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Kevlar Thread Buying Guide

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About Kevlar Thread Kevlar™ thread (also called Para-Aramid) is one of the strongest and most heat resistant of available threads. It is about 2½ times stronger than nylon and polyester, has very little stretch, does not melt, and at 800°F. This makes it a great choice for high stress applications including sewing seams on heavy duty clothing, belts, harnesses and bags, reinforcing plastics, and other fibers, and even providing high-temperature controls for airplanes and rockets. To put Kevlar thread in perspective, here is a side-by-side comparison of Kevlar and three middleweight (Size 92) threads:

	Kevlar	Nylon	Polyester	Nomex
Tensile strength	30 Lbs.	15 Lbs.	15 Lbs.	9 Lbs.
Stretch before breaking	2%	26%	26%	N/A
Heat decomposition	800°F	485°F	485°F	700°F

Kevlar Properties Kevlar thread is stronger, more heat resistant, less stretchy, durable than most other threads. It is usually a very small part of material content. This means that using Kevlar thread with materials that do not have it is a waste and could be dangerous.

Decomposition	Kevlar begins to decompose (turn to ash) at about 800°F (426°C). Much higher than nylon or polyester.
Melting	Kevlar thread does not melt. This is important in fire retardant gear.
Stretchiness	Kevlar thread stretches about 2% before it breaks. For example, a 100 foot piece of Kevlar would be 102 feet long just before it breaks. If you sew stretchy fabrics with Kevlar the seams will pucker.
Acids and alkalis	Good resistance to dilute acids and bases. Degraded by strong mineral acids and to a lesser extent, by strong mineral bases. This is important when Kevlar thread is used in a laboratory setting.
Bleaching and solvents	Should not be bleached. Excellent solvent resistance. This matters when Kevlar thread is reused.
Mildew, aging, and sunlight	Excellent resistance to mildew and aging. Prolonged exposure to sunlight causes deterioration. Polyester thread works just as well in some cases.
Abrasion	Good abrasion resistance.

Alternatives To Kevlar Thread--Kevlar thread is super-strong, fire retardant, and has very little stretch. But, it is only a little yellow and is very expensive. Here are alternatives to Kevlar that might be better suited to your needs.

Nylon and Polyester Thread - Use a heavier weight nylon or polyester thread instead of a lighter weight Kevlar. For example, a Size 138 nylon or polyester thread has about the same strength as a Size 69 Kevlar thread, costs about 80% less, and comes in colors. But, it is twice as thick, not fire retardant, and has 25% elasticity.

Fire Retardant Sewing Thread - Spun Kevlar and spun Nomex threads have the same fire retardance as Kevlar thread and are available in many colors. This type of thread is usually the best choice for sewing seams and attaching emblems and logos. These threads look and feel like cotton because they are made by wrapping cotton around a Kevlar or Nomex filament core.

Fire Retardant Embroidery Thread - Use Nomex embroidery thread to embroider logos and emblems for fire retardant gear. The thread looks like top-quality, 40 weight, polyester embroidery thread, but it is just as fire retardant as Kevlar thread. It is not strong enough to sew seams or attach emblems. It is very expensive and should only be used when fire retardance is essential.

Filament Nomex Thread - This thread has about the same fire retardance as filament Kevlar but only 1/3 of its strength. It has a smooth, shiny feel. We are discontinuing this thread because reliable suppliers are not reliable because of government priorities.



Color--Nobody buys filament Kevlar thread for its color. It normally comes a color called Nats and cannot be dyed after it is manufactured. Usually, color is not a problem because it takes to strength and heat resistance in most applications.

There is some black filament Kevlar on the market. But, we do not normally stock it because we have not found a reliable source and there are alternatives.

Color is very important when it comes to fire retardant garments, turnout gear, and racing suits. We have a great selection of colors to choose from.



spun Kevlar and Nomex™ on our [Fire Retardant Thread](#) page. Spun threads have a single Kevlar or Nomex filament wrapped in cotton. This allows dyeing, retains the thread's fire retardant properties, but sacrifices thread strength. We have [Nomex Fire Retardant Embroidery Thread](#) for names and logos.

Sizes--With Kevlar thread, a higher size number means a thicker thread. As size increases diameter, strength, needle size, stitch visibility, and sewing machine requirements increase while yards per pound decrease. Let's see how this affects representative sizes:

As size increases:	Size 69	Size 138	Size 346
Diameter increases	0.0081 Inches	0.0140 Inches	0.0255 Inches
Strength increases	23 Lbs	45 Lbs	135 Lbs
Needle size increases	16 to 18	20 to 22	26 to 28
Stitch visibility increases	Low	Medium	Very High
Sewing machine requirements increase	Home	Commercial	Heavy Duty
Yards per pound decrease	6,700 Yards	3,350 Yards	1,050 Yards

Size Selection Guide In most sewing applications thread is the least expensive material. This means that it is often (excepted) better for the thread to break than for the fabric to rip. It also means that fabric and leather thickness and the most important factor in selecting the right size. Simply put, thread size should normally increase as material thickness increases. There are two other considerations:

- Most home sewing machines cannot handle threads heavier than Size 69. In these cases use double stitching to add strength.
- Sometimes "look" is important. Using a heavier thread makes stitches stand out from the fabric or leather.

