

CARING FOR YOUR SAILS

Originally published in Ocean Navigator Magazine

Copyright Great Circle Sails



Sail care is an important part of overall seamanship no matter if you race or cruise and these days, with the line between high-tech racing sails and high-tech cruising sails being fairly fine, there are a number of important things you can do to take care of your sails so that they will last longer, and more importantly, not fail when you need them most. This is becoming increasingly important as many cruising boats are being fitted with high tech sails rather than standard Dacron, and many boats are sailed with a small crew that often do not have a great deal of experience dealing with modern, high tech sails. With this in mind let's start by looking at the factors that fatigue sails and some things that you can do to mitigate the damage that is being caused.

Flogging

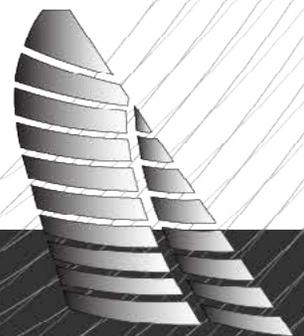
The number one factor for reducing the life of a sail is flogging and this applies as much to a membrane sail as it does a Dacron sail. Modern fibers like Twaron and Carbon are very sensitive to being bent and over time even the best sails will find a natural hinge around which to bend. This hinge will quickly become a weak spot in the sail and the delicate yarns will slowly start to break down and disintegrate.

Flogging comes in a variety of different ways and can be as simple as letting your mainsail flog as you are motoring back to the mooring. It's important to sheet the sail on hard and to sail a few degrees off dead upwind. This will keep some overall tension on the sail and keep flogging and flapping to a minimum. The same thing can happen when a headsail is being hoisted. The helmsman should keep the bow of the boat pointed into the wind but not motoring forward so as to create extra apparent wind, and the person trimming the sail needs to wait until the sail is fully hoisted before sheeting it on. Cranking the sheet on early places undue loads on the sail that will, over time, weaken it.

Flogging also happens in very subtle ways. A sail that is not trimmed correctly will often have some flutter in the leech. This is actually the worst kind of flogging as it's rapid and can quickly lead to the breakdown of the yarns along the leech which also happens to be one of the high load areas of the sail. Make sure that the leech line is tightened so that it takes the flutter out of the leech and also make sure that the tail end of the leech line is tucked away into its pocket so that it does not catch on the rigging when you tack.

Using a sail beyond its designed wind range.

Molded and laminated sails are particularly susceptible to damage when the sails are used beyond their designed wind range. The mylar film that is there as part of the laminate is there to take up any off-threadline stretch and does a pretty effective job, but the film is fairly delicate and needs to be taken care of. The sail designer understands the realities of sailing and knows that there are times when you get caught in a squall and



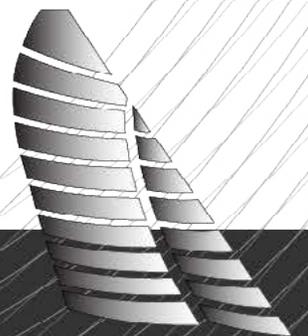
factors that into his engineering, but pushing the sail beyond its limit on a regular basis will soon lead to the mylar stretching to a point where it can't recover and the result will be a distorted sail shape. You need to think of the life of your sails as how long they hold their shape and not just how long they hold together. Distorted mylar will ruin sail shape rendering the sail useless.

Some sailmakers will stencil the maximum wind range on the clew of the sail so that it's clearly visible to the person trimming the sail. If it's not there ask your sailmaker for the designed wind range and either write it on the sail or write it on a laminated sheet and place it where it can be seen by all.

There are a number of things you can do if you suddenly find yourself in a squall with too much wind. Remember that a sail is at its most vulnerable when it's sheeted on tight. When you are using the sail within its wind range this is the perfect situation because all those individual yarns are there to take the anticipated loads, but when a squall hits the sail can be damaged. The first thing to do is to quickly ease the sail out. This immediately reduces the load on the sail but it has to be done in coordination with the helmsman. If the sail is eased and starts to flog you may end up doing more damage, rather than less. The helmsman needs to bear away quickly so that the sail is still drawing and not flogging. It's worth noting that a sail that has a maximum wind range of 15 knots of wind (when sailing upwind and under full load) can be carried in 30 knots if you are sailing off the wind with the sail eased out.

Over trimming a sail

Many modern cruising boats rely on electric winches to hoist and trim sails and while this is a great convenience, it can also be very detrimental to your sails. If you are manually cranking a headsail there is a certain amount of information being transmitted through the winch handle. If you are winding away and suddenly there is an extra load on the sheet, it's very natural to stop winding and to look aloft to see if there is a problem. Electric winches know no such thing and will keep winding so long as you keep pushing the button. In addition to ripping the sail, if indeed it was hung up on



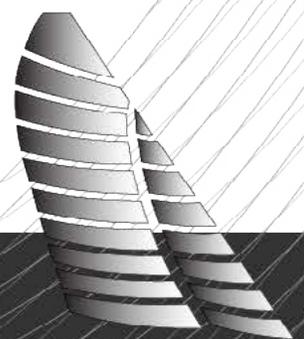
something, you often end up over trimming the sail which places undue loads on it which over time will distort sail shape.

