FZM

Material Type: Magnesia partially stabilized zirconia (Mg-PSZ) (ZrO_2, MgO)
MECHANICAL AND PHYSICAL PROPERTIES OF THE MATERIAL (TYPICAL)

Characteristic	Standard	Specification	Unit	Value
Content			[%]	**> 99.7**
Density (ρ_b)	DIN EN ISO 18754		[g/cm³]	**≥ 5.70**
Open (apparent) porosity (π_a)	DIN EN ISO 18754		[vol-%]	**0**
Average size of crystallites (g_{mli})	ISO 13383-1	A1	[µm]	**50**
Flexural strength ($\sigma_{f,4}$)	DIN EN 843-1	Four-Point-Bending	[MPa]	**500**
Weibull modulus (m)	EN ISO 20501		[-]	**> 20**
Fracture toughness ($K_{1c,\ SEVNB}$)	DIN EN ISO 23146	SEVNB	[MPa·m^{0,5}]	**6.3**
Compressive strength ($\sigma_{c,m}$)	DIN ISO 17162		[MPa]	**2000**
Young's modulus of Elasticity (E)	EN 843-2	dynamic	[GPa]	**207**
Poisson's ratio (μ)	EN 843-2	resonance	[-]	**0.31**
Vickers Hardness (HV 1.0)	DIN EN ISO 14705	Procedure A	[GPa]	**12.0**
Maximum service temperature (T_{max})		in air	[°C]	**900**
Mean coefficient of linear thermal expansion ($\bar{\alpha}$)	DIN EN ISO 17562	-100 - 20 °C 20 - 500 °C 20 - 900 °C	[10^{-6}/K]	**7.7** **10.4** **10.6**
Specific heat capacity (c_p)	DIN EN 821-3	20 °C	[J/(kg·K)]	**400**
Thermal shock resistance	DIN EN 820-3	R_1, Type A, in water	[°C]	**250**
Thermal conductivity (λ)	DIN EN ISO 18755	20 °C 500 °C 900 °C	[W/m·K]	**3** **2.3** **2**
Volume resistivity (ρ)	DIN EN 62631-3	20 °C 900 °C	[Ω·cm]	**10^{10}** **84**
Dielectric strength	DIN EN 60243-1		[kV/mm]	**> 30**
Typical colour			[-]	**yellow**

The values and information contained in this document are based on our current state of knowledge and are provided without any representation or warranty as to specific properties, completeness, accuracy, or suitability for a particular purpose. The stated values are derived from typical test samples under laboratory conditions and may vary depending on design, shape, manufacturing process, and application. Prior to any use, it is the sole responsibility of the user to determine whether the material is suitable for the intended purpose and to conduct any necessary corresponding tests.
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