INTERNATIONAL Syalons

ADVANCED ZIRCONIA CERAMICS

Zircalon 30

Zircalon 30 is a composite ceramic material with a co-stabilised zirconium oxide (ZrO_2) and alumina (Al_2O_3) matrix reinforced with self-grown alumina-based platelets. Zircalon 30 offers improved mechanical properties over a typical yttria stabilised zirconia, with outstanding fracture toughness and an increase in impact resistance of >50% compared with 3mol% Y-TZP.

Typical mechanical, thermal and electrical property data for **Zircalon 30** is shown in the table below.

Property	Zircalon 30	Units
Density	>5.62	g/cc
Porosity	0	%
3-point Modulus of Rupture (20°C)	1000	MPa
Weibull Modulus	14	-
Compressive Strength	>2000	MPa
Young's Modulus of Elasticity	-	GPa
Poisson's Ratio	0.295	-
Hardness (Vickers Hv_{50})	12.13	GPa
Fracture Toughness K^1C	14-15	$MPam^{½}$
Thermal Expansion Coefficient (0-1200°C)	$10.1x10^{-6}$	K^{-1}
Thermal Conductivity	3.5	W/(mK)
Thermal Shock Resistance	250	ΔT°C
Maximum Use Temperature	1000	°C
Electrical Resistivity	10^{13}	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 30 is used predominately in applications requiring excellent impact and wear resistance, in industries such as oil and gas, metal forming and welding, for example as weld location pins for resistance welding of captive nuts on to sheet metal.

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 30** has to offer.

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