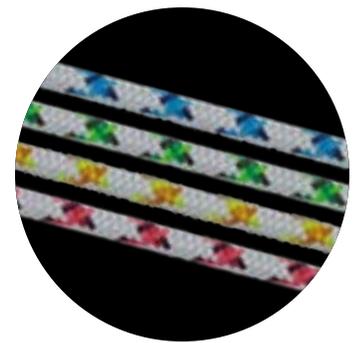


DETERMINING ROPE STRENGTH

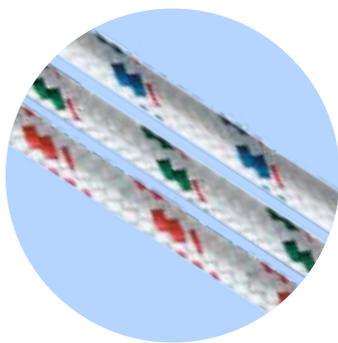


Tensile strength is the average strength of new rope under laboratory conditions. This is determined by wrapping the rope around two large diameter capstans and slowly tensioning the line until it breaks. Some manufacturers refer to this as Breaking strength.

Working load is determined by taking the tensile strength and dividing it by a factor that more accurately reflects the maximum load that should be applied to a given rope to assure a comfortable safety margin before it reaches the breaking point. That factor varies with the type of fiber and the weaving construction. Adhering to the working load also prolongs the life of the line. These are only guidelines, however, and factors such as the age of the rope and degradation through use must also be taken into consideration when judging working load and breaking point.



Some manufacturers refer to Working strength as working load and define it as the weight in pounds that is recommended for safe working conditions. They apply this term to new rope in good condition with appropriate splices and only under normal service conditions. Where dynamic loading may occur, the recommended working load should be adjusted accordingly.



It may surprise you to find out that the working load for most kinds of rope is **between 15% and 25% of the tensile strength**. Now consider the fact that any time you tie a knot in a rope you effectively cut the tensile strength in half. With enough tension, a knot can cut the line. While certain kinds of knots damage the line less than others, the 50% loss of tensile strength is a good general rule to live by. **Research has shown that the figure 8 knot reduces the tensile strength by approximately 35% instead of 50% for other common knots tested.**