All our knowledge for you ...

Wear Protection to Perfection – Consulting | Planning | Production | Installation

hightech ceram®

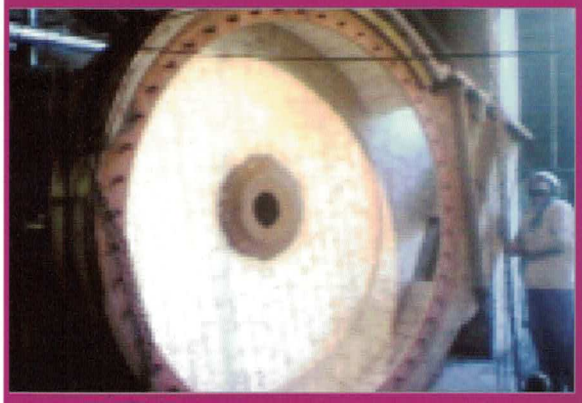
hightech ceram® **protects your materials with ...**

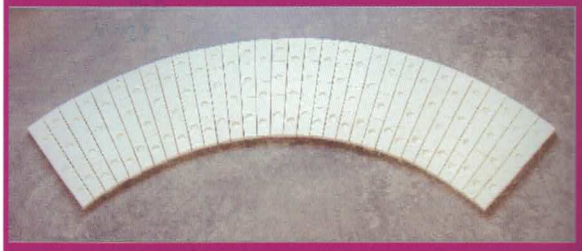
hightech ceram® was founded in 1990 and can be proud of its extensive know-how and long-time experience in the application of ceramic and metallic wear protection materials in various countries and industries.

On request we offer complete project handling, from consulting and planning to installation.

We use the following products:

- **Alumina ceramics**
- **Fused cast basalt**
- **Fused cast corundum**
- **Hardface welding**
- **Chromium white cast iron**





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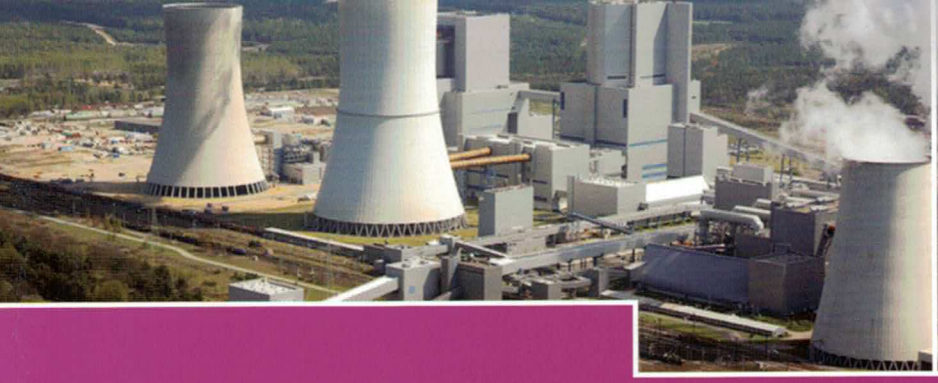
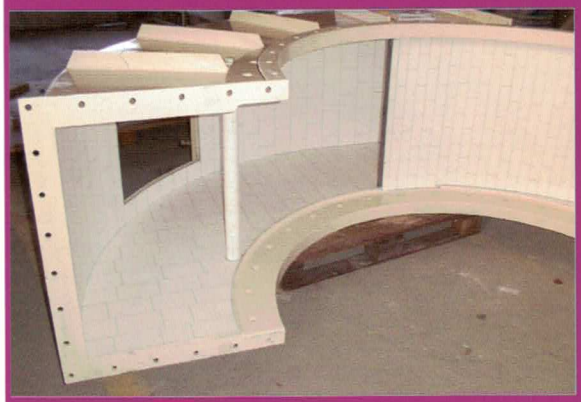


... alumina ceramic ...



Because of their extraordinarily high hardness, alumina ceramics are used wherever extreme wear occurs.

