

Data Sheet

Nilcra[®] SiAlON E

Description

- A silicon nitride based SiAlON with exceptional strength, toughness and reliability.
- Contains interlocking grains of beta phase SiAlON.
- Designed for applications requiring high strength, toughness, thermal shock and wear resistance.

Prime Features

- High Strength at ambient & high temperatures up to 1000°C
- Excellent fracture toughness
- Extremely high hardness & wear resistance
- Low coefficient of thermal expansion
- Very high thermal shock resistance
- Excellent corrosion resistance in acids, alkaline and molten metals
- Non-wetting in molten metal
- Low oxidation at elevated temperatures

Physical Properties

Colour		Black
Density g/cm ³	20°C	3.23
Flexural Strength MPa	20°C	950
Weibull Modulus	20°C	11
Tensile Strength MPa	20°C	400
Compressive Strength MPa	20°C	3500
Modulus of Elasticity GPa	20°C	290
Poisson's Ratio	20°C	0.23
Hardness HV _{0.3} kg/mm ²	20°C	1500
Hardness Rockwell HRA	20°C	92
Fracture Toughness MPa√m	20°C	8
Average Grain Size μm		1-5
Thermal Conductivity W/m-K	20°C	28
Specific Heat J/g-K	20°C	0.65
Thermal Expansion Coefficient x10 ⁻⁶ mm/mm/°C	25-1200°C	3.0
Thermal Shock Resistance ΔT°C		900
Electrical Resistivity ohm-cm	20°C	10 ¹²
Dielectric Constant		8.0
RT Loss Tangent at 10 GHz	20°C	0.002

Specifications

- Quality Assurance to ISO 9001

Typical Applications:

- Excellent for combating wear and corrosion in non-ferrous molten metal systems
- Successfully used for a wide variety of tooling used in metal forming and industrial wear.

Production Capabilities

- Sintered components
- Precision ground components
- Ceramic / Metal assemblies
- Ceramic design assistance
- Prototyping, batch and volume production

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.