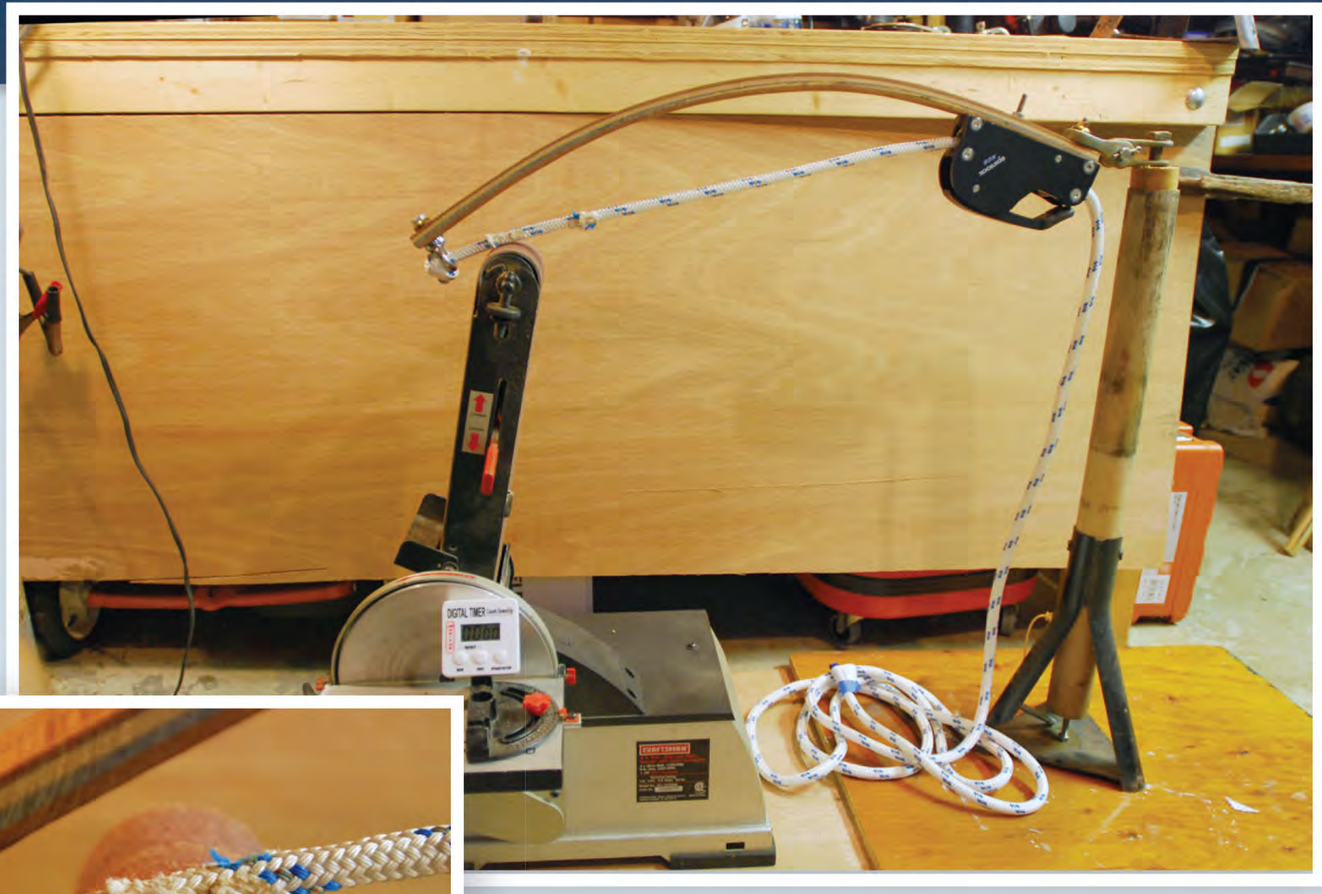
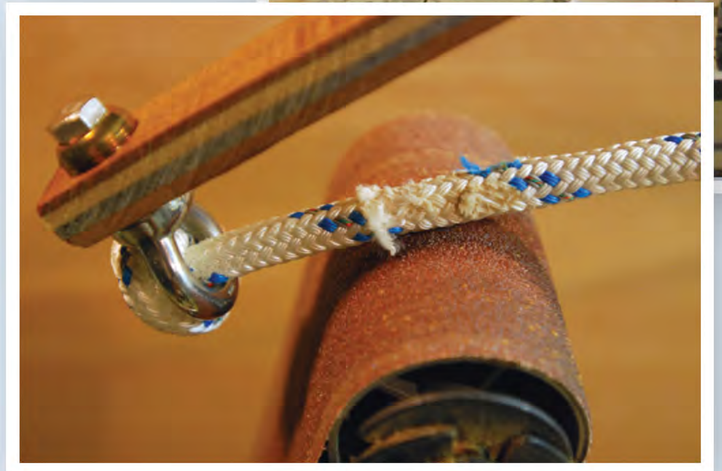
Testers Compare Rope Elasticity, Durability, and Ease of Handling





