



# EKasic® F SILICON CARBIDE

## TECHNICAL DATA

			Silicon Carbide
Material properties	Norm	Symbol/Unit	EKasic® F
Density	DIN EN 623-2	$\rho$ [g/cm <sup>3</sup> ]	> 3.10
Porosity	DIN EN 623-2	P [%]	< 3.0
Mean grain size		[ $\mu$ m]	< 5
Grain size distribution		[ $\mu$ m]	
Phase composition			$\alpha$ -SiC
Vickers hardness	DIN EN 843-4	HV 1 [GPa]	25.5
Knoop hardness	DIN EN 843-4	HK 0.1 [GPa]	24.5
Young's modulus	DIN EN 843-2	E [GPa]	410
Weibull modulus	DIN EN 843-5	m	10
Flexural strength, 4-pt bending	DIN EN 843-1	$\sigma_b$ [MPa]	400
Compressive strength		$\sigma_c$ [MPa]	2200
Poisson ratio		$\nu$	0.17
Fracture toughness (SENB)		$K_{Ic}$ [MPa·m <sup>0.5</sup> ]	4
Coefficient of thermal expansion	DIN EN 821-1		
20 °C - 500 °C		$\alpha$ [10 <sup>-6</sup> /K]	4.1
500 °C - 1000 °C		$\alpha$ [10 <sup>-6</sup> /K]	5.2
Specific heat at 20 °C	DIN EN 821-3	$c_p$ [J/g K]	0.6
Thermal conductivity at 20 °C	DIN EN 821-2	$\lambda$ [W/m K]	125
Thermal stress parameters	calculated		
$R_1 = \sigma_b \cdot (1 - \nu) / (\alpha \cdot E)$		R1 [K]	198
$R_2 = R_1 \cdot \lambda$		R2 [W/mm]	25
Specific electrical resistance at 20 °C	DIN EN 50359	$\rho$ [ $\Omega$ cm]	10 <sup>6</sup> - 10 <sup>9</sup>

EKasic® F/e-1206

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