

Rope Fibers

Fiber	Type	Heat Resistance*	UV Resistance	Chemical Resistance	Advantages	Disadvantages
Cotton	Natural	Chars at 148°C	Very Good	<ul style="list-style-type: none"> Degraded by acids in high concentration or at high temperatures Resistant to alkalis Degraded by organic solvents and sea water 	<ul style="list-style-type: none"> Exceptional handling 	<ul style="list-style-type: none"> Susceptible to deterioration from moisture, rot & mildew Strength can be dramatically affected by basic environmental variables such as the level of humidity
Dyneema®	Synthetic	Melts at 145°C	Fair	<ul style="list-style-type: none"> Acid & alkali resistant. Resistant to bleaches, other oxidizing agents and most solvents. Unaffected by sea water 	<ul style="list-style-type: none"> Good strength Unaffected by water 	<ul style="list-style-type: none"> Susceptible to creep (gradual elongation under load) Expensive
Kevlar®	Synthetic	Decomposes at 500°C	Poor	<ul style="list-style-type: none"> Resistant to weak acids, bases, water & salt water Degraded by strong acids & bases in high concentration or high temperature 	<ul style="list-style-type: none"> Exceptional strength Exceptional heat resistance 	<ul style="list-style-type: none"> Poor shock loading qualities Poor abrasion resistance Expensive
Nylon	Synthetic	Melts at 218°C	Very Good	<ul style="list-style-type: none"> Resistant to weak acids Degraded by concentrated, strong acids Unaffected by most alkalis at room temperature Resistant to organic solvents Soluble in phenols & formic acid 	<ul style="list-style-type: none"> Resistant to rot & mildew Good strength & durability 	<ul style="list-style-type: none"> Minor loss of strength when wet (strength is regained when rope dries)
Polyester	Synthetic	Melts at 245°C	Very Good	<ul style="list-style-type: none"> Resistant to mineral acids Degraded by strong sulphuric acids Degraded by strong alkalis at high temperature Resistant to organic solvents, soluble in phenols 	<ul style="list-style-type: none"> Resistant to rot & mildew Good strength & durability Unaffected by water 	
Polypropylene	Synthetic	Melts at 165°C	Poor	<ul style="list-style-type: none"> Resistant to acids Resistant to alkalis Resistant to organic solvents, soluble in chlorinated hydrocarbons 	<ul style="list-style-type: none"> Light weight Inexpensive Unaffected by water 	<ul style="list-style-type: none"> Low strength relative to other synthetic fibers Susceptible to creep (gradual elongation under load)
Polysteel™	Synthetic	Melts at 140°C	Fair	<ul style="list-style-type: none"> Resistant to acids Resistant to alkalis Resistant to organic solvents, soluble in chlorinated hydrocarbons 	<ul style="list-style-type: none"> Light weight Good handling characteristics Unaffected by water 	<ul style="list-style-type: none"> Less strength than some other synthetic fibers
Technora®	Synthetic	Decomposes at 500°C	Poor	<ul style="list-style-type: none"> Resistant to acids Resistant to alkalis Resistant to organic solvents Resistant to sea water and steam 	<ul style="list-style-type: none"> High strength Good abrasion resistance 	<ul style="list-style-type: none"> Expensive

* Many fibers start to lose strength below their ultimate melting or decomposition temperature.