Alumina ceramics are produced in qualities containing 80 % up to 99.7 % of pure Al2O3. In industry, qualities containing 90-92 % have become established.

Alumina ceramics can be produced as tiles, tubes or tube bends as well as in special shapes, e. g. cones or nozzles.

Our htc® Al92 (Al2O3-92 %) alumina quality has been specially developed for wear protection applications.

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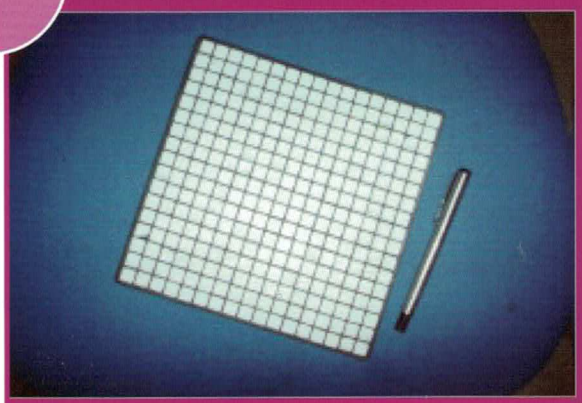
... hightech ceram® **alumina ceramics, ...**

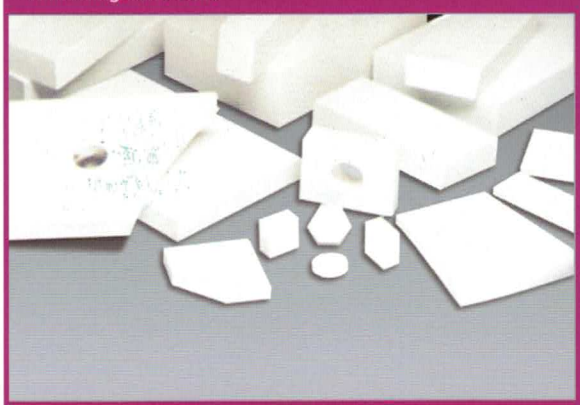
Advantages:

- **high hardness and wear resistance**
- **high temperature resistance**
- **high corrosion resistance**
- **low specific weight**
- **Pre-engineered tailor-made linings**
- **Variable layer thicknesses from 1-50 mm**

Physical properties:		
Bulk density	g/cm³	3,66
Open porosity	%	0
Hardness HV 10	GPa	11,3
Compressive strength	MPa	> 2500
Flexural strength at 25°C	MPa	320
Linear thermal expansion coefficient (25°C - 1400°C)	10^{-6}K	7,98
Thermal conductivity	W/mK	22



