TETRABOR® BORON CARBIDE TECHNICAL DATA

			Boron Carbide
Material properties	Standard	Symbol/Unit	TETRABOR®
Density	DIN EN 623-2	ρ [g/cm^3]	> 2.48
Porosity	DIN EN 623-2	P [%]	< 0.5
Mean grain size		[µm]	< 10
Phase composition			B_4C, C
Vickers hardness	DIN EN 843-4	HV 1 [GPa]	26
Knoop hardness	DIN EN 843-4	HK 0.1 [GPa]	27
Young's modulus	DIN EN 843-2	E [GPa]	410
Weibull modulus	DIN EN 843-5	m	15
Flexural strength, 4-pt bending	DIN EN 843-1	σ_B [MPa]	460
Compressive strength	DIN 51104	σ_D [MPa]	> 2800
Poisson ratio	DIN EN 843-2	ν	0.18
Fracture toughness (SENB)		K_{Ic} [MPa·m$^{0.5}$]	5
Coefficient of thermal expansion	DIN EN 821-1		
25 °C - 500 °C		α [10^{-6}/K]	4.5
500 °C - 1000 °C		α [10^{-6}/K]	6.3
Specific heat at 25 °C	DIN EN 821-3	c_p [J/g K]	0.94
Thermal conductivity at 25 °C	DIN EN 821-2	λ [W/m K]	36
Thermal stress parameters	calculated		
$R_1 = \sigma_B \cdot (1-\nu)/(\alpha \cdot E)$		[K]	204
$R_2 = R_1 \cdot \lambda$		[W/mm]	7
Specific electrical resistance at 25 °C	DIN EN 50359	ρ [Ω cm]	1

TDS/TETRABOR®/e-03-2011

The management system has been certified according to DIN EN ISO 9001, DIN EN ISO 14001. TETRABOR® is a registered trademark of ESK Ceramics GmbH Co. KG

ESK Ceramics GmbH & Co. KG
Max-Schaidhauf-Straße 25
87437 Kempten, Germany
www.esk.com, info@esk.com