

TENALA Carbon — Application Specification Catalog

Comprehensive Material Grades, Weave Structures, and Target Application Components [cite: 1]

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1. CARBON FIBER FABRIC

Typically used for general-purpose composites, aesthetic parts, medium-load structural components, and cost-sensitive applications [cite: 1].

1.1 T300 Carbon Fiber Fabric

Weave Structure	Characteristics & Advantages	Target Application Domains & Components
A. Plain Weave	Good dimensional stability; minimal deformation tendency; suitable for flat or low-curvature parts; neat appearance for decorative use; lower conformability on complex curves compared to twill [cite: 1].	Automotive: Interior trim panels, dashboard accents, door cards, center console trim, mirror caps Motorcycle: Instrument surrounds, body trim, side covers Bicycle: Bottle cage outer layer, frame/seatpost cosmetic layers Industrial/Consumer: Instrument panels, protective covers, PC enclosures, speaker shells Aeromodelling: Fuselage and wing skins
B. Twill Weave	Better conformability to curved surfaces than plain weave; distinct diagonal aesthetic texture; sporty look; widely used in aesthetic and general composite components [cite: 1].	Automotive: Mirror caps, door sill plates, interior trim, diffusers, engine covers Motorcycle: Fairings, side guards, tail trims, gauge covers Bicycle: Frame outer layers, fork outer layers, seatposts, handlebars UAV: Fuselage shells, arm shells, protective hoods Industrial/Consumer: Robotics casings, sporting goods shells, electronic cosmetic faces
C. Basket / Multiaxial	Basket Weave, 2x2 Basket, Harness Satin and other special structures. Requires specific manufacturing verification [cite: 1].	Automotive interior trim, motorcycle cosmetic parts, equipment panels, housing enclosures, sporting goods shells, composite aesthetic surfaces [cite: 1].

1.2 T700 Carbon Fiber Fabric

Employed for composite components requiring higher strength, stiffness, and weight reduction [cite: 1].

Fabric Type	Core Characteristics	Specific Components & Applications
T700 Plain / Twill	Plain emphasizes fabric stability for regular flat layouts; Twill suits curved components with enhanced aesthetic performance [cite: 1].	Bicycle: Frames, forks, seatposts, handlebars [cite: 1] Automotive: Structural reinforcement, lightweight covers, semi-load-bearing parts [cite: 1] UAV: Arms, structural frames, wing structures, mounting plates [cite: 1] Industrial/Aeromodelling: Robotic arms, lightweight supports, wing spars, load-bearing skins, wind energy parts [cite: 1]

1.3 T800 Carbon Fiber Fabric

Targeted at high-performance, lightweight, and ultra-high-strength applications [cite: 1].

Application Grade	Structural Properties	Target Application Directions [cite: 1]
T800 Fabric	Ultra-high modulus and tensile strength, exceptional lightweight capability [cite: 1].	Aerospace: High-performance structures, lightweight load-bearing components, UAV frames [cite: 1] Motorsports: Body structures, cockpit shells, lightweight reinforcements [cite: 1] High-End Cycling: Frames, forks, handlebars, seatposts [cite: 1] Industrial/Sports: High-load robotic arms, high-performance rods and structural stiffeners [cite: 1]

2. CARBON FIBER PREPREG

Fiber Grade	Weave Structure Types	Specific Components & Typical Applications [cite: 1]
2.1 T300 Prepreg	Plain Weave Twill Weave Basket Weave UD / Multiaxial	Plain: Dashboard trim, center console parts, hood outer layers, motorcycle side covers, UAV shells Twill: Mirror caps, door sills, motorcycle fairings, bicycle cosmetic layers, UAV fuselage shells Basket: Cosmetic panels, equipment housings, sporting goods casings, automotive interiors UD/Multiaxial: Lightweight reinforcement layers, local load zones, panel stiffeners, equipment supports [cite: 1]
2.2 T400 Prepreg	Plain Weave Twill Weave Basket Weave UD / Multiaxial	Plain/Twill/Basket: Auto interior/exterior trim, equipment covers, UAV shells, industrial panels, bicycle cosmetic parts, sporting goods enclosures UD/Multiaxial: Lightweight structural reinforcements, support struts, local patching areas [cite: 1]

Fiber Grade	Weave Structure Types	Specific Components & Typical Applications [cite: 1]
2.3 T700 Prepreg	Plain Weave Twill Weave Basket Weave UD / Multiaxial	Plain: UAV fuselages, equipment mounting plates, robotic parts, lightweight panels, bicycle structures Twill: Bicycle frames/handlebars, UAV arms, automotive lightweight components, sporting goods structures UD/Multiaxial: Frame high-stress zones, support beams, primary load-direction panel reinforcements [cite: 1]
2.4 T800 Prepreg	Plain Weave Twill Weave UD / Multiaxial	Plain/Twill: High-performance equipment enclosures, sporting goods parts, lightweight panels, high-end bicycle parts, racing composite layers UD/Multiaxial: High-strength structural parts, local load areas, lightweight support elements [cite: 1]

3. CARBON FIBER PREFORM

Engineered preform structures utilizing actual fiber grades and weaving topologies [cite: 1].

Preform Classification	Sub-structures / Layup Orientations	Specific Components & Application Scenarios [cite: 1]
3.1 Woven Preform (T300/T400/T700/T800)	Plain, Twill, Basket Woven Preforms, Multi-layer Woven Preforms [cite: 1]	Panel reinforcement layers, equipment casings, automotive interior structures, UAV shells, curved housings, thick-section panels, local stiffeners and supports [cite: 1]
3.2 Braided Preform	- Tubular Braided - Tapered Braided - Over-braided Preforms - Multiaxial Braided [cite: 1]	Bicycle frame tubes, UAV arms, robotic support arms, drive shafts, tapered supports, complex mandrel-wrapped parts, tubular load-bearers [cite: 1]
3.3 Stitched / Multiaxial	0°/90° structures (Panels/Beams) ±45° structures (Torsion/Joints) 0°/±45°/90° Multiaxial - Multi-layer Stitched Preforms [cite: 1]	Planar structure reinforcement, torsional load zones, joint connections, shell stiffening, complex stress components, thick-walled parts, local reinforcements [cite: 1]
3.4 3D Woven Preform	3D Integral/Multi-directional Weaving - Near-net-shape Preforms [cite: 1]	Thick-walled connectors, nodal components, complex structural parts, multi-directional reinforcement zones, near-net-shape complex curved structures (reducing machining) [cite: 1]