Data Sheet

Nilcra® Zirconia TS Grade

Description

- Magnesia-Partially Stabilised Zirconia (Mg-PSZ) with exceptional transformation toughening properties.
- Comprising 3.5 wt% MgO in ZrO_2.
- Designed for applications requiring high thermal shock resistance.

Prime Features:

- Very high mechanical strength
- Excellent wear and abrasion resistance
- Excellent corrosion resistance
- High impact resistance and toughness
- Superior thermal shock resistance
- Very low thermal conductivity

Typical Applications:

- Excellent for combating wear and corrosion in applications requiring thermal shock resistance.
- Successfully used for a wide variety of tooling used in metal forming, such as, dies for hot copper and brass extrusion, guide rollers for welded tube production and for zinc coating steel sheet.

Physical Properties

Colour		White
Density g/cm^3	20°C	5.74
Flexural Strength (4 Pt Bend) MPa	20°C	650
	820°C	360
Tensile Strength MPa	20°C	390
Weibull Modulus	20°C	>30
Compressive Strength MPa	20°C	1800
	800°C	1750
Modulus of Elasticity GPa	20°C	205
Poisson's Ratio	20°C	0.31
Hardness $HV_{0.3}$ kg/mm^2	20°C	1020
Fracture Toughness MPa√m	20°C	>12
Average Grain Size µm		45
Electrical Resistivity ohm-cm		
	20°C	>10^{11}
	500°C	1.9 x 10^5
	600°C	2.7 x 10^4
	900°C	8000
Thermal Conductivity W/m-K		
	20°C	3.05
	400°C	2.47
	800°C	2.32
Thermal Expansion Coefficient x10^{-6} mm/mm/°C		
	25-400°C	9.9
	25-800°C	9.7
Specific Heat J/g-K	20°C	0.47

Production Capabilities

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

Specifications

- Quality Assurance to ISO 9001

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.