CeramTec Rocar® SiF Silicon Carbide, SiSiC

Category : Ceramic , Carbide

Material Notes:

Rocar® is an extremely lightweight silicon carbide ceramic. It permits a reduction in mass forces at high speeds, and is considered for its hardness, excellent resistance to corrosion and sudden changes in temperature, excellent anti-friction properties, and higher heat conductivity over steel. The various types of Rocar include sintered and silicon infiltrated silicon carbide. In SiSiC, the pore cavities are filled with metallic silicon. Since shrinkage during firing is minimal, complex components can be produced with low tolerances. It maximum application temperature is 1350°C. However, it is not suitable for use in highly alkaline media because of its content of metallic silicon.

Order this product through the following link:
http://www.lookpolymers.com/polymer_CeramTec-Rocar-SiF-Silicon-Carbide-SiSiC.php

Physical Properties	Metric	English	Comments
Density	3.07 g/cc	0.111 lb/in³	DIN EN 623-2 / ASTM-C373 / ASTM-C20
Water Absorption	0.00 %	0.00 %	DIN EN 623-2 / ASTM-C373
Porosity	0.00 %	0.00 %	Closed (approximate)
Permeability	0.00	0.00	Gas
Weibull Modulus	>= 14	>= 14	DINV ENV 843-5

Mechanical Properties	Metric	English	Comments
Vickers Microhardness	1200	1200	HV 0.2; Si; DINV ENV 843-4
	2700	2700	HV 0.2; SiC; DINV ENV 843-4
Tensile Strength at Break	350 MPa	50800 psi	ACMA Test #4 / DIN EN 843-1
Tensile Modulus	395 GPa	57300 ksi	Young's; DINV ENV 843-2 / ASTM-F417
Flexural Strength	350 MPa @Temperature 20.0 °C	50800 psi @Temperature 68.0 °F	DIN EN 843-1
	350 MPa @Temperature 1000 °C	50800 psi @Temperature 1830 °F	DIN EN 820-1
Compressive Strength	3500 MPa	508000 psi	ASTM C-773-88 / DIN 51067T1
Poissons Ratio	0.17	0.17	DINV ENV 843-2
Fracture Toughness	4.00 MPa-m½	3.64 ksi-in½	DIN 51109
Shear Modulus	169 GPa	24500 ksi	Calculated

Thermal Properties	Metric	English	Comments
CTE, linear	3.80 µm/m-°C @Temperature 20.0 - 200 °C	2.11 µin/in-°F @Temperature 68.0 - 392 °F	DIN EN 821-1
	4.30 µm/m-°C @Temperature 20.0 - 400 °C	2.39 µin/in-°F @Temperature 68.0 - 752 °F	DIN EN 821-1
	4.50 µm/m-°C @Temperature 20.0 - 600 °C	2.50 µin/in-°F @Temperature 68.0 - 1110 °F	DIN EN 821-1
	4.90 µm/m-°C @Temperature 20.0 - 1000 °C	2.72 µin/in-°F @Temperature 68.0 - 1830 °F	DIN EN 821-1
Specific Heat Capacity	0.700 J/g-°C @Temperature 100 - 200 °C	0.167 BTU/lb-°F @Temperature 212 - 392 °F	DINV ENV 821-3
	1.30 J/g-°C @Temperature 1000 °C	0.311 BTU/lb-°F @Temperature 1830 °F	DINV ENV 821-3
Thermal Conductivity	40.0 W/m-K @Temperature 1000 °C	278 BTU-in/hr-ft²-°F @Temperature 1830 °F	DIN EN 821-2
	120 W/m-K @Temperature 20.0 - 100 °C	833 BTU-in/hr-ft²-°F @Temperature 68.0 - 212 °F	DIN EN 821-2 / ASTM-C408
Maximum Service Temperature, Air	1350 °C	2460 °F	
Maximum Service Temperature, Inert	1350 °C	2460 °F	

Electrical Properties	Metric	English	Comments
Volume Resistivity	<= 1.0 ohm-cm @Temperature 20.0 °C	<= 1.0 ohm-cm @Temperature 68.0 °F	IEC 672-1
	100 ohm-cm @Temperature 400 °C	100 ohm-cm @Temperature 752 °F	IEC 672-1

Descriptive Properties	Value	Comments
Color	Black	
Ra = Arithmetic Mean Roughness Value (µm)	Profilometer (0.8 mm Cutoff)	

Descriptive Properties	Value	Comments

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