

## Oxide/oxide ceramic matrix composite “Keramiklech”, N720-EF11/FW12 material for applications up to 1300°C

Keramiklech Type, old name		
Keramiklech Type, new name	N720-EF11/FW12	test standard
Fibre (Fabric)	Nextel 720/1500 denier (EF11-1500)	–
Matrix	85% Al <sub>2</sub> O <sub>3</sub> 15% 3YSZ	–
Thickness per layer [mm]	0,3	–
Density [g/cm <sup>3</sup> ]	2,6	–
Bending strength [MPa] anisotrop 0/90° at RT*	213,5	DIN 658-3, 3 point bending
Young's modulus (bending) [GPa] at RT*	–	–
Bending strength [MPa] anisotrop +/-45° at RT*	82	DIN 658-3, 3 point bending
Bending strength [MPa] isotrop 0/90° at RT*	153,8	DIN 658-3, 3 point bending
Tensile strength [MPa] anisotrop 0/90° at RT*	146,8 <sup>(3)</sup>	DIN 658-1
Young's modulus (tension) [GPa] at RT*	51,5 <sup>(3)</sup>	DIN 658-1
Tensile strength [MPa] anisotrop +/-45° at RT*	33 <sup>(3)</sup>	DIN 658-1
Tensile strength [MPa] at 1000 °C	167,7 <sup>(3)</sup>	DIN 658-1
Tensile strength [MPa] at 1200°C	157,2 <sup>(3)</sup>	DIN 658-1
Compression strength [MPa] at RT*	–	DIN 658-2
Young's modulus (compression) [GPa] at RT*	–	DIN 658-2
Shear strength (ILSS) [MPa] at RT*	8,4 <sup>(3)</sup>	DIN 658-4
Thermal expansion coefficient [10 <sup>-6</sup> 1/K]		DIN 1159-1
25–300 °C	–	–
25–600 °C	–	–
25–900 °C	–	–
25–1100 °C	–	–
Thermal conductivity [W/mK]		DIN 1159-2
300 °C	–	–
600 °C	–	–
900 °C	–	–
1100 °C	–	–
Recommended continuous service temperature [°C] without mechanical load	< 1300 °C	–
Recommended continuous service temperature [°C] with mechanical load	< 1200 °C	–
Maximum continuous service temperature [°C] with high mechanical load	< 1200 °C	–

Material N720-EF11/FW12/as of 2021, (\*at room temperature)

Gemessen durch FhG-ISC <sup>(1)</sup>, FhG-IWM <sup>(2)</sup>, Universität Bremen, Advanced Ceramics <sup>(3)</sup>, TU Freiberg <sup>(4)</sup>, Berner Fachhochschule TI <sup>(5)</sup>