CORRESIC®

Silicon Carbide SiC
Pressureless Sintered, α-Silicon Carbide (SSiC)

Material Information (W-3)

Silicon Carbide

- Silicon carbide is a very solid, hard and temperature-resistant material. Thanks to its excellent chemical resistance and thermal conductivity, it is ideal for the construction of heat exchangers
- The material's processing differs completely compared to other metallic materials in heat exchanger manufacturing
- The ceramic component's form is created in the so-called „green" state, followed by a high-temperature sintering process

Best strength

Latest manufacturing technologies

100 % process reliability

Material Characteristics	Units	SiC (SSiC)
Density (20°C)	kg/dm³	3,1
Bending strength (4-Pkt. 20°C)	MPa	460
Compression strength (20°C)	MPa	2900
Elasticity modulus (20°C)	GPa	410
Weibull-module		>12
Thermal dilatation coefficient. (20°C/200°C)	K^{-1}	$2,9 \times 10^{-6}$
Thermal conductivity (20°C/200°C)	W/mK	130
Free porosity	%	0

Direct, Sintered, α-Silicon Carbide (SSiC)

- SSiC is the pressureless sintered modification of silicon carbide where all free silicon has been eliminated in the material structure
- In contrast to silicon-infiltrated SiC (SiSiC), this material shows excellent chemical resistance when combined with very high abrasion resistance
- In this respect, SSiC is far superior to most other heat exchanger materials

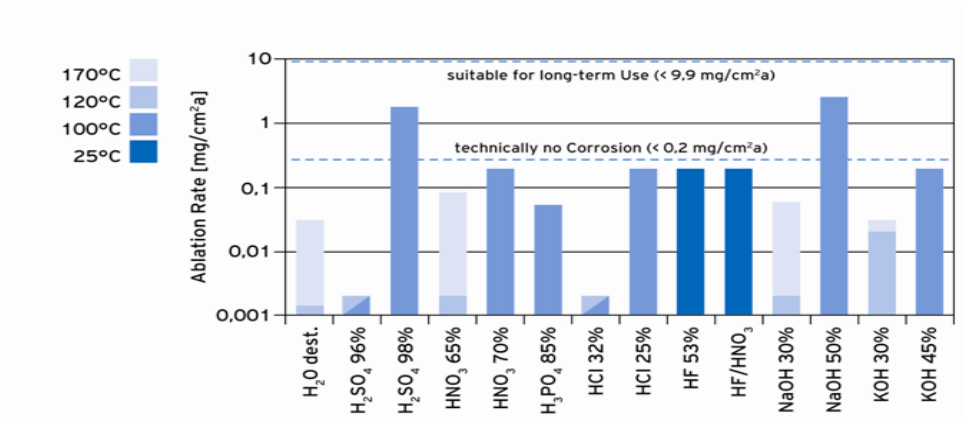
Universal corrosion resistance

Acids, leaches, halogen compounds and oxidizing media

Application with all organic solvents

Optimal abrasion resistance

100% FDA / GMP compliance



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Graphite and SiC Heat Exchangers and Process Equipment

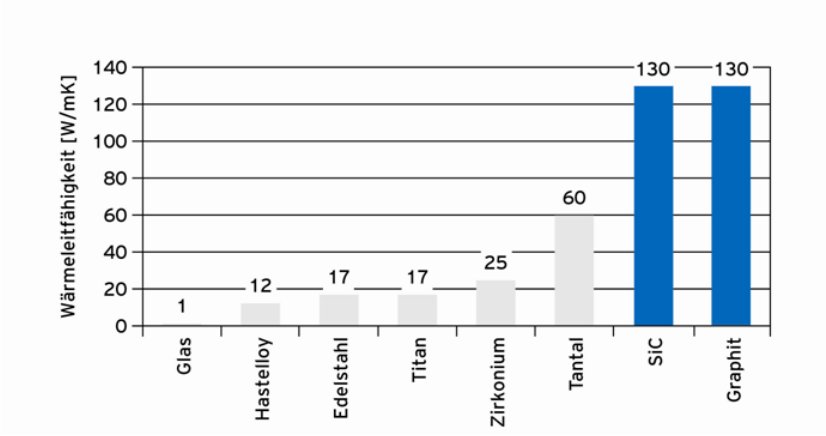
Silicon Carbide SiC
Pressureless Sintered, α-Silicon Carbide (SSiC)

Pressureless Sintered, Single-phase, α-Silicon Carbide (SSiC)

- SSiC 's incredible purity helps to avoid product contamination
- Adapted for use in the highly pure manufacturing of electronic chemicals, SSiC is washed in a specific chemical mixture to achieve manufacturing particle removal
- This material is well suited for use in ppt grade clean areas

No risk of product contamination

Adequate for ppt grade clean production



- High heat conductivity allows for excellent thermal shock resistance
- Short-term temperature difference (thermal shock stability parameter R1) is approximately > 200 K
- This ensures high operational safety, especially during unstable start-up or shut-down procedures

Excellent thermal conductivity

Great resistance against thermal shock

The CORRESIC® Heat Exchanger Portfolio

- For diverse applications GAB Neumann has developed three different designs:

  | CORRESIC®-SR Shell & Tube Heat Exchangers
  | CORRESIC®-SE Block Heat Exchangers
  | CORRESIC®-SP Plate & Frame Heat Exchangers

- The specific properties of the different designs result in various benefits pending on the application
- This portfolio ensures optimal performance in each process

-1 bar to +16 bar max. operating pressure (depending on design)

-60°C to +220°C max. operating temperature (depending on design)

Further information

- Product information sheets SR-1, SB-1 and SE-1 provide further data on our CORRESIC® heat exchangers
- Further developments and complementary information (brochures, corrosion resistance charts, product information, data sheets,…) are available for download at www.gab-neumann.de.

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