

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/cm ³]	≥ 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 ($K_{1c, \text{SEVNB}}$)	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 (α)	DIN EN ISO 17562	-100 - 20 °C	[10 ⁻⁶ /K]	4.9
		20 - 500 °C		7.5
		20 - 1000 °C		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			[-]	white

The preliminary remark in DIN 60672-2 applies analogously to the property values given in the table, according to which the reported values apply only to the test specimens on which they were determined. Assignment to other forms is therefore only conditional permissible. The reference values given are to be understood as such. They refer to a temperature of 20 °C, unless otherwise stated.