



TETRABOR® BORON CARBIDE TECHNICAL DATA

| | | | Boron Carbide |
|---|--------------|----------------------------------|---------------------|
| Material properties | Norm | 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 | | [μ m] | < 15 |
| Aspect ratio (L/D) | | | - |
| Phase composition | | | B ₄ C, C |
| Vickers hardness | DIN EN 843-4 | HV 1 [GPa] | 31 |
| Knoop hardness | DIN EN 843-4 | HK 0.1 [GPa] | 29 |
| Young's modulus | DIN EN 843-2 | E [GPa] | 420 |
| Weibull modulus | DIN EN 843-5 | m | 15 |
| Flexural strength, 4-pt bending | DIN EN 843-1 | σ_B [MPa] | 450 |
| Compressive strength | | σ_D [MPa] | > 2800 |
| Poisson ratio | | ν | 0,15 |
| Fracture toughness (SENB) | | K_{Ic} [MPa·m ^{0.5}] | 5 |
| Coefficient of thermal expansion | DIN EN 821-1 | | |
| 20 °C - 500 °C | | α [10 ⁻⁶ /K] | 4,5 |
| 500 °C - 1000 °C | | α [10 ⁻⁶ /K] | 7,2 |
| Specific heat at 20 °C | DIN EN 821-3 | c_p [J/g K] | 1 |
| Thermal conductivity at 20 °C | DIN EN 821-2 | λ [W/m K] | 40 |
| Thermal stress parameters | calculated | | |
| $R_1 = \sigma_B \cdot (1 - \nu) / (\alpha \cdot E)$ | | [K] | 202 |
| $R_2 = R_1 \cdot \lambda$ | | [W/mm] | 8 |
| Specific electrical resistance at 20 °C | DIN EN 50359 | ρ [Ω cm] | 1 |

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. TETRABOR® is a registered trademark of ESK Ceramics GmbH Co. KG

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