

DATA SHEET

HPSN

Silicon Nitride

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Description

Hot Pressed Silicon Nitride (HPSN) is a fully dense Silicon Nitride (i.e. 0% porosity). HPSN exhibits the highest mechanical properties of the Silicon Nitride family due to reduction of residual porosity, removed during the Hot Pressing stage.

Prime Features

- High temperature applications
- Superior hardness & abrasive wear resistance
- Exceptional thermal shock capabilities
- Resists chemical attack

Typical Applications

- Semiconductor handling parts
- Molten metal handling (including crucible / wear plates)
- Brazing jigs
- Induction heating coil supports
- Reinforcement phase for composites
- Welding jigs, fixtures and weld location pins
- Dental heat treatment supports
- TIG / Plasma welding nozzles
- Thermocouple sheaths
- Bearings and rollers
- Glow plugs
- Cutting tools

Specification

Quality Assurance to ISO 9002

MTC Production Capabilities

- Pressed and machined components
- Prototype, batch and volume production.

Physical properties*

| | |
|-------------------------------------------------------------|-------------------|
| Color | Gray |
| Bulk density (fired), g/cm ³ | 3.28 |
| Porosity (apparent), % nominal | 0 (fully dense) |
| Rockwell hardness (R45N) | 89 |
| Compressive strength, MPa | >3000 |
| Flexural strength (ASTM C1161, 3-point), MPa | 800 |
| Young's modulus, GPa | 310 |
| Thermal conductivity, W/m.K | 15-20 |
| Thermal expansion coefficient (0-800C), 10 ⁻⁶ /C | 3.3 |
| Maximum no-load temperature, °C | 1200 |
| Thermal downshock, ΔC | >600 |
| Volume resistivity, ohm.cm @ 20C | >10 ¹⁰ |

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. 12.12.2012