



EKasic® SILICON CARBIDE TECHNICAL DATA

			Silicon Carbide					
Material properties	Standard	Symbol/Unit	EKasic® F	EKasic® F plus	EKasic® T	EKasic® C	EKasic® P	EKasic® G
Density	DIN EN 623-2	ρ [g/cm ³]	> 3.10	> 3.16	> 3.21	> 3.10	> 2.76 - 2.89	> 3.02
Porosity	DIN EN 623-2	P [%]	< 3.0	< 1.0	< 1.0	< 3.0	10 - 14	< 3.0
Mean grain size		[μ m]	< 5	< 5	< 2	bimodal	< 5	bimodal
Grain size distribution		[μ m]				10 - 1500		10 - 1000
Phase composition			α -SiC	α -SiC	α -SiC, YAG	α -SiC	α -SiC	α -SiC, graphite
Vickers hardness	DIN EN 843-4	HV 1 [GPa]	25.5	25.5	22.5	25.5	23.5	24.5
Knoop hardness	DIN EN 843-4	HK 0.1 [GPa]	24.5	24.5	21.0	24.5	21.6	23.0
Young's modulus	DIN EN 843-2	E [GPa]	410	420	420	410	340	390
Weibull modulus	DIN EN 843-5	m	10	15	15	10	15	14
Flexural strength, 4-pt bending	DIN EN 843-1	σ_b [MPa]	400	510	550	400	225	230
Compressive strength		σ_c [MPa]	2200	2200	2500	2500	2000	2500
Poisson ratio		ν	0.17	0.17	0.16	0.17	0.17	0.16
Fracture toughness (SENB)		K_{Ic} [MPa·m ^{0.5}]	4	4	6	3.5	3	3
Coefficient of thermal expansion	DIN EN 821-1							
20°C - 500°C		α [10 ⁻⁶ /K]	4.1	4.1	4.1	4.1	3.9	4.0
500°C - 1000°C		α [10 ⁻⁶ /K]	5.2	5.2	5.2	5.2	5.1	5.0
Specific heat at 20°C	DIN EN 821-3	c_p [J/g K]	0.6	0.6	0.6	0.6	0.6	0.6
Thermal conductivity at 20°C	DIN EN 821-2	λ [W/m K]	125	125	75	125	90	110
Thermal stress parameters	calculated							
$R_1 = \sigma_b \cdot (1 - \nu) / (\alpha \cdot E)$		R1 [K]	198	246	314	198	157	124
$R_2 = R_1 \cdot \lambda$		R2 [W/mm]	25	31	24	25	14	14
Specific electrical resistance at 20°C	DIN EN 50359	ρ [Ω cm]	10 ⁶ - 10 ⁸	10 ⁶ - 10 ⁸	10 ² - 10 ³	10 ³ - 10 ⁴	10 ⁶ - 10 ⁸	10 ³ - 10 ⁴

The data presented in this leaflet are in accordance with the present state of our knowledge, but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this leaflet should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. The recommendations do not absolve the user from the obligation of investigating the possibility of infringement of third parties' rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the products for a particular purpose.

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

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