Mill linings and balls



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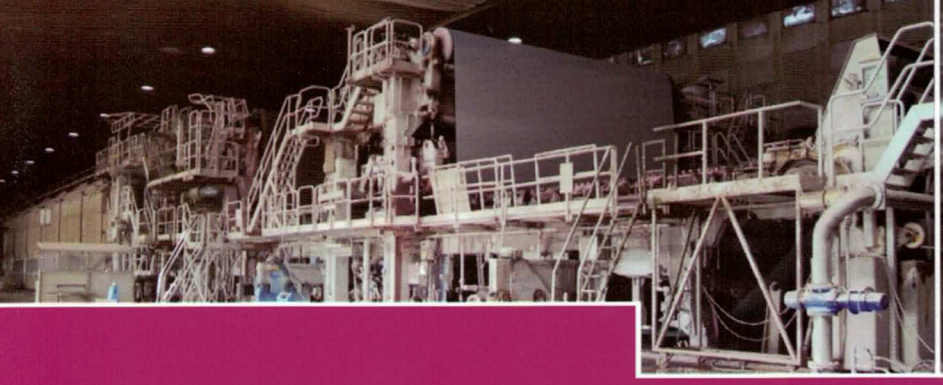
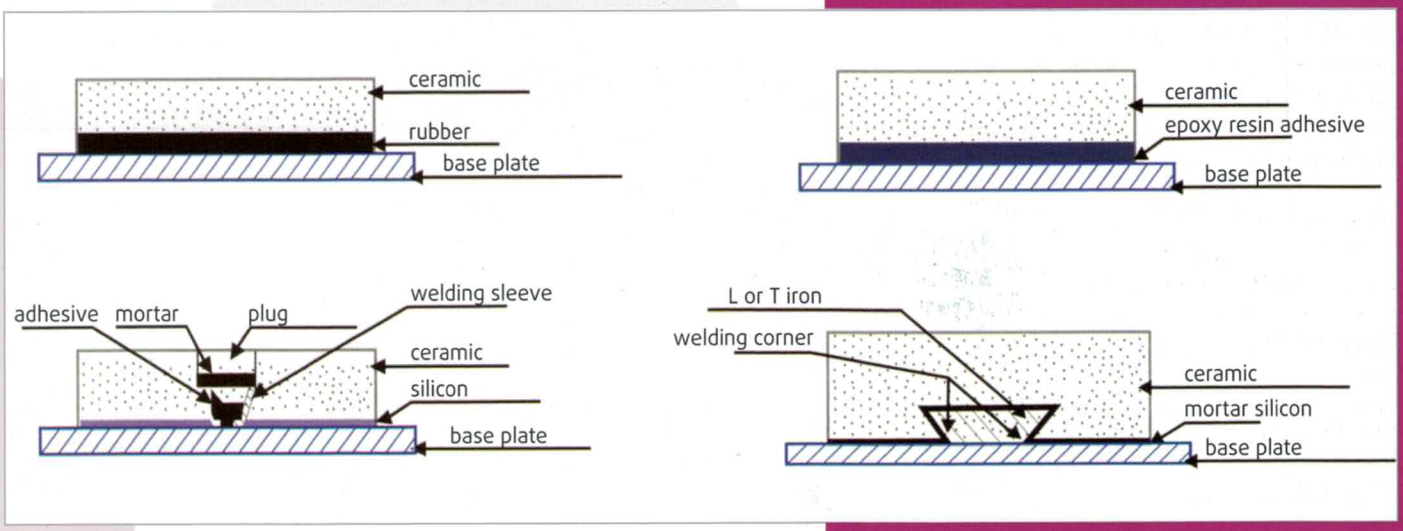


... their properties and dimensions ...

Standard alumina tiles								
Tile thickness in mm								
Mats								
	1,5	3	4	6	10	13	25	50
10 x 10	0	0	0	0	0			
20 x 20		0	0	0	0	0		
SW 20		0	0	0	0	0		
Tiles								
50 x 150				0	0	0 x	0 x	0 x
100 x 100				0	0	0 x	0 x	0 x
150 x 100				0	0	0 x	0 x	0 x
200 x 150				0	0	0 x	0 x	0 x
228 x 114				0	0	0 x	0 x	0 x
114 x 114				0	0	0 x	0 x	0 x

0 = available as a standard / x = available with hole



Fixing options

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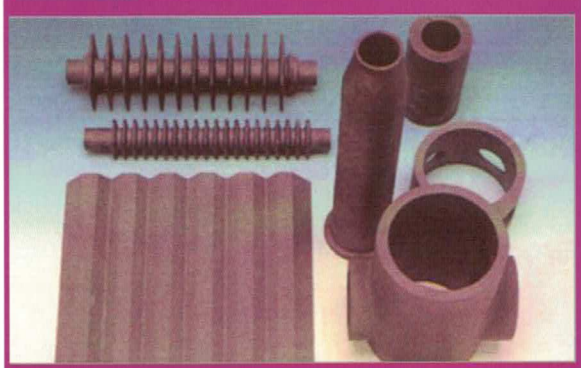
... hightech ceram® **silicon carbide** ...

