

Technical Bulletin 15: K-Spec® High-Performance Fiber Core Yarn

Slingmax® began manufacturing roundslings with high-performance core yarns in 1986. Prior to that, roundslings were manufactured using polyester core yarn as the load bearing fibers. One of the first high-performance fibers to enter the market was Kevlar®, manufactured by DuPont®. This core yarn had many beneficial properties but, as with all new products, also had some drawbacks. Kevlar is an aramid fiber with a very high tensile strength, but as with all aramid fibers it is susceptible to yarn-on-yarn abrasion. The Kevlar fiber used in our original Twin-Path® slings had a coating applied to help reduce this friction and extend the life span of the core fibers. Today however, there are numerous manufacturers of high-performance fibers and Slingmax is constantly evaluating their performance in roundslings.

Our current K-Spec core yarn is a blend of high-performance fibers. Blending the fibers allows us to combine the advantages of multiple fiber types, while offsetting any disadvantages of using a single fiber type in a sling. Slingmax has continually utilized technological advances in its K-Spec core yarn production to ensure that it is always the strongest and longest lasting sling fiber available in the marketplace. K-Spec fiber has ten times the strength of steel, but at 90% less weight. It also has less than 1% elongation at working load limit (WLL) with negligible creep characteristics.

Fiber Type	Pros	Cons
Aramid (Kevlar/Twaron)	<ul style="list-style-type: none"> • 5x strength of steel • Resistant to high temperatures 	<ul style="list-style-type: none"> • Susceptible to quickly wearing out in dynamic applications due to internal abrasion
Technora	<ul style="list-style-type: none"> • 15% stronger than Kevlar • Resistant to high temperatures • Significant improvement in internal abrasion • Very low creep 	<ul style="list-style-type: none"> • Although better, still susceptible to internal abrasion
Vectran	<ul style="list-style-type: none"> • Same strength as Technora • Resistant to high temperatures • Improvement over Technora in abrasion resistance • Zero creep 	<ul style="list-style-type: none"> • Although better than all aramids, still susceptible to internal abrasion
HMPE (Dyneema/Spectra)	<ul style="list-style-type: none"> • 10x strength of steel • Highest resistance to internal abrasion 	<ul style="list-style-type: none"> • Low temperature resistance • Susceptible to creep
K-Spec®	<ul style="list-style-type: none"> • Strength and abrasion resistance of HMPE • Improved temperature and creep resistance 	<ul style="list-style-type: none"> • Cons of individual fibers are compensated for by blending materials with different properties