To test abrasion resistance, each rope was evenly abraded for 10 seconds on a belt sander loaded with 80-grit sandpaper.

Durability and elasticity were our principal comparative factors in this evaluation, but testers also considered ease of application, coating adhesion to substrate, resistance to abrasion, and price.

Picking the right piece of cordage for a specific running rigging task takes more than simply scanning strength and stretch statistics. Handling characteristics, both on and off a winch drum, play into the equation, as does the durability of the line. With this in mind, we set up a multi-variable test approach that gave us a chance to derive some empirical data as well as subjective line-handling input.

Elongation: Our stretch test used a hefty Ideal anchor windlass to generate tensile load. Each 15-foot piece of line was affixed to a calibrated dynamometer directly measuring line tension. The actual load segment of each piece of rope was 7.3 feet, and the bitter end of the line was affixed to a strong point via a bowline. Five tension pulls to 500 pounds were done to set the fiber in the new line and tighten the rope. The test process included measuring line stretch as the tension was increased from 200 to 1,000 pounds. The stretch was recorded and marked and measured on the rope. The measurement was made at 1,000 pounds of pull. The process was repeated five times with each sample, and the arithmetic average was used to indicate the stretch result.

During these tests we also observed how the rope behaved on the winch drum and whether or not the bowline slipped once the knot was initially set. Testers eliminated the need to track the latter because all knots held with only one note of interest. It involved Samson's single-braid Dyneema line, a powerhouse of tensile strength, that testers thought might not hold a bowline due to its slippery olefin surface and urethane coating. Instead, the bowline fused itself in place, and though it easily untied after testing, it retained the deformation caused by the knot.

Abrasion: In order to test the abrasion resistance inherent in each braided line, we fabricated a simple machine that applied consistent abrasive point-load for a controlled period. The machine comprised an endless loop belt sander and a jig that could hold a piece of line in a specific alignment for a 10-second period. The purpose was to induce highly accelerated abrasion to each line in a uniform and repeatable manner. The resulting line damage was microscopically inspected and compared via macro photography. Line damage was grouped into four categories and assigned grades, according to how much abrasion the cover sustained. Abrasion resistance is important since point loads often chafe through a cover and make a sheet useless despite the strong (and expensive) space-age fiber buried beneath.

Handling: Testers put each piece of rope through a handling drill that included coiling, tossing, cleat fastening, knotting, and using each line on a winch drum. Even though 24 of the 26 lines had a polyester cover, we found a wide range of handling difference. The traditional double-braid polyester lines coiled most willingly, but New England Ropes high-tech Endura Braid proved to be the line-handlers' favorite due to its supple feel and lack of any tendency to hockle. Ironically, it was the 10-millimeter (3/8-inch) line that earned the top rating while the smaller, 8-millimeter (5/16-inch) Endura Braid line was stiffer and less supple. We assume handling will change with age, and the trend will be toward lines becoming stiffer not more supple. With regard to winch drum behavior, some cover coatings will wear off and weather away, taming some of the initial slipperiness. The single-braid Dyneema lines, however, will retain much of their lubricity.

The bowline in the 3/8-inch diameter Amsteel didn't slip, but after tensioning, a permanent crimp remained where the knot was untied.