Silicon carbide is used where high wear occurs together with high temperatures and temperature changes as well as possible corrosive influences.

The great variety of forming options even allow the production of complex components. Today, the following silicon carbide qualities are used:
SiSiC, SSiC, NSiC, NB-SiC, RSiC

Applications:

- **Mechanical seals, sliding bearings**
- **Shaft protection sleeves**
- **Ball bearings**
- **Isolation shells for magnetic pumps**
- **Pump wheels**
- **Pump shafts, nozzles**
- **Pipe linings**



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... hardface welding ...

Hardface welded sheets can be used universally. They are made by special welding methods and consist of a weldable basic material and an adapted hardface.

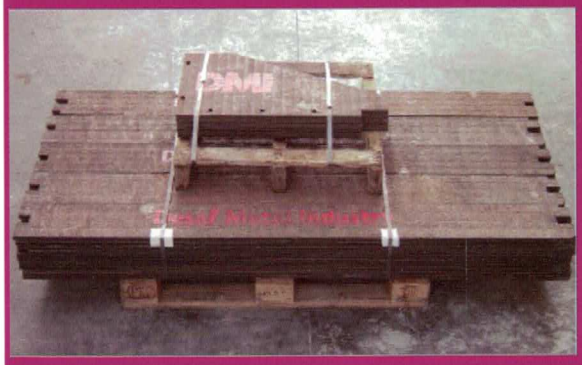
Using the latest cutting technology, e.g. plasma, laser or water jet cutting, the composite sheets can be cut into any shape as required by customer's drawings.
After this process, cold or hot forming is possible for the manufacturing of cyclones, separators etc.

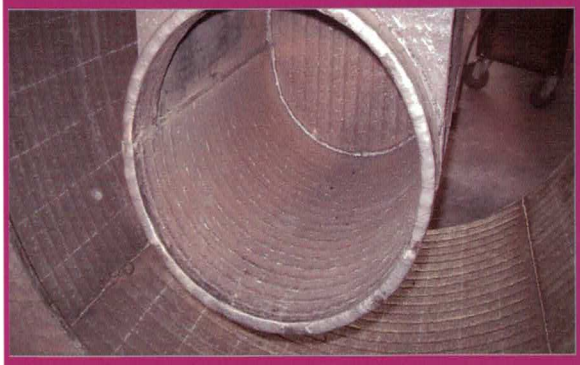
Standard dimensions	Thicknesses
2.900 x 1.400 mm	3+3, 4+4, 6+4, 8+5, 10+5 und 10+10 mm
2.400 x 1.150 mm	
1.900 x 1.150 mm	

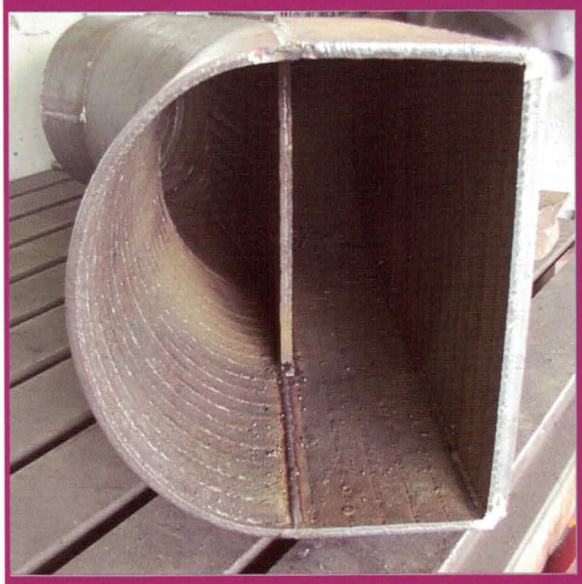
Different hardfacing welding methods can be chosen, depending on criteria such as abrasion load, impact load and temperature load.

