

Oxide/oxide ceramic matrix composite “Keramiklech”, N720-EF19/FW30 material for applications up to 1300°C

Keramiklech Type, old name		
Keramiklech Type, new name	N720-EF19/FW30	test standard
Fibre (Fabric)	Nextel 720/3000 denier (EF19-3000)	–
Matrix	85% Al ₂ O ₃ 15% 3YSZ	–
Thickness per layer [mm]	0,55	–
Density [g/cm ³]	2,5	–
Bending strength [MPa] anisotrop 0/90° at RT*	152,1	DIN 658-3, 3 point bending
Young's modulus (bending) [GPa] at RT*	–	–
Bending strength [MPa] anisotrop +/-45° at RT*	55,7	DIN 658-3, 3 point bending
Bending strength [MPa] isotrop 0/90° at RT*	138,3	DIN 658-3, 3 point bending
Tensile strength [MPa] anisotrop 0/90° at RT*	–	DIN 658-1
Young's modulus (tension) [GPa] at RT*	–	DIN 658-1
Tensile strength [MPa] anisotrop +/-45° at RT*	–	DIN 658-1
Tensile strength [MPa] at 1000 °C	–	DIN 658-1
Tensile strength [MPa] at 1200 °C	–	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*	–	DIN 658-4
Thermal expansion coefficient [10 ⁻⁶ 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	< 1200 °C	–
Maximum continuous service temperature [°C] with high mechanical load	< 1200 °C	–

Material N720-EF19/FW30/as of 2021, (*at room temperature)

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