BOOSTEC® SILICON CARBIDE

GENERAL	PROPERTIES	Temperature	Typical value	Unit
• Sintered SiC	*Theoritical Density*	20°C	3.21	10^3 kg/m3
	Bulk Density	20°C	3.15+/-0.05	10^3 kg/m3
• Lightweight material	*Total Porosity (fully closed)*	20°C	< 3.5	%
	Coefficient of Thermal Expansion	−200°C	0.08	10^{-6}/°C
• Outstanding thermome-		20°C	2.2	10^{-6}/°C
chanical stability		500°C	4.8	10^{-6}/°C
		1000°C	6.0	10^{-6}/°C
• High mechanical strength	*Thermal Conductivity*	−200°C	163	W/m.K
		20°C	180	W/m.K
• Excellent resistance to		500°C	66	W/m.K
corrosion and abrasion		1000°C	39	W/m.K
	Specific Heat	−200°C	42	J/kg.K
• High thermal conductivity,		20°C	680	J/kg.K
similar to the aluminium		500°C	1040	J/kg.K
one		1000°C	1180	J/kg.K
	Maximum Thermal Shock (ΔTc)		325	°C
	Maximum Temperature of Use			
	- in air		1450	°C
	- in inert atmosphere		1800	°C
	Vickers Hardness (500g load)	20°C	22	GPa
	Bending Strength: coaxial double ring	20°C		
	DIN EN 1288-1&5 Mechanical Strength		400	MPa
	Weibull Modulus		11	
	Tensile Strength	20°C	210	MPa
	Compressive Strength	20°C	3000	MPa
	K_{1C} Toughness	20°C	3	$MN.m^{-3/2}$
	Young's Modulus	−200 to 1000°C	420	GPa
	Shear Modulus	−200 to 1000°C	180	GPa
	Poisson's Ratio	−200 to 1000°C	0.16	
	Electrical Resistivity			
	− *0.01 V/mm*	20°C / 200°C	10^5 / 10^3	Ω.m
	− *100 V/mm*	20°C	10^3	Ω.m
	Emissivity	−200 to 300°C	0.7	
	Outgassing ESA ECSS-Q-70-02A			
	− *TML (Total Mass Loss)*		0.01	%
	− *CVCM (Collected Volatile Condensable Materials)*		0.00	%

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