Composite properties of Carbon sheets DESIGN

Comparison of unidirectional and multilayer CFRP composites with conventional materials

This table serves as a rough guide

Material	Density g/cm³	Tensile strength N/mm²	Tensile modulus N/mm²	Shear modulus N/mm²	Impact strength kJ/m²	Spec. strength km	Spec. E-modulus km
Pine wood	0.5	100	12.000	-	40	20	2.400
AL-Alloy	2.8	350	75.000	28.000	200	13	2.700
Ti-Alloy	4.5	800	110.000	42.000	300	18	2.400
Steel	7.8	1.100	210.000	81.000	500	14	2.700
GFRP [1])	2.1	750	25.000	6.000	150	36	1.200
CF-EP [1]) (NF) = fabric or UD 0°/90°	1.6	750	74.000	19.000	40	50	5.000
CF-EP [2]) (NF) UD 0°	1.6	1.300	130.000	5.300	20	87	8.700

Note:

[1]) Fibre orientation  Content of fibre: approx. 60 Vol.-%

[2]) Fibre orientation  Content of fibre: approx. 60 Vol.-%

CF-EP = Composite material carbon fibre (CF) with epoxy matrix (EP)

NF = Normal strength fibre

Edition 07/2023, subject to change