

Material Type: Zirconia (Y-TZP) (ZrO_2, Y_2O_3, Al_2O_3)

MECHANICAL AND PHYSICAL PROPERTIES OF THE MATERIAL (TYP.)

Characteristic	Standard	Specification	Unit	Value
Content			[%]	≥ 99.8
Density (ρ_b)	DIN EN ISO 18754		[g/cm ³]	≥ 6.00
Open (apparent) porosity (π_q)	DIN EN ISO 18754		[vol-%]	0
Average size of crystallites (g_{mli})	ISO 13383-1	A1	[μ m]	0.8
Flexural strength ($\sigma_{f,4}$)	DIN EN 843-1	Four-Point-Bending	[MPa]	1000
Weibull modulus (m)	EN ISO 20501		[-]	10
Fracture toughness ($K_{1c, SEVNB}$)	DIN EN ISO 23146	SEVNB	[MPa·m ^{0.5}]	4.6
Compressive strength ($\sigma_{c,m}$)	DIN ISO 17162		[MPa]	2200
Young's modulus of Elasticity (E)	EN 843-2	dynamic	[GPa]	200
Poisson's ratio (μ)	EN 843-2	resonance	[-]	0.3
Vickers Hardness (HV 1.0)	DIN EN ISO 14705	Procedure A	[GPa]	13.9
Maximum service temperature (T_{max})		in air	[°C]	1000
Mean coefficient of linear thermal expansion ($\bar{\alpha}$)	DIN EN ISO 17562	20 - 1000 °C	[10 ⁻⁶ /K]	10.5
Specific heat capacity (c_p)	DIN EN 821-3	20 °C	[J/(kg·K)]	400
Thermal conductivity (λ)	DIN EN ISO 18755	100 °C	[W/m·K]	2.5
Volume resistivity (ρ)	DIN EN 62631-3	50 °C 100 °C 300 °C 600 °C 1000 °C	[Ω ·cm]	5·10 ¹⁰ 2.5·10 ⁹ 4.5·10 ⁵ 8·10 ³ 15
Stability under hydrothermal conditions (autoclave)		230 °C, 28 bar, deionized water	[h]	≥ 5
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.