

# 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/cm <sup>3</sup>	Tensile strength N/mm <sup>2</sup>	Tensile modulus N/mm <sup>2</sup>	Shear modulus N/mm <sup>2</sup>	Impact strength kJ/m <sup>2</sup>	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 <sup>1)</sup>	2.1	750	25.000	6.000	150	36	1.200
CF-EP <sup>1)</sup> (NF) = fabric or UD 0°/90°	1.6	750	74.000	19.000	40	50	5.000
CF-EP <sup>2)</sup> (NF) UD 0°	1.6	1.300	130.000	5.300	20	87	8.700

### Note:

<sup>1)</sup> Fibre orientation



Content of fibre: approx. 60 Vol.-%

<sup>2)</sup> Fibre orientation



Content of fibre: approx. 60 Vol.-%

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

NF = Normal strength fibre

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