FZT

Material Type: Zirconia toughened alumina (Al_2O_3, ZrO_2)
MECHANICAL AND PHYSICAL PROPERTIES OF THE MATERIAL (TYP.)

Characteristic	Standard	Specification	Unit	Value
Content			[%]	**> 99.5**
Density (ρ_b)	DIN EN ISO 18754		[g/cm³]	**≥ 4.10**
Open (apparent) porosity (π_a)	DIN EN ISO 18754		[vol-%]	**0**
Average size of crystallites (g_{mli})	ISO 13383-1	A1	[µm]	**5**
Flexural strength ($\sigma_{f,4}$)	DIN EN 843-1	Four-Point-Bending	[MPa]	**460**
Weibull modulus (m)	EN ISO 20501		[-]	**> 15**
Fracture toughness ($K_{1c,\ SEVNB}$)	DIN EN ISO 23146	SEVNB	[MPa·m^{0,5}]	**3.3**
Compressive strength ($\sigma_{c,m}$)	DIN ISO 17162		[MPa]	**3000**
Young's modulus of Elasticity (E)	EN 843-2	dynamic	[GPa]	**360**
Poisson's ratio (μ)	EN 843-2	resonance	[-]	**0.24**
Vickers Hardness (HV 1.0)	DIN EN ISO 14705	Procedure A	[GPa]	**18.4**
Maximum service temperature (T_{max})		in air	[°C]	**1700**
Mean coefficient of linear thermal expansion ($\bar{\alpha}$)	DIN EN ISO 17562	-100 - 20 °C 20 - 500 °C 20 - 1000 °C	[10^{-6}/K]	**4.9** **7.5** **8.3**
Specific heat capacity (c_p)	DIN EN 821-3	20 °C	[J/(kg·K)]	**850**
Thermal conductivity (λ)	DIN EN ISO 18755	100 °C	[W/m·K]	**25**
Typical colour			[-]	**cream white**

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