

TAPE-DRIVE®



UK Sailmakers has been dedicated since 1985 to improving and refining our Tape-Drive® sail construction system. Tape-Drive sails truly earn the tag line “fast sails that lasts.” Sailors around the world know that Tape-Drives are the longest lasting laminate sails. Whether cruising, club racing or ocean racing, Tape-Drive is the logical choice for boat owners who value durability.

WHAT IS TAPE-DRIVE? Tape-Drive is a two-part construction process in which the structural strength of the sail and actual skin that defines the sail’s three-dimensional shape are separate and distinct elements. This process marries a grid of high-strength, low stretch tapes – the structural strength – to a three-dimensionally shaped membrane – the skin – made up of broadseamed, cross-cut laminated panels. The tape grid carries the primary structural loads of the sail, while the skin produces aerodynamic lift and handles secondary and tertiary loads. The tapes radiate across the sail with heavier concentrations at computer predicted high load areas.

Durability: In Tape-Drive sails the skin laminate is uniform throughout the sail. There is no differential stretch or shrinkage from panel to panel as commonly experienced in sails produced with traditional sail-making techniques. Also there are no load-bearing seams to creep, distort, or worse yet, fail. As a result, Tape-Drive sails are acknowledged by many as the durability champions amongst laminate sails.

Dependability: Depending on the size of your boat and its sailing requirements, UK Sailmakers selects the appropriate sailcloth from a wide variety of laminates made by sailcloth manufacturers for the Tape-Drive construction system. These commercially made laminates include scrimms made of aramid, Spectra or polyester yarns. Professionally made laminates do not delaminate.



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TAPE-DRIVE CARBON: High Performance For Years and Years

Tape-Drive Carbon earns its name from the black carbon fibre tapes used on the sails. The matrix of load-bearing carbon tapes can be applied to a range of skin materials.

Tape-Drive Carbon/Aramid

The highest performance material set for Tape-Drive sails is a grid of loadpath carbon tapes bonded to a laminate skin made with aramid yarns. Aramid laminates come in different weights so that sails can be customized for different sized boats and different wind ranges. These all-black sails have the least amount of stretch in the primary loadpaths (where the carbon tapes are laid) as well as in the secondary load directions.

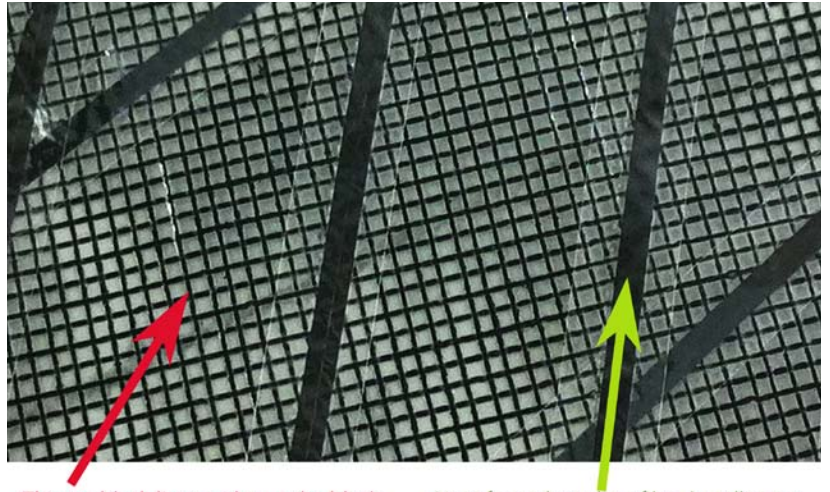
Tape-Drive Carbon sails are perfect for racer/cruisers who need sails to last more than three years. In fact, after a Tape-Drive sail loses its racing edge, it still has many years service left for daysailing and deliveries.

Tape-Drive Carbon/Polyester

For small boat sailors and for those on a tight budget, Tape-Drive Carbon sails can be made with a laminate with polyester yarns. While the polyester yarns have more stretch than aramid yarns, smaller boats don't generate the high loads that bigger boats do.

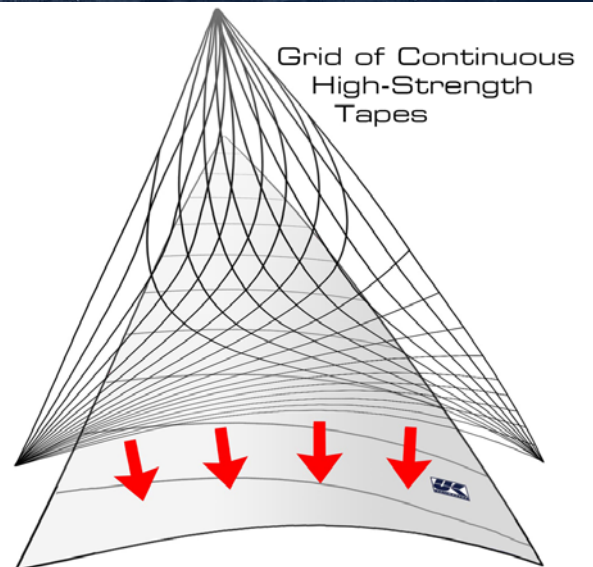
Cruising sailors who like a more traditional look, like Tape-Drive Carbon sails with a polyester laminate since they are not all black, which makes them look less radically racey.

