It is important to consider the purchase of accumulation lining if you want to improve heat utilization from a fireplace stove. It is true that the lining cannot be cut due to the mechanical strength of our refractory concrete. However, we are able to produce a very wide range of shapes and sizes. This means that, after consultation with our technical office, no cutting is required.

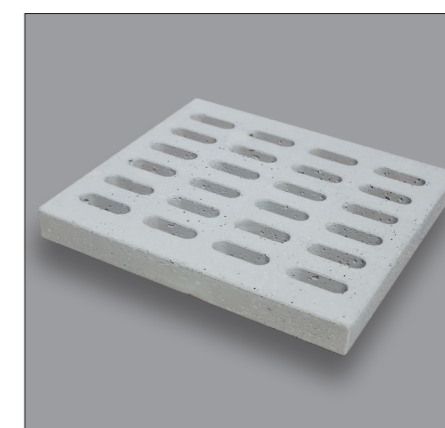
**KZB 8** up to 1,000 °C  
 Highly accumulative refractory concrete with a volume weight of 3.6 kg/l and a slow thermal gradient. We recommend using it for facing, lining and lining accumulation stones.

### Accumulation rings and half-rings

For even better heat utilization from fireplace stoves. For more information please see page 17 in the Accessories section.



Stoking chamber castable shape



Grate



Rounded grate



Accumulation lining



We also supply accessories for boilers, fireplaces and industrial purposes as required. Refractory ropes, heating elements, cast ceramic components and refractory cements.



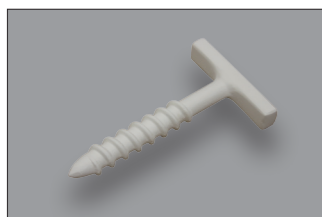
### Ropes

We supply a wide range of shapes and types of refractory ropes. Please ask our technical sales managers for more information.



### Heating elements

We produce and supply heating elements either as part of heating panels or as separate components. We always design and develop them with the customer's application in mind so that we can provide the most suitable solution.



### Cast ceramic components

Cast ceramic components are made of ceramic material which is resistant to high temperatures and electrically non-conductive. It is used for the production of aids for furnaces, spiral carriers, grooves or insulation connectors, etc. We process both white and grey ceramic material which contains SiC admixture in order to reduce permanent length changes. The shrinking of grey ceramic components is slower than white ones.

### Cements



#### VT cement

This concerns fine cement on a mullite basis with kaolin admixture. Due to its fine structure, it is used by our customers for boilers, industrial purposes and fireplaces. You can apply it directly from a tube as a sealant for joints between refractory castable shapes and the steel structure of the boiler or between castable shapes themselves.



#### Boilermaker's cement

Working with our cements is very easy. They do not require any preparation, you can use them immediately. Air hardens the surface layer of cement within a short period of time, however, the cement still retains some of its elasticity in the joint. This property means that there is no risk of cement cracking or crumbling in case of shocks. Ideal for boilers where cement is used to seal the joints between the refractory castable shapes and the steel bearing structure of the boiler.



#### KKB cement

This cement on mullite basis with corundum admixture is coarse-grained. It is suitable for boilers and industrial purposes. KKB cement is ready for application and can be easily applied as a sealant for joints between the steel structure of a boiler and the refractory castable shapes or between the refractory castable shapes themselves.

### Accumulation rings and half-rings

For even better heat utilization from fireplace stoves, you can substitute the chimney with accumulation rings or face the chimney with half-rings. Their task is to accumulate heat from the fireplace liner or stove and to transfer it into the living areas through uniform radiation for as long a period as possible. They also reduce the temperature and the volume of combustion products, but above all utilize residual heat.

#### KZB 3

up to 1,450 °C

The material has high strength, small permanent length changes and good resistance to mechanical abrasion and impacts. It is used in places subjected to mechanical and thermal stress in combination with the demand for shape and dimensional stability of the combustion shapes.

#### KZB 2

up to 1,350 °C

Castable shapes made of KZB 2 refractory concrete are ideal for places that are subjected to mechanical and thermal stress. They have dimensional stability, excellent thermal soaking and good accumulation properties.



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## LAC, Ltd. | Production plant: Refractory castable shapes

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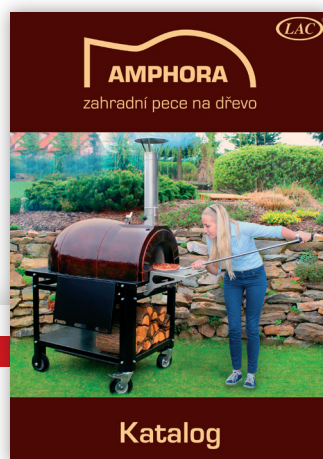
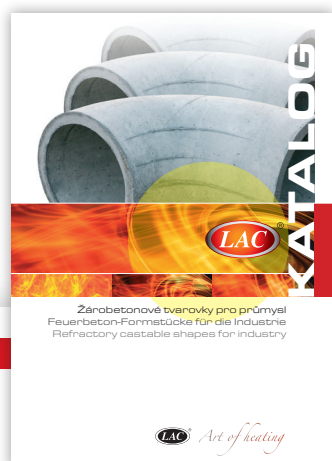


## LAC, Ltd. | Production plant: Industrial furnaces and dryers

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