

CeramTec ZN 40 Zirconia, ZrO₂-MgO

Category : Ceramic , Oxide , Zirconium Oxide

Material Notes:

ZN 40 is a zirconium oxide ceramic with an excellent surface finish and a higher strength than aluminum oxide. Its good crack resistance and anti-friction properties, combined with steel-like thermal expansion attributes, make this material an ideal partner for bearing composites working at elevated temperatures.

Order this product through the following link:

[http://www.lookpolymers.com/polymer_CeramTec-ZN-40-Zirconia-ZrO₂-MgO.php](http://www.lookpolymers.com/polymer_CeramTec-ZN-40-Zirconia-ZrO2-MgO.php)

Physical Properties	Metric	English	Comments
Density	5.74 g/cc	0.207 lb/in ³	DIN EN 623-2
Water Absorption	0.00 %	0.00 %	Open Porosity; DIN EN 623-2
Permeability	0.00	0.00	%, Gas
Weibull Modulus	25	25	DINV ENV 843-5

Mechanical Properties	Metric	English	Comments
Vickers Microhardness	1240	1240	HV1; DINV ENV 843-4
Tensile Strength at Break	500 MPa	72500 psi	ACMA Test #4 / DIN EN 843-1
Tensile Modulus	210 GPa	30500 ksi	Young's; DINV ENV 843-2
Flexural Strength	500 MPa	72500 psi	DIN EN 843-1
Compressive Strength	1600 MPa	232000 psi	DIN 51067T1
Poissons Ratio	0.30	0.30	DINV ENV 843-2
Fracture Toughness	8.10 MPa-m ^{1/2}	7.37 ksi-in ^{1/2}	K _{IC} (SEVNB); DIN CEN/TS 14425-1
Shear Modulus	80.8 GPa	11700 ksi	Calculated

Thermal Properties	Metric	English	Comments
CTE, linear	10.2 μm/m-°C	5.67 μin/in-°F	DIN EN 821-1
	@Temperature 20.0 - 400 °C	@Temperature 68.0 - 752 °F	
	11.0 μm/m-°C	6.11 μin/in-°F	DIN EN 821-1
	@Temperature 20.0 - 1000 °C	@Temperature 68.0 - 1830 °F	
Specific Heat Capacity	0.400 J/g-°C	0.0956 BTU/lb-°F	DINV ENV 821-3

Thermal Properties	Metric /m-K	English U-in/hr-ft ² -°F	Comments
Maximum Service Temperature, Air	850 °C	1560 °F	
Maximum Service Temperature, Inert	850 °C	1560 °F	

Electrical Properties	Metric	English	Comments
Volume Resistivity	500000 ohm-cm	500000 ohm-cm	IEC 672-1
	@Temperature 400 °C	@Temperature 752 °F	
	5.00e+13 ohm-cm	5.00e+13 ohm-cm	IEC 672-1
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Dielectric Constant	27	27	IEC 672-1
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
Dielectric Strength	19.0 kV/mm	483 kV/in	IEC 672-1
Dielectric Loss Index	0.020	0.020	IEC 672-1
	@Frequency 9.00e+9 Hz	@Frequency 9.00e+9 Hz	

Descriptive Properties	Value	Comments
Ra = Arithmetic Mean Roughness Value (µm)	<0.06	
Thermal Shock Resistance R1 (K)	163	calculated; R1 = [s ² (1-µ)] / (a·E)

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