Data Sheet

# RBSN Reaction bonded silicon nitride (Mac-RBSNS)

## Description

An advanced synthetic ceramic with a nominal $Si_3N_4$ content of **99%.** Reaction bonded silicon nitride (RSBN) is made by directly reacting compacted silicon powder with nitrogen to produce porous components of relatively low density and possessing exceptional thermal

## Prime Features:

- Porous, low density material
- Exceptional resistance to thermal downshock
- Excellent resistance to wetting and attack by molten non-ferrous alloys containing aluminium, magnesium, copper, zinc and lead
- Low thermal conductivity
- Good electrical resistance

## Typical Applications:

- Welding jigs and fixtures
- Molten non-ferrous metal handling systems
- Riser tubes and transfer tubes
- Delivery systems and degassing systems
- Special crucibles

## Specifications

- Quality Assurance to ISO 9002

## Production Capabilities:

- Net shape forming
- Prototype, batch and volume production

## Physical Properties

| | |
|---|---|
| Colour | Gray |
| Bulk Density (fired) | 2.5 $Mg/m^3$ |
| Porosity (apparent) | 20 % nominal |
| Compressive Strength | 650 MPa |
| Flexural Strength (3-point) | 200 MPa @20C |
| Young's modulus | 170 GPa @20C |
| Thermal Conductivity @20C | 12 W/m.K |
| Thermal Expansion Coefficient $10^{-6}$/C (20-1000C) | 3.1 |
| Thermal Downshock σC | >600 |
| Specific Heat | 1100 J/kg.K |
| Maximum no-load temperature | 1300 C |
| Volume resistivity @20C | $>10^{10}$ ohm.cm |

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.

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We design and manufacture products for demanding applications in a variety of markets using a comprehensive range of advanced ceramic, glass, precious metal, piezoelectric and dielectric materials. We utilise core competences of applications engineering and superior materials technology, together with state of the art fully integrated manufacturing processes to offer precision ceramic components, ceramic-to-metal assemblies and special coatings for use in a variety of applications.