Keramikblech®
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Oxide/oxide ceramic matrix composite “Keramikblech”, new materials development for applications up to 1300°C

“Keramikblech” Type	FW12	FW30
Fibre (Fabric)	Nextel 610/1500 denier (DF11)	Nextel 610/3000 denier (DF19)
Matrix	85% Al_2O_3 / 15% 3YSZ	85% Al_2O_3 / 15% 3YSZ
Bending strength [MPa] at room temperature	310-320 [2], [1]	273 [5]
Young’s modulus (bending) [GPa] at room temperature	92 [2], [1]	85 [5]
Tensile Strength [MPa] at room temperature	190 [3]	153 [5]
Young’s modulus (tension) [GPa] at room temperature	122,8 [3]	74 [5]
Compression strength [MPa] at room temperature	207 [2]	216 [5]
Young’s modulus (compression) [GPa] at room temperature	123 [2]	70 [5]
Shear strength (ILSS) [MPa] at room temperature	17 [2]	17 [5]
Thermal expansion [10^{-6} 1/K]		
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]		
300 °C	3,80 [1]	–
600 °C	2,81	–
900 °C	2,30	–
1100 °C	2,02	–

FW12
For applications up to 1300°C where components with thin wall thickness and good mechanical properties are needed. This material is used for burner tubes and hot gas leading components in facilities for testing exhaust systems.

FW30
For applications up to 1300°C where components with large wall thickness with moderate mechanical properties are needed. This type is used for large structures.

Measured by FhG-ISC [1], FhG-IWM [2], Universität Bremen, Advanced Ceramics [3], TU Freiberg [4], Berner Fachhochschule TI [5]