

CeramTec CD 101 Silicon Carbide, SiC-ZrB2

Category : Ceramic , Carbide

Material Notes:

CD101 is a zirconia reinforced silicon carbide designed for maximum hardness.

Order this product through the following link:

http://www.lookpolymers.com/polymer_CeramTec-CD-101-Silicon-Carbide-SiC-ZrB2.php

Physical Properties	Metric	English	Comments
Density	3.26 g/cc	0.118 lb/in ³	DIN EN 623-2
Water Absorption	0.00 %	0.00 %	DIN EN 623-2
Porosity	2.0 %	2.0 %	closed (approximate vol. %)
Permeability	0.00	0.00	%, Gas
Weibull Modulus	8.0	8.0	DINV ENV 843-5

Mechanical Properties	Metric	English	Comments
Vickers Microhardness	2750	2750	HV 0.5; DINV ENV 843-4
Tensile Strength at Break	330 MPa	47900 psi	ACMA Test #4 / DIN EN 843-1
Tensile Modulus	415 GPa	60200 ksi	Young's; DINV ENV 843-2
Flexural Strength	330 MPa	47900 psi	DIN EN 843-1
	360 MPa	52200 psi	Bending Strength; 4-Point Method (40x4x3 mm ³); ASTM-F417
Compressive Strength	2000 MPa	290000 psi	DIN 51067T1
Poissons Ratio	0.16	0.16	DINV ENV 843-2
Fracture Toughness	3.80 MPa-m ^{1/2}	3.46 ksi-in ^{1/2}	K _{IC} ; DIN 51109
Shear Modulus	179 GPa	26000 ksi	Calculated

Thermal Properties	Metric	English	Comments
CTE, linear	3.50 µm/m-°C	1.94 µin/in-°F	DIN EN 821-1
	@Temperature 20.0 - 200 °C	@Temperature 68.0 - 392 °F	
	3.50 µm/m-°C	1.94 µin/in-°F	DIN EN 821-1
	@Temperature 20.0 - 400 °C	@Temperature 68.0 - 752 °F	

Thermal Properties	4.50 µm/m-°C Metric	2.50 µin/in-°F English	Comments DIN EN 821-1
	@Temperature 20.0 - 600 °C	@Temperature 68.0 - 1110 °F	
	4.50 µm/m-°C	2.50 µin/in-°F	DIN EN 821-1
	@Temperature 20.0 - 1000 °C	@Temperature 68.0 - 1830 °F	
Specific Heat Capacity	0.600 J/g-°C	0.143 BTU/lb-°F	DINV ENV 821-3
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
Thermal Conductivity	100 W/m-K	694 BTU-in/hr-ft ² -°F	DIN EN 821-2
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
Maximum Service Temperature, Air	1400 °C	2550 °F	
Maximum Service Temperature, Inert	1800 °C	3270 °F	

Electrical Properties	Metric	English	Comments
Volume Resistivity	>= 0.10 ohm-cm	>= 0.10 ohm-cm	
	@Temperature 500 °C	@Temperature 932 °F	
	>= 100 ohm-cm	>= 100 ohm-cm	IEC 672-1
	@Temperature 400 °C	@Temperature 752 °F	
	>= 30000 ohm-cm	>= 30000 ohm-cm	IEC 672-1
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Dielectric Constant	29	29	IEC 672-1
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
Dielectric Loss Index	0.20	0.20	IEC 672-1
	@Frequency 9.00e+9 Hz	@Frequency 9.00e+9 Hz	

Descriptive Properties	Value	Comments
Color	Black	
Thermal Shock Resistance R1 (K)	191	R1 = [s ² (1-µ)] / (a-E)

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