



Zircalon 20

Zircalon 20 is a magnesia stabilized zirconia ceramic and is amongst the toughest of all monolithic ceramics. It is characterized by high impact resistance and very high strength and toughness resulting in excellent wear resistance.

Zircalon 20 shows improved thermal shock resistance over yttria stabilized zirconia which allows the material to be used for extrusion dies.

Typical mechanical, thermal and electrical property data for Zircalon 20 is shown in the table below.



Property	Zircalon 20	Units
Density	5.7	g/cc
Porosity	0	%
3 point Modulus of Rupture 20°C (Specimen 3x3x50, span 19mm)	500	MPa
Weibull Modulus	15	-
Compressive Strength	>1600	MPa
Young's Modulus of Elasticity	210	GPa
Poisson's Ratio	0.3	-
Hardness (HRA)	90	-
Hardness (Vickers Hv ₅₀)	11.77 (1200)	GPa (Kg/mm ²)
Fracture Toughness K ¹ C	7	MPam ^{1/2}
Thermal Expansion Coefficient (0-1200°C)	11.0x10 ⁻⁶	K ⁻¹
Thermal Conductivity	2.5	W/(mK)
Thermal Shock Resistance	350	ΔT°C quenched in water
Maximum Use Temperature	1000	°C
Electrical Resistivity	10 ¹¹	Ohm cm

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 20 is used predominately in applications requiring excellent impact and wear resistance, in industries such as metal forming and oil and gas. Components such as extrusion dies benefit from the outstanding toughness and thermal shock resistance of Zircalon 20. 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 20 has to offer.

