



## Zircalon

**Zircalon** is a recently added material to our portfolio and is the toughest of all monolithic ceramics. It has been developed to compliment our range of components for the metal forming industries, such as weld location and control pins.

Zircalon is a partially stabilised zirconia characterised by high strength and toughness giving it excellent wear resistance as well as excellent corrosion resistance.

Zircalon is available in two grades, Zircalon 5 and Zircalon 10. The table below compares their typical mechanical, thermal and electrical property data.



Property	Units	Zircalon 5	Zircalon 10
3 point RT Modulus of Rupture (Specimen 3x3x50, span 19mm)	MPa	1000	1200
Weibull Modulus	-	15	15
RT Unit Tensile Strength	MPa	500	550
RT Compressive Strength	MPa	>2000	>2000
RT Young's Modulus of Elasticity	GPa	205	205
RT Hardness (HRA)	-	91	91
RT Hardness (Vickers Hv <sub>0.3</sub> )	Kg/mm <sup>2</sup>	1350	1350
Fracture Toughness K <sup>1</sup> C	MPam <sup>1/2</sup>	8.0	10.0
Poisson's Ratio	-	0.30	0.30
Density	g/cc	6.13	6.05
Porosity	%	0	0
Thermal Expansion Coefficient (0-1200°C)	K <sup>-1</sup>	10.0x10 <sup>-6</sup>	10.0x10 <sup>-6</sup>
RT Thermal Conductivity	W/(mK)	2.0	2.0
Thermal Shock Resistance	ΔT°C quenched in water	250	250
Maximum Use Temperature	°C	1000	1000
RT Electrical Resistivity	ohm m	10 <sup>9</sup>	10 <sup>9</sup>

Typical physical property data obtained under test conditions. All properties have been measured by independent testing authorities. The values given only apply to the test bodies on which they were determined, and therefore can only be recommended values.

### Applications

**Zircalon** is used predominately in applications requiring excellent impact and wear resistance, in industries such as metal forming and oil and gas. Components such as weld location pins, as used in resistance welding, benefit from the outstanding toughness and strength of **Zircalon**. Its excellent chemical corrosion resistance also make it a candidate material in chemical and process industry applications.

### Technical Support

The successful integration of ceramics into industrial and engineering systems requires close collaboration between you, the end-user, and us, the material suppliers. Our Technical Specialists are available to discuss your requirements in detail and assist in exploiting the significant advantages which **Zircalon** has to offer.