Fixing methods:
- Plug welding
- Rear welding to the basic body
- Special suspension systems
- Screw-type fastening by countersunk rings
- Screw-type fastening by welding a bolt to the rear side

Applications:
- Chute linings
- Bunker linings
- Concrete mixer linings
- Screens
- Separator linings
- Cyclones
- Pipelines (transportation of ashes, dust)







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... hightech ceram® **tube linings** ...

Tube linings are used in hydraulic and pneumatic transport of raw materials. The following materials are available:

- **Fused cast basalt**
- **Fused cast corundum**
- **Alumina ceramics**
- **Hardface welding materials**
- **White-cast iron**

Fused cast basalt, fused cast corundum and alumina ceramics are installed in a mortar bed in forms of cylinders and segments.
Before the suitable material is determined, a system analysis is made.
For connection, different systems can be selected. Normal flange connections (fixed flange, loose flange), counter flange/adapter flanges or couplings.

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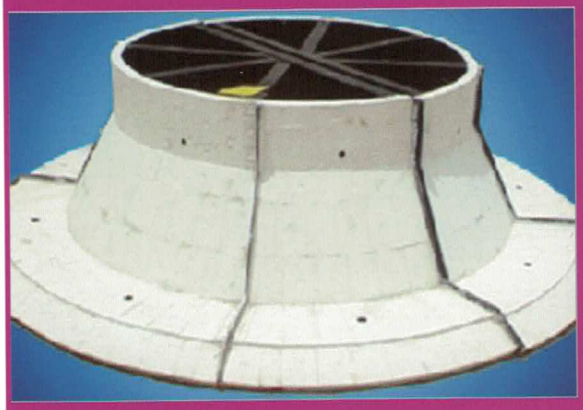
... Applications in **cement industry** ...

Application areas:

- **Linings of silos, chutes and bunkers of blast-furnace slag**
- **Inlet chutes for mills**
- **Separators, pipes and bends for raw meal**
- **Dust removal cyclones, separators and cyclones**
- **Pipelines for clinker dust transport, coal dust and cement**
- **Coal silos**
- **Coal mills and separators**
- **Nozzles**
- **Spiral chutes**



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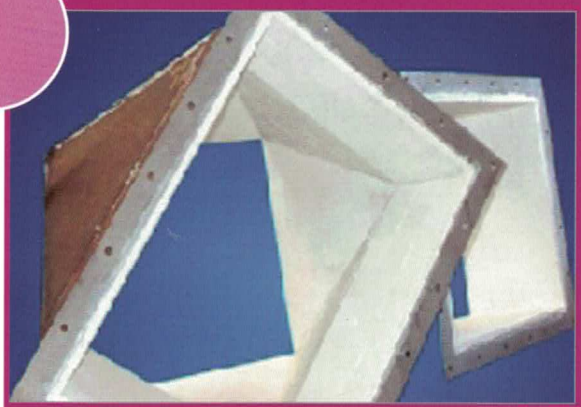
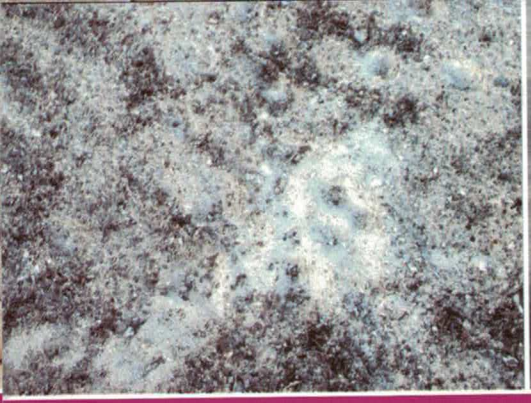
... Applications in **steel industry** ...



