

Property	Specification / Typical Value	Standard / Notes
Product Name	Hollow Carbon Fiber Rod	Pultruded or Roll-wrapped type
Outer Diameter (OD)	3 mm - 50 mm (customizable)	± 0.05 mm tolerance, ISO 286-2
Inner Diameter (ID)	Based on wall thickness, customizable	Uniform wall thickness from 0.5 mm to 5 mm
Wall Thickness	0.5 mm - 5 mm (typical)	Tolerance ± 0.03 mm
Length Options	500 mm, 1000 mm, 1500 mm, 2000 mm, 3000 mm	Custom lengths available
Material Composition	Carbon Fiber (T300/T700) + Epoxy Resin	Aerospace-grade CFRP
Fiber Orientation	Unidirectional (UD) or Quasi-Isotropic (0° / $\pm 45^\circ$ / 90°)	Affects stiffness and strength
Fiber Volume Content	$\geq 60\%$	ASTM D3171
Density	1.5 - 1.6 g/cm ³	ASTM D792
Tensile Strength (Axial)	≥ 1200 MPa	ASTM D3039
Tensile Modulus (Axial)	≥ 70 GPa	ASTM D3039
Compressive Strength	≥ 700 MPa	ASTM D695
Flexural Strength	≥ 900 MPa	ASTM D790
Shear Strength	≥ 60 MPa	ASTM D2344
Surface Finish	Glossy or Matte / Twill or Plain Weave	Sanded finish optional
Color	Black (natural), custom colors available	With optional UV protection coating
Thermal Resistance	-40°C to $+120^\circ\text{C}$ (continuous use)	Short-term: up to 150°C
Coefficient of Thermal Expansion	$\sim 0 \times 10^{-6} / ^\circ\text{C}$ (axial)	High dimensional stability
Electrical Properties	Electrically conductive (axial)	Useful for EMI shielding
Water Absorption	$\leq 0.1\%$	ASTM D570
Flame Retardancy (optional)	UL94 V-0 resin system optional	For aerospace or electronics use
Straightness	≤ 0.2 mm per meter	ISO 13003
Roundness Tolerance	± 0.02 mm	Precision control for drone/robotics use
Applications	Drones, RC aircrafts, robotics, telescopic rods, fishing gear	Lightweight, stiff, corrosion-resistant
Certifications	ISO 9001, REACH, RoHS	Material certification available upon request