

DATA SHEET

PS5000

Silicon Carbide

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Description

A fully dense sintered silicon carbide material with exceptional wear resistance capability due to its low friction properties, which make it ideal for wear and other friction-based applications.

Prime Features

- High thermal conductivity
- Low friction
- Low thermal expansion coefficient
- Outstanding thermal shock resistance
- Extreme hardness and wear resistance
- Exceptional corrosion resistance
- Good mechanical strength

Typical Applications

- Abrasive and aggressive fluid applications
- Radial and thrust bearings
- Electric water pump (EWP) bearings
- Gas seal rings
- Mechanical seal rings
- Centrifugal pumps
- Submersible pumps
- Gear pumps
- Sliding bearings

MGAM Production Capabilities

- Manufacture of large and small components in complex shapes
- Complex pressed and machined components
- Exceptional flatness $\leq 0.6\mu\text{m}$ (2 light bands); surface finish typically controlled to $<0.4\mu\text{m Ra}$
- Prototype, batch and volume production

Specifications

Quality Assurance to ISO 9001

Physical Properties

Colour	Grey-Black
Density (fired), g/cm ³	>3.10
Porosity (apparent), % nominal	0
Vickers hardness, GPa @ HV 0.5kg	27
Fracture Toughness, MPa.m ^{1/2}	3.3
Flexural Strength (3-point), MPa @ 20 °C	350
Weibull Modulus, m	10
Grain Size, μm	<20
Young's Modulus E, GPa @ 20 °C	400
Poisson's Ratio ν	0.18

Thermal Properties

Thermal Conductivity, W/m.K @ 20C	150
Thermal Expansion Coefficient 10 ⁻⁶ @ 0-800 °C	4.1
Thermal Shock Resistance (R ₁) $\Delta\text{T}/\text{C}$	180
Thermal Shock Resistance (R ₂) W/m	26250
Specific Heat J/kg.K	800

Electrical Properties

Permittivity, 20C 1MHz	---
Dielectric Loss @ 1MHz, $\tan \delta \cdot 10^{-4}$	---
Dielectric Strength, kV/mm	---
Volume Resistivity, ohm.cm @ 20°C	---
@ 300°C	---
@ 600°C	---

Please note that all values quoted are based on test pieces and may vary according to component design. These values are not guaranteed in anyway whatsoever and should only be treated as indicative and for guidance only. 08.09.2017