Application areas:

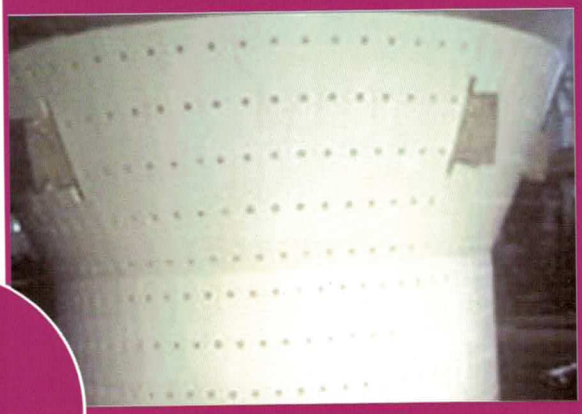
- **Bunkers and chutes**
- **Dedusting lines**
- **Hoppers, skip cars, distributor chutes and granulated slag drums**
- **Pipelines for coke and coal dust**
- **Sinter channels**
- **Bunkers for additives**
- **Cyclones and Venturis**
- **Screw conveyors and chain conveyors**
- **Pipelines for Betonit and ore dust**

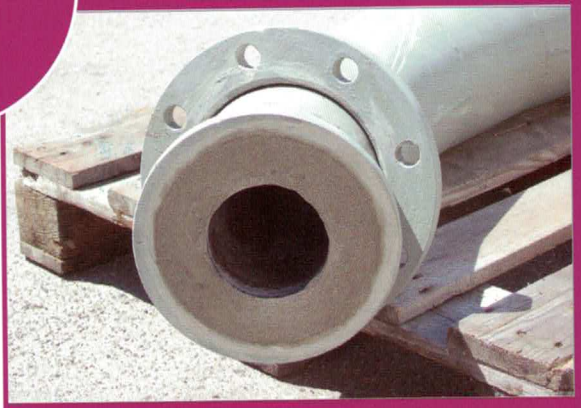


... Applications in **coal-fired power plants ...**

Application areas:

- **Coal bunkers and coal chutes**
- **Coal distributors/hoppers and coal mills**
- **Coal dust lines**
- **Slag removers and ash sluice ways**
- **Separators**
- **Pyrite lines**
- **Pipelines for pneumatic transportation of fly ash and hydraulic transportation of boiler ash**





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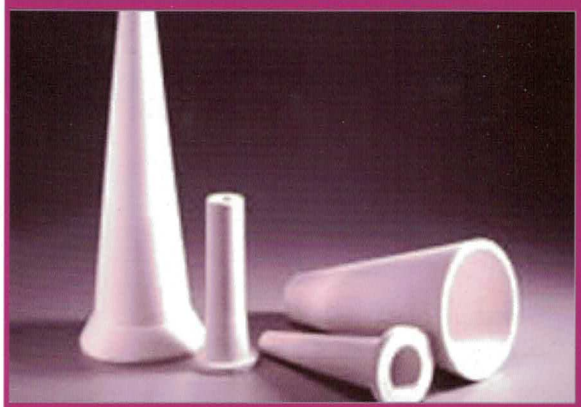
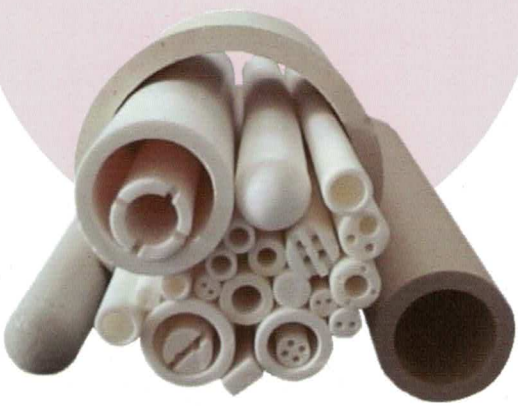
... Applications in **mineral processing** ...

