

Choosing a Rope Construction

Once the correct fiber is chosen, selecting the correct type of rope construction is the next decision. Though in many cases there may appear to be little choice there are subtle differences between the various construction systems employed by the various manufacturers.

Twisted rope is widely used for the manufacture of synthetic and natural fiber rope. Twisted rope is still a very cost effective solution for ropes where ultimate handling characteristics or flexibility are not key issues. Twisted rope is simple to splice, offers good strength and is available in long lengths. The process does produce a stretchy material with a hard and bumpy finish that is neither free running nor easy on the hands.

Braided ropes are mainly produced in shorter lengths. While there are a few braided ropes made simply from a single braid - polypropylene is often made up using this construction. The majority of braided ropes consist of an outer cover and an inner core. Soft and flexible they offer better handling though slightly more expensive alternative to twisted ropes. The core and cover of braided ropes are often of different materials allowing optimum properties for each. Braided ropes offer an inherently lower stretch design, a softer feel and less friction. To achieve a good balance between flexibility, cost, and ease of use, virtually all manufacturers produce their covers in 16 carrier form using 16 individual yarns for the cover. In the smaller sizes the number of yarns is sometimes reduced to 8, and though more economic to produce and harder wearing, these ropes are noticeably less flexible and harder on the hands. Though requiring a different technique, braided ropes are not significantly more difficult to splice than twisted rope. You will however need some special tools and a set of instructions for your particular rope.

ROPE CONSTRUCTION SELECTION GUIDE

Characteristics	Rating	Twisted	Solid Braid	Diamond Braid	Plaited	Double Braid	Hollow Braid
Number of strands or carriers		3	12,18,20	8,16	8,12	16, 24, 32	8, 12, 16
Spliceability	Difficult -1 Easiest - 5	4	1	4	3	1	5
Strength to weight	Most - 1 Least - 5	3	4	2	3	2	1
Flexibility	Most - 1 Least - 5	4	3	3	3	2	1
Flattens under load		No	No	No	No	No	Yes
Rotates under load		Yes	No	No	No	No	No
Mechanical elongation	High - 1 Low - 5	2	2	4	3	5	4
Cost per size	High - 1 Low - 5	5	3	2	4	1	4
Abrasion resistance	Most - 1 Least - 5	4	2	3	3	1	3