

BOOSTEC[®] SILICON CARBIDE

GENERAL	PROPERTIES	Temperature	Typical value	Unit
• Sintered SiC	<i>Theoretical Density</i>	20°C	3.21	10 ³ kg/m ³
	<i>Bulk Density</i>	20°C	3.15+/-0.05	10 ³ kg/m ³
• Lightweight material	<i>Total Porosity (fully closed)</i>	20°C	< 3.5	%
	<i>Coefficient of Thermal Expansion</i>	-200°C	0.08	10 ⁻⁶ /°C
• Outstanding thermomechanical stability		20°C	2.2	10 ⁻⁶ /°C
		500°C	4.8	10 ⁻⁶ /°C
		1000°C	6.0	10 ⁻⁶ /°C
• High mechanical strength	<i>Thermal Conductivity</i>	-200°C	163	W/m.K
		20°C	180	W/m.K
• Excellent resistance to corrosion and abrasion		500°C	66	W/m.K
		1000°C	39	W/m.K
• High thermal conductivity, similar to the aluminium one	<i>Specific Heat</i>	-200°C	42	J/kg.K
		20°C	680	J/kg.K
		500°C	1040	J/kg.K
		1000°C	1180	J/kg.K
	<i>Maximum Thermal Shock (ΔTc)</i>		325	°C
	<i>Maximum Temperature of Use</i>			
	- in air		1450	°C
	- in inert atmosphere		1800	°C
	<i>Vickers Hardness (500g load)</i>	20°C	22	GPa
	<i>Bending Strength: coaxial double ring</i>	20°C		
	<i>DIN EN 1288-1&5 Mechanical Strength</i>		400	MPa
	<i>Weibull Modulus</i>		11	
	<i>Tensile Strength</i>	20°C	210	MPa
	<i>Compressive Strength</i>	20°C	3000	MPa
	<i>K_{1C} Toughness</i>	20°C	3	MN.m ^{-3/2}
	<i>Young's Modulus</i>	-200 to 1000°C	420	GPa
	<i>Shear Modulus</i>	-200 to 1000°C	180	GPa
	<i>Poisson's Ratio</i>	-200 to 1000°C	0.16	
	<i>Electrical Resistivity</i>			
	- 0.01 V/mm	20°C / 200°C	10 ⁵ / 10 ³	Ω.m
	- 100 V/mm	20°C	10 ³	Ω.m
	<i>Emissivity</i>	-200 to 300°C	0.7	
	<i>Outgassing ESA ECSS-Q-70-02A</i>			
	- TML (Total Mass Loss)		0.01	%
	- CVCM (Collected Volatile Condensable Materials)		0.00	%

typical characteristics rev: 00 20121114

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