Application areas:

- **Pipes for pneumatic transport**
- **Chain conveyors**
- **Mill linings**
- **Separators**
- **Chutes**
- **Hydrocyclones**
- **Tanks and containers**
- **Venturis and nozzles**





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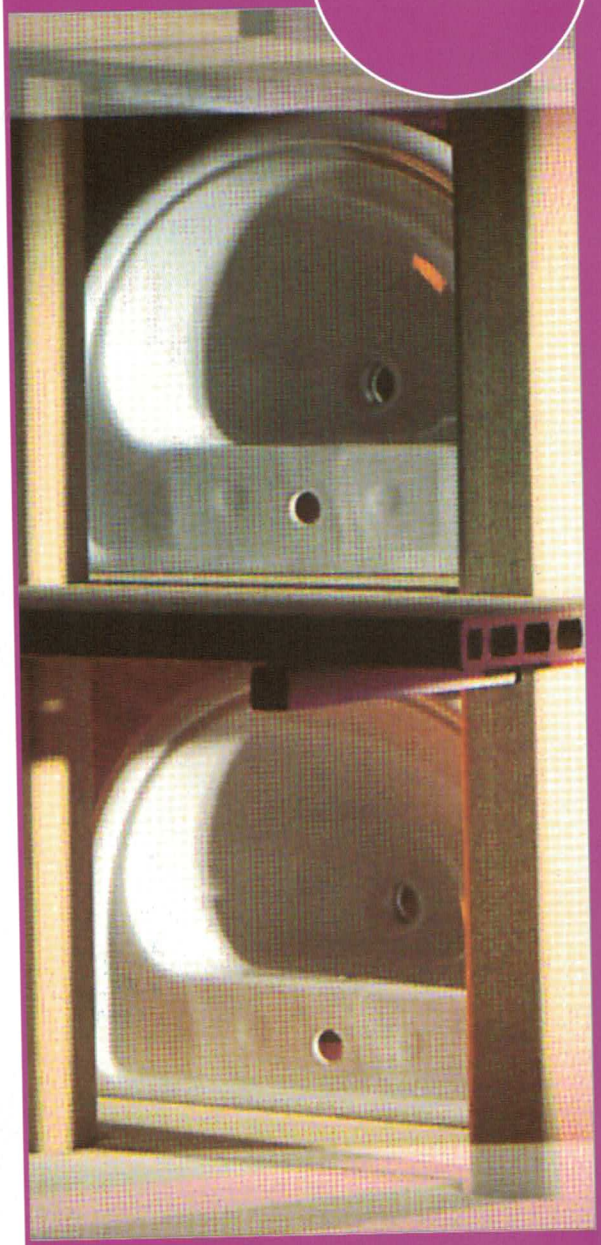
... **Business divisions:** Engineering ceramics ...

Ceramic components (finished parts in accordance with customer drawings and semi-finished parts) in materials and material groups adapted to various applications:

- **Alumina**
- **Zirconia**
- **Silicon carbide**
- **Silicon nitride**
- **Boron nitride**
- **Boron carbide**



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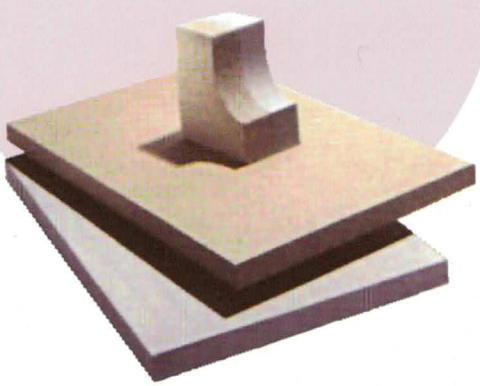
... **Business divisions:** High temperature ceramics ...

Components made of refractory materials ranging from various fire clays to bubble alumina, and kiln furnitures, from cordierite to densely sintered silicon carbide as well as components of high-temperature insulating materials, from the following material groups:

- **Moler**
- **Perlite**
- **Vermiculite**
- **Low-mass insulation bricks**
- **Calcium silicate**
- **Ceramic fibres (from wool, mats, modules, paper to vacuum shaped components)**
- **Micro-porous materials, also made water-repellent**

as well as various cloths, ceramic sealing cords, packings, mortars and coatings.



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