

Cesic[®] Material Properties

Type MF

Starting material	Micro-fiber carbon felt
Fiber orientation	Isotropic
Max. temperature at permanent operation	1400° C (1673 K)

Mechanical Properties

Density	2.65 – 2.70 g/cm³		
3-Point bending strength			
293 K	164 MPa	22 Std. Dev.	
90 K	163 MPa	20 Std. Dev.	
4-Point bending strength			
293 K (samples: 150 x 30 x 3 mm)	111 MPa	16 Std. Dev.	11 Weibull
293 K (samples: 80 x 10 x 3 mm)	149 MPa	13 Std. Dev.	14 Weibull
Young's modulus	249 GPa	20 Std. Dev.	
Fracture toughness K_{Ic}	4.62 MPa m^{1/2}		
Poisson's ratio	0.17		

Thermal Properties

CTE			
20 K - 85 K	0.00	10⁻⁶ / K	
85 K - 120 K	0.06	10⁻⁶ / K	
120 K - 180 K	0.43	10⁻⁶ / K	
180 K - 220 K	1.07	10⁻⁶ / K	
220 K - 300 K	2.09	10⁻⁶ / K	
313 K - 393 K	2.74	10⁻⁶ / K	
Thermal conductivity (λ)			
293 K	121	W / (m K)	
Specific heat capacity			
293 K	0.8	J / (g K)	
1473 K	1.2	J / (g K)	
Thermal shock parameter R_1	169	K	
(R ₁ equals the max. temperature increase, ΔT , applied suddenly to the surface that Cesic [®] can tolerate without damage.)			
Thermal shock parameter $R_2 = \lambda R_1$	2.04	10⁴ W / m^{**}	

Electrical Properties

Specific electrical resistance, 293 K	6.45 10⁻⁵ Ω m
Specific electrical conductivity (293 K)	15.503 S / m