



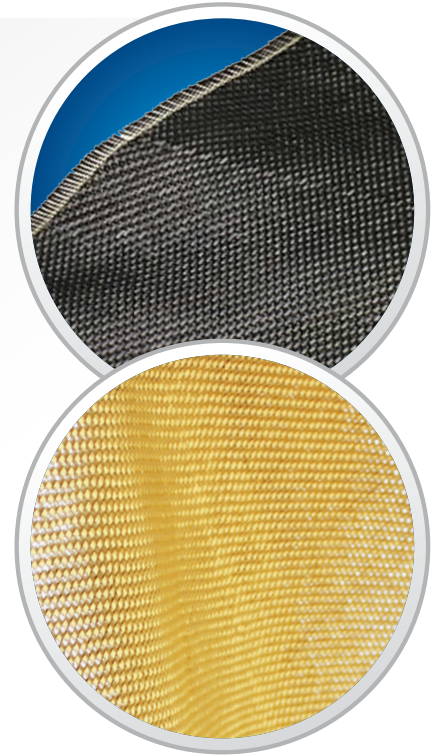
CARBON FIBER & KEVLAR FABRICS

➔ **Carbon Fiber** fabric is well known as one of the strongest and stiffest reinforcement materials available. Although it is more expensive than glass, it easily justifies its premium price when used in high-performance applications. All Freeman Carbon Fiber fabrics are top-quality materials manufactured by BGF and made exclusively from polyacrylonitrile (PAN) precursors, thus making them suitable for all high-performance applications. Available by the yard and in full rolls.

Kevlar® fiber, also known as aramid fiber, is most widely known for its superior resistance from impact, fatigue, wear, and tear. All of our Kevlar® woven fabrics are made with Kevlar® 49, the structural grade of Kevlar® material for composite reinforcement (as opposed to Kevlar® 29, the ballistic grade material).

Lighter than fiberglass but heavier than carbon fiber, it is used for manufacturing sporting goods equipment, marine vessels of all sizes, and in the automotive and aerospace industries. It is often used with either fabric to improve the toughness, flexibility, abrasion resistance, and most importantly, impact resistance of a composite part.

Kevlar® will degrade when exposed to UV light, so accommodation should be made in part design or choice of matrix materials and additives. Kevlar® is a registered trademark of DuPont.



Specifications

Style	Weight (oz./sq. yd.)	Weave	Warp	Fill	Construction (Ends x Picks)	Breaking Strength (lb./in.)	Thickness
Carbon Fiber Fabrics							
94901	5.7	Plain	3K	3K	12 X 12	105	–
94933	6.2	2x2 Twill	3K	3K	13 X 13	65	–
94910	11.2	2x2 Twill	6K	6K	12 X 12	150	–
94900	11.2	5 Harness Satin	6K	6K	12 X 12	110	–
94140	19.2	2x2 Twill	12K T300	12K T300	11 X 11	150	–
Tapes	8.8	Plain	12K	G150 Fiberglass	11 X 8	135	–
Kevlar® Fabrics							
5120	1.8	Plain	195 Denier Kevlar®	195 Denier Kevlar®	34 X 34	200	0.004 in.
5285	5.25	4 HS	1140 Denier Kevlar®	1140 Denier Kevlar®	17 X 17	650	0.01 in.

For part numbers, technical documents, and ordering, visit our website at www.FreemanSupply.com.



Join Freeman 360° today! Use your Customer Number to create an online account on FreemanSupply.com!

Your Freeman Customer Number can be found on any invoice.



CARBON FIBER FABRICS

3K Carbon Fiber Cloth – Plain Weave (#94901)

Our lightest carbon fiber cloth features a plain weave (the

▶ Warp	3K
▶ Fill	3K
▶ Construction (Ends x Picks)	12 x 12
▶ Weight	5.7

'one over, one under' pattern gives it a checkerboard appearance) that is commonly used by manufacturers of lightweight aerodynamic parts. While not as drapable as the 2x2 twill weave, it is easier to handle.

3K Carbon Fiber Cloth – 2x2 Twill Weave (#94933)

This is our lightest carbon fiber cloth that features the

▶ Warp	3K
▶ Fill	3K
▶ Construction (Ends x Picks)	13 x 13
▶ Weight	6.2

popular 2x2 twill weave (the 'two over, two under' pattern gives a diagonal appearance) that many recognize as "the look" of carbon fiber. This weave also makes it more drapable, yet more delicate to handle.

6K Carbon Fiber Cloth – 2x2 Twill Weave (#94910)

A medium weight carbon fiber cloth features the popular

▶ Warp	6K
▶ Fill	6K
▶ Construction (Ends x Picks)	12 x 12
▶ Weight	11.2

2x2 twill weave (the 'two over, two under' pattern gives a diagonal appearance) that many recognize as "the look" of carbon fiber. However, since it is not as drapable as the 3k carbon cloth, it is more often used in structural applications.

6K Carbon Fiber Cloth – 5HS Weave (#94900)

This medium-weight cloth features a five-harness satin weave, giving it higher drapability than the 6K 2x2 twill weave.

▶ Warp	6K
▶ Fill	6K
▶ Construction (Ends x Picks)	12 x 12
▶ Weight	11.2

KEVLAR® FABRICS

1.7 oz. Kevlar® Cloth (Style 5120)

This is our thinnest and lightest Kevlar® cloth, used in many smaller applications or in larger composite applications that require the performance of Kevlar® with the least amount of additional weight or part thickness.

12K Carbon Fiber Cloth – 2x2 Twill Weave (#94140)

This heavy-duty carbon fiber cloth features the popular

▶ Warp	12K T300
▶ Fill	12K T300
▶ Construction (Ends x Picks)	11 x 11
▶ Weight	19.2

2x2 twill weave, giving it adequate drapability for its size. While more difficult to form than lighter carbon cloths, this fabric enables rapid buildup, making it ideally suited for the construction of flat parts with high strength and stiffness requirements.

Unidirectional Carbon Fiber Tapes

These tapes are made from flat filaments of carbon (not twisted, like yarns), and provide the strength and stiffness of carbon fiber in one direction only, thus enabling the maximum precision in orientation. Sold by the yard.

▶ Warp	12K T300
▶ Fill	G150 Fiberglass
▶ Construction (Ends x Picks)	11 x 8
▶ Weight	8.8



Stabilized Carbon Reinforcement

This new line of carbon fiber reinforcement is treated with nylon on one side of cloth. This veil backing (662) keeps the reinforcement perfectly aligned, as well as drapable. Works well with epoxy laminates and die cutting patterns. This material is also excellent in resin infusion application as it helps with flow of resin and some debulking.

5 oz. Kevlar® Cloth (Style 5285)

This is our standard weight Kevlar® fabric in 4-harness satin weave form. The 4HS weave provides greater conformability for working with irregular shapes and in corners.

For part numbers, technical documents, and ordering, visit our website at www.FreemanSupply.com.



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