Size selection works differently in reinforcing, wrapping, hanging, and whipping applications. Here, the other material as strong as Kevlar and the strength of the thread is often key. There are exceptions such as threading Kevlar through a hole.

Take availability into consideration when there is an ongoing need. We regularly stock Kevlar thread in ten sizes or more to best keep them in stock. We also have thread in sizes that we do not regularly stock and sell them at lower prices but we will probably not have them when our current supply runs out.

Kevlar Terminology--We use several "technical" terms to describe our Kevlar thread. Understanding these terms because they affect how you can use the thread.

Bonded / Soft	Bonded means that the thread has a coating that reduces heat at the tip of the needle and prevents unraveling. Soft means that the thread does not have this coating. Bonding is important for machine sewing in Sizes 69 and higher. It does not matter if the thread is used for hand sewing and reinforcing. Bonding may interfere with adhesives used in some wrapping and whipping applications. If so, it can be removed with alcohol.
Monocord	Monocord means that the thread is made with a single ply (like fishing line) and has a coating similar to bonding. This gives the thread a flat, ribbon-like shape and makes it usable in double-needle machines. Many of our lighter weight threads use this construction.
Left twist / Right twist	When threads have more than one ply the plies are twisted to the left or the right. If we say otherwise our thread is left twist. This is because single-needle machines in the U.S. market require left twist or monocord thread. Use right twist thread with double-needle machines and some machines designed for Asian markets. Twist does not matter in hand sewing and non-sewing applications.
Loose twist / No twist / and Yarn	These kinds of threads are frizzy and almost impossible to put through a needle. Consider them for non-sewing applications such as wrapping and hanging.

How to Save--We love selling Kevlar thread. But, it costs about five times more than nylon or polyester. Here are some ways to save:

- [Do you really need Kevlar?](#) Kevlar seems to have a cult following and customers buy it when less expensive polyester will do the job. Please, ask yourself or ask us if you really need Kevlar thread.
- [Buy what you need](#) Our junior spools in 1 to 4 Ounces, coils, and thread packs are a great value for specific jobs and hobbyists. They generally ship 1st Class to U.S. addresses so shipping costs are low compared to other options.
- [Choose lighter weights](#) You get more yards per ounce with lighter weight thread. But, make sure that the thread has the strength you need.
- [Consider non-standard sizes and closeouts](#) These threads sell at a 25% to 50% discount compared to our regular thread. Our featured Tex 105 and Tex 300 Kevlar thread is on par with our standard sizes. But, we cannot provide certificates of conformance (CERTS) and will probably not restock them in the future. Our closeouts are old stock that sells at very low prices, but is not recommended for machine sewing.

Nominal Weights--Industry norms allow Kevlar thread spool weights to vary by $\pm 10\%$ from the stated nominal weight. We follow this practice, but have biased our standards so that customers receive slightly more thread than less thread in most cases. Here is a table that shows our tolerances. When spool weights fall within these tolerances we do not charge or give refunds for underages.

Nominal Weight	Spool Minimum	Spool Maximum	Nominal Weight	Spool Minimum	Spool Maximum
2.0 Oz	2.6 Oz	4.5 Oz	8.0 Oz	8.0 Oz	10.5 Oz
4.0 Oz	4.6 Oz	5.9 Oz	12.0 Oz	10.6 Oz	15.5 Oz
6.0 Oz	6.0 Oz	7.9 Oz	16.0 Oz	15.6 Oz	19.9 Oz

Certificates of Compliance We can email manufacturer's CERTS for our 16 Ounce standard size Kevlar. We can also provide them for other sizes.

CERTS for any non-standard size or closeout thread.

CERTS apply to specific batch / lots. We wind our smaller spools from the 16 Oz standard size spools and do not have lot information for these spools. We can send a "representative" CERT for these spools that applies in a general way to thread purchased. Please call if you must have batch / lot traceable CERTS on small spools and are willing to pay an up-charge.

No Medical Devices Our Kevlar thread is clean in the ordinary sense. But, it is not sterile and using it in any medical device could put lives at risk. We will not knowingly sell Kevlar thread for use in medical devices.

Kevlar Specifications Here are specifications for our standard size Kevlar thread

Size										
Commercial	15	23	46	69	92	138	207	346	415	
Tex	16	21	40	60	80	120	210	350	500	
Military	00	AA	B	E	F	FF	3-Cord	5-Cord	6-Cord	
U.S.										
Tensile Strength (Lbs.)	4	6	14	23	30	45	64	135	195	
Yards Per Pound	28,000	25,000	10,000	6,700	5,000	3,350	2,100	1,050	900	
Diameter (Inches)	0.004	0.006	0.008	0.010	0.011	0.014	0.018	0.026	0.036	
Metric										
Tensile Strength (Kg)	1.8	2.7	6.3	10.4	13.6	20.3	29.0	61.2	79	
Diameter (MM)	0.10	0.15	0.21	0.25	0.29	0.36	0.46	0.65	0.91	

More Choices

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- [Size 23](#)
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Kevlar



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