Top Left: Close up showing the tapes over the laminate with black aramid scrim yarns. Left and below: An X 612 and a C&C 99, both with Tape-Drive Carbon on black aramid laminate. Below Right: Tape-Drive Carbon on a polyester laminate is perfect for this Beneteau 31.7's performance cruising sails.



Thinner black lines make up the black aramid scrim that is laminated between two layers of Mylar. This laminate is produced with high pressure rollers that squeeze out any excess glue and creates a sandwich that does not delaminate. The purpose of the scrim in the laminate is to carry off-tape loads in the sail, prevent tearing of the skin material and increase the durability of the laminate.

Aircraft-grade carbon fiber bundles are bonded to the sail along the primary load-paths between the three corners. The carbon bundles are locked to the surface of the sail under an adhesive Mylar tape can be seen on either side of the carbon yarns. Since the yarns are not impregnated with glue, they stay pliable and are not brittle. Carbon is the lowest stretch fiber used in sailmaking.



Sail-skin made of crosscut panels, shaped on all four sides, that takes the shape of the 3-D mold created by the sail designer.



TAPE-DRIVE CARBON/SPECTRA



Top: The Whitbread 60 that used to be named TOKIO is still ocean racing with Spectra Tape-Drive sails for maximum durability. **Above:** The 80-foot custom motor sailor QUINTA a Spectra Tape-Drive Passagemaker genoa and full-batten mainsail. **Left:** A 70-foot schooner with full-batten Spectra Tape-Drive mains and a roller/reefing genoa.

For the ultimate in cruising durability, UK Sailmakers makes Tape-Drive sails with laminates using Spectra yarns. Many sailors have used Tape-Drive Carbon Spectra sails for 10 years or more since they hold up so well.

Spectra is one of the world's strongest and lightest fibers. Pound-for-pound, it is 10 times stronger than steel and up to 40 percent stronger than aramids.

Spectra doesn't breakdown from folding, is impervious to UV radiation, and gets softer with use. Unfortunately, Spectra is more expensive than carbon fiber and Kevlar. Other sailmakers have problems working with Spectra because it elongates after staying under high loads, but when used as a skin fabric in Tape-Drive sails, the Spectra fibers never become loaded enough to stretch.

Tape-Drive Carbon Spectra sails have been tested on club cruises, across oceans, and around the world. These sails stand-up to the rigors of cruising. Many boat owners use the same set of sails for their racing as well as cruising needs so they don't have to deal with unrigging one set of sails and then re-rigging with another set.

A SPECTRA TAPE-DRIVE TESTIMONIAL

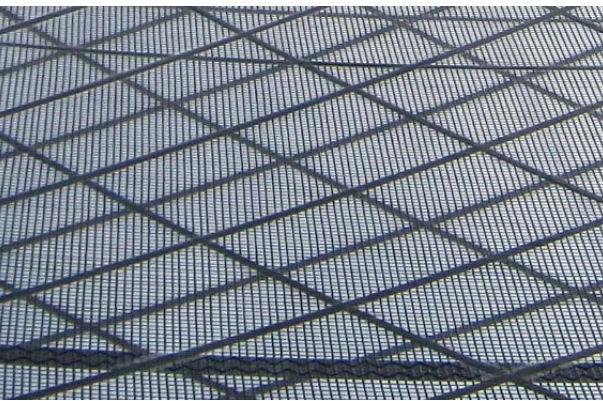
Larry Rouen used the same suit of Tape-Drive Spectra sails for 11 years on his Dawn 41 NEPENTHE (shown below) racing Thursday evenings and cruising on the weekends. Naturally, he came back for replacements that, straight from their bags, helped him win his club's non-spinnaker championship. "With UK Sailmakers, you sure get your money's worth!" says Larry to all his sailing friends. Our Tape-Drives are beautifully shaped, durable enough to remain that way for years, and take you wherever you want to go – cruising or racing.





TAPE-DRIVE SILVER

For boats under 40-feet, UK Sailmakers has the option of using less expensive laminates made of polyester laminates. The crosscut polyester laminates are reinforced with S-Glass fiber tapes. When S-Glass tapes are used on polyester laminates, the sail has an all-white look as shown to the left and right. These sails offer vastly better shape holding than a similar Dacron sail and the price increase is surprisingly small.



WHEN REPAIRS ARE LESS EXTENSIVE, THEY ARE LESS EXPENSIVE

The Tape-Drive construction system creates a unique "Rip Stop" layout, which prevents accidental tears from becoming catastrophic failures. In the highest load areas of the leech and the luff, the cross-cut panels are laid out approximately perpendicular to the tapes, dividing the sail into a series of boxes bordered by tapes and seams. Damage to the skin fabric, if it tears beyond the yarns in the membrane, migrates only to the nearest tape or seam. Tears stay small! Most repairs can be made right on the boat with sticky-back sail cloth or duct tape. In fact, Tape-Drive is the only sail that comes with a guarantee against catastrophic failure.



THE TAFFETA OPTION

Taffeta is a finely woven polyester that gets glued to one or both sides of the sail. Taffeta protects the mylar and the tapes. As the picture at the left shows, the taffeta layer does not have to cover a complete side of the sail. The taffeta layer only covers



the part of the sail that overlaps the mast to protect the tapes and mylar from the abrasion from tacking. Long distance cruisers opt for the taffeta layer to cover 100% of the tapes as shown on the mainsail to the left. The taffeta makes the carbon tapes appear grey instead of shiny black.



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