

KALSICA Linings ...

Silicon Carbide Ceramics Highlighted by Outstanding Properties

KALSICA features excellent abrasion resistance and thermal shock resistance. It belongs to the family of silicon carbide ceramics and is offered at different qualities:

- nitride bonded silicon carbide KALSICA-P, -N and -A
- silicon infiltrated silicon carbide KALSICA-S

KALSICA linings are produced to high dimensional accuracy by pressing or casting followed by reaction sintering.



Pulverized coal distributor made of KALSICA-N installed in a power plant



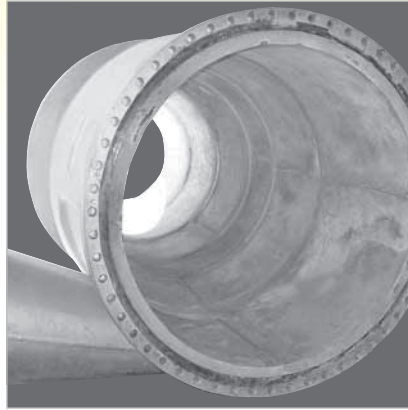
Guide vanes of a separator made of KALSICA-A operated in combination with a coal pulverizer

Wear Protection with Silicon Carbide Ceramics

The Program

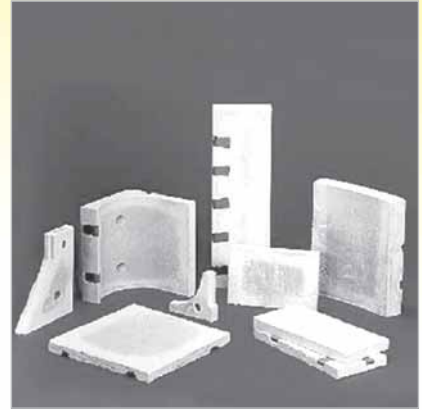


Burner cone made of KALSICA-N in a power plant



KALSICA-N cyclone with 1,200 mm diameter for silicon sand

KALSICA-P



Common features

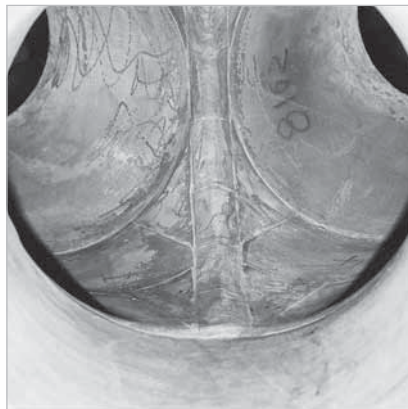
- good abrasion resistance
- resistance to oxidation
- chemical resistance
- heat resistance
- good thermal shock resistance
- good thermal conductivity
- good dimensional stability

Installation

Shaped elements made to measure are laid in adhesives based on synthetic resin or in heat and acid resistant setting compounds. Similarly, self-supporting structures and mechanical fastening are feasible.

Additional illustrations on pages 2 and 3:

Typical shaped elements made of the different KALSICA materials



KALSICA lined pipe transition



KALSICA hydrocyclone for magnesite processing without steel jacket

Special features

- very good abrasion resistance
- very good thermal shock resistance
- very good thermal conductivity
- shaped elements of varying dimensions

Technical data

Type: silicon nitride bonded
 Production: pressed or stamped, then sintered
 Chemical composition: 80% SiC
 17% Si₃N₄ + Si₂ON₂
 Density: 2.6 g/cm³
 Porosity: 16%
 Maximum service temperature: 1,550 °C / 2,822 °F

Maximum dimensions*

	pressed	stamped
Height:	300 mm	1,000 mm
Diameter:	1,000 mm	1,800 mm
Wall thickness:	8-150 mm	12-300 mm

Typical applications

Tiles and shaped elements
 Lining of bunkers, cyclones, separators, impact walls, etc.

* Not all dimensional maximums can be utilized at the same time

KALSICA-N



Special features

- excellent abrasion resistance
- very good thermal shock resistance
- very good thermal conductivity
- complex and large shaped elements

Technical data

Type: silicon nitride bonded
Production: vibration cast and sintered
Chemical composition:
71% SiC
23% Si₃N₄ + Si₂ON₂
Density: 2.6 g/cm³
Porosity: 16%
Maximum service temperature: 1,550 °C / 2,822 °F

Maximum dimensions*

Height: 1,000 mm
Diameter: 1,200 mm
Wall thickness: 8-200 mm

Typical applications

Cylinders, self-supporting structures, complex and large shaped elements

Lining of pipes, bunkers, cyclones, pumps, fans, etc.

KALSICA-A



Special features

- excellent abrasion resistance
- very good thermal shock resistance
- low porosity
- thin wall production possible

Technical data

Type: silicon nitride bonded
Production: slip cast and sintered
Chemical composition:
68% SiC
25% Si₃N₄
Density: 2.8 g/cm³
Porosity: less than 1%
Maximum service temperature: 1,550 °C / 2,822 °F

Maximum dimensions*

Height: 1,000 mm
Diameter: 600 mm
Wall thickness: 8-15 mm

Typical applications

Shaped elements, cylinders, little wall thickness

Lining of pipes, cyclones, cyclone stator blades, etc.

KALSICA-S



Special features

- excellent abrasion resistance
- outstanding thermal shock resistance
- excellent thermal conductivity
- good sliding properties
- 0% porosity
- thin wall production possible

Technical data

Type: silicon infiltrated
Production: slip cast and sintered
Chemical composition:
> 81% SiC
< 12% Si
Density: 3.0 g/cm³
Porosity: 0%
Maximum service temperature: 1,250 °C / 2,282 °F

Maximum dimensions*

Height: 1,000 mm
Diameter: 600 mm
Wall thickness: 8-12 mm

Typical applications

Shaped elements, cylinders, thin wall production possible

Lining of pipes, cyclones, nozzles, guide vanes, injection lances, etc.

Reliable Protection for Pipes, Cyclones, etc.:

**Well Suited for High Temperatures,
Little Wall Thickness and Complex Shapes**



Lining of a coke-loading bay with tiles made of KALSICA-P:

tile dimensions 250 x 250 x 50 mm, high abrasive wear, 800 °C / 1,472 °F, quick thermal shocks, intense impact wear



Cyclone lining made of KALSICA-N for handling silane dust:

cone diameter 400 - 1,200 mm, 30 mm wall thickness, high abrasive wear, 350 °C / 662 °F, large shaped elements, small number of joints



Pipe branch made of KALSICA-S for handling granulated blast-furnace slag:

inside diameter 80 and 100 mm, 10 mm wall thickness, high abrasive wear, impact wear due to turbulence, 400 °C / 752 °F, little wall thickness



Lime slurry nozzle made of KALSICA-N in a flue-gas desulphurization plant:

inside diameter 80 mm, high abrasive wear, 80 °C / 176 °F, manufactured in one piece as a self-supporting structure

Kalenborn Kalprotect

Phone +49(0) 26 45.18-0

Fax +49(0) 26 45.18-112/180 (Export)

kalenborn@kalenborn.de

www.kalenborn.de



The Wear Protection People