

Oxide/oxide ceramic matrix composite “Keramiklech”, N610-DF13-4500/FW12 material for applications up to 1300°C

Keramiklech Type, old name		
Keramiklech Type, new name	N610-DF13-4500/FW12	test standard
Fibre (Fabric)	Nextel 610/4500 denier (DF13-4500)	–
Matrix	85% Al ₂ O ₃ 15% 3YSZ	–
Thickness per layer [mm]	0,35	–
Density [g/cm ³]	2,6	–
Bending strength [MPa] anisotrop 0/90° at RT*	330 ⁽³⁾	DIN 658-3, 3 point bending
Young's modulus (bending) [GPa] at RT*	100 ⁽³⁾	–
Bending strength [MPa] anisotrop +/-45° at RT*	–	DIN 658-3, 3 point bending
Bending strength [MPa] isotrop 0/90° at RT*	–	DIN 658-3, 3 point bending
Tensile strength [MPa] anisotrop 0/90° at RT*	250 ⁽³⁾	DIN 658-1
Young's modulus (tension) [GPa] at RT*	83 ⁽³⁾	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*	15,5 ⁽³⁾	DIN 658-4
Thermal expansion coefficient [10 ⁻⁶ 1/K]		DIN 1159-1
25–300 °C	6,94 ⁽¹⁾	–
25–600 °C	7,69	–
25–900 °C	8,17	–
25–1100 °C	8,49	–
Thermal conductivity [W/mK]		DIN 1159-2
300 °C	3,80 ⁽¹⁾	–
600 °C	2,81	–
900 °C	2,30	–
1100 °C	2,02	–
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	< 1000 °C	–

Material N610-DF13-4500/FW12/as of 2021, (*at room temperature)

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