

## Data Sheet

# Nilcra<sup>®</sup> Zirconia 3Y-TZP Grade

### Description

- Ytria-Tetragonal Zirconia Polycrystal (Y-TZP) with excellent transformation toughening properties.
- Comprising 3 mol% (5.2 wt%) Y<sub>2</sub>O<sub>3</sub> in ZrO<sub>2</sub>.

### Prime Features:

- Very high mechanical strength
- Excellent wear and abrasion resistance
- High impact resistance and toughness
- Good thermal shock resistance

### Specifications

- Quality Assurance to ISO 9001

### Physical Properties

<b>Colour</b>		White
<b>Density g/cm<sup>3</sup></b>	20°C	6.07
<b>Flexural Strength MPa</b>	20°C	1000
<b>Compressive Strength MPa</b>	20°C	2300
<b>Modulus of Elasticity GPa</b>	20°C	205
<b>Poisson's Ratio</b>	20°C	0.3
<b>Hardness HV<sub>0.3</sub> kg/mm<sup>2</sup></b>	20°C	1300
<b>Fracture Toughness MPa√m</b>	20°C	10
<b>Average Grain Size μm</b>		0.4
<b>Electrical Resistivity ohm-cm</b>	20°C	>10 <sup>11</sup>
<b>Maximum Use Temperature °C</b>		800
<b>Thermal Shock Resistance, ΔT °C</b>		200
<b>Thermal Conductivity W/m-K</b>	20°C	3.0
<b>Thermal Expansion Coefficient x10<sup>-6</sup>/°C</b>	25-400°C	9
<b>Specific Heat J/g-K</b>	20°C	0.5

### Typical Applications:

- Typically used for blades and cutting edges where the fine grain structure is an advantageous.
- Gas and Oil field applications
- Pump and Valve components
- Canning and Metal Packaging
- Solids Handling
- Automotive (eg Weld Pins)

### Production Capabilities

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

- A high purity, fine grain (sub-micron) tetragonal, transformation toughened zirconia (3Y-TZP).

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.