Category	Attribute	Details
Material Specifications	Fiber Grade	Standard: T300, T700, T800, T1000High- strength/High- modulus: M40J, M55J, M60J
	Weave Style	3K/12K Plain Weave, Twill Weave; UD (Unidirectional); Hybrid Layup
	Resin System	Ambient- cure Epoxy (≤120° C)High- temperature Epoxy (-50° C to 180° C, short- term up to 200° C)Flame- retardant Epoxy (UL94 V- 0)
Manufacturing Processes	Pultrusion	Continuous production; straightness ±0.05 mm; ideal for high- volume standards
	Filament Winding	Adjustable hoop/spiral fiber angles; enhances hoop strength; suited for high- pressure or torsion applications
	Compression Molding / Autoclave	Complex cross- sections; localized thickening; precision ±0.02 mm
Post- Processing	Surface Finish	Matte or Gloss; 3K Twill appearance; UV clear coat; Nickel plating
	Machining & Assembly	CNC turning, milling flats, drilling, tapping; adhesive bonding or riveted aluminum inserts
Standard Dimensions	Outer Diameter (OD)	1 mm – 800 mm (customizable)
	Wall Thickness (WT)	0.2 mm – 10 mm
	Length (L)	0.1 m – 10 m (up to 10 m continuous)
	Straightness	≤0.3 mm/m (precision grade ≤0.1 mm/m)
	Roundness	≤0.05 mm (precision grade ≤0.02 mm)
Mechanical Properties	Density	1.55 g/cm³ (versus steel 7.8 g/cm³, 80% weight reduction)
	Tensile Strength	3000 – 3500 MPa (6–12× that of steel)
	Elastic Modulus	165 – 230 GPa (≈3× that of aluminum)
	Interlaminar Shear Strength	80 – 110 MPa (superior to aluminum)
	Coefficient of Thermal Expansion	$<1.5\times10^{-6}$/° C (1/10 that of steel)
	Corrosion Resistance	pH 3–11; ≥1000 h salt spray with no change
	Fatigue Life	$\geq10^7$ cycles at ≥90% retained strength
Key Advantages	Lightweight	30–50% lighter than aluminum at equal stiffness; over 70% lighter than steel
	Design Flexibility	Tailorable layup angles, wall- thickness gradients, and localized reinforcement
	Environmental Resistance	Corrosion- free and maintenance- free; ideal for marine, chemical, and high- humidity environments
	EMI Compatibility	Low electrical conductivity, non- magnetic; suitable for

Category	Attribute	Details
		radar mounts and medical imaging
Quality & Standards	Quality Systems	ISO 9001, AS9100D
	Material Standards	ASTM D3039, GB/T 3354, EN 13706
	Inspection	100 % visual and dimensional checks plus ultrasonic NDT; batch material certificates included
Customization Workflow	Requirement Analysis	Evaluate load conditions, environment, and connection interfaces
	Design & Simulation	3D CAD modeling and FEA for strength verification and weight optimization
	Rapid Prototyping	3 – 7 days turnaround including CNC finishing
	Mass Production	Pilot run for validation followed by full-scale production
	Packaging & Shipping	Individual bubble- wrap and reinforced cartons; crates for long tubes
Ordering Information	Minimum Order Quantity (MOQ)	1 tube; standard sizes ship in 2 – 3 days; bespoke designs ship in 7 – 15 days
	Technical Support	CAE co- simulation and adhesive or metal- insert solution support
	Quotation Process	Provide drawings or specifications for an instant quote and process evaluation