It's futile to suggest that sailors not use their electric winches because convenience is king, but there are some things that you can do to minimize potential damage. When using the winches during the day have someone keep an eye aloft to make sure that the sail clears the rigging and is not snagged on anything. When using the electric winch at night consider hand cranking the sail the last few feet. If the sail is hung up on something you won't be able to see it and the sail will rip, but at least if you hand crank the last bit you will not over trim the sail. Another thing you should do is mark all halyards and sheets with a maximum trim mark. On a calm day at the dock hoist the headsail all the way up and when it is at max hoist, mark the halyard against some corresponding point on the boat. The edge of the winch is a good place. Whip the halyard with twine in addition to marking it with a marker. This way you will be able to feel it stand proud when it's dark. Do the same on the headsail sheets. Trim the sails perfectly and make a mark on the sheet. The sail trimmer will know to look at the sheet and never trim it past the mark that you have made.

UV degradation

Sunlight has always been an enemy of sailcloth and the battle against UV degradation continues. Fabric engineers have become very clever in their quest to rid sail cloth of UV degradation, but sunlight is insidious and can do a lot of damage if left unchecked. Fabrics are engineered so that the delicate yarns are encapsulated between taffetas that have been treated with anti-mildew and anti-UV additives. In some cases the mylar films are also treated with UV inhibitors and all of this goes a long way toward protecting those fibers that are most susceptible to UV degradation. When ordering new sails bear this in mind and make sure that the sail cloth that your sailmaker is recommending has adequate UV protection engineered into the fabric.

You can also do your part by ordering an acrylic sunshield that runs down the leech of the sail and along the foot so that when the



sail is rolled up on the furler the sunshield protects the body of the sail. You should always cover your mainsail with a mainsail cover especially if you are in the tropics. For real bullet-proof protection you might consider having a mainsail cover that has a foil liner on the inside. The foil liner is the same material that is used for making space blankets and it completely blocks the sun's harmful rays. An investment in a bullet-proof cover and UV-prohibiting films and adhesives and sunshields on your headsails will go a long way toward extending the life of the sail.

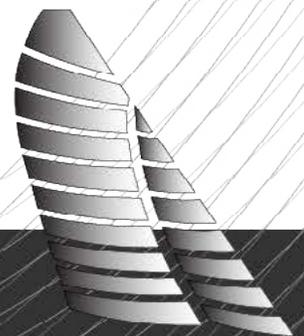
Moisture and mildew

While moisture and mildew will not actually weaken your sails, an excessive amount will make them unsightly and render the sail useless, unless of course you don't care about cosmetics. These days fabrics are treated with anti-fungal coatings that are very effective and if you want to exercise an abundance of caution you can have the entire sail dipped in a coating that protects against mildew. This may be an option if you live in a damp, warm climate and regularly put your boat away with wet sails. This applies to all sails; woven, laminates and molded sails.

Chafe

Chafe is something that occurs on all sailboats especially on those boats that are heading offshore as the sails are subject to long hours of continual use. If you do not guard against chafe your sails will wear out in short order. A single chafe point can wear a hole in the sail and that hole could lead to a rip and this happens on all sails no matter the fabric and engineering. Fortunately there are a number of things you can do to both the sails and the boat.

Start by installing spreader patches. Each time you tack the back end of your headsail is dragged across the spreader ends. Mark the sail where the spreader rubs and install patches. Consider covering the spreader ends with leather or tape them with sticky-back Dacron to minimize chafe. You can also install stanchion patches where the sail rubs up against the stanchions and if you want to be really diligent you can take the process even further and add an additional chafe strip along the foot of the sail where it clears the lifeline.



The areas where your battens rub up against the rigging when you are sailing down wind are also very vulnerable and you need to install chafe protection. This can be sticky back Dacron like the spreader patches, or if you going for an extended cruise you might want to have your sailmaker sew sections of webbing where the batten pocket connects with the rigging.

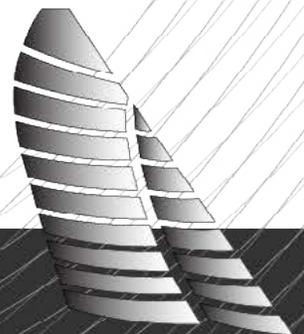
There is also a lot you can do on the boat and rigging itself to help minimize chafe. Take some time to go over the boat carefully in search of snags. Cover exposed cotter pins with tape and silicon, and where you can, cover rigging with leather. This extra effort will really help your sails last longer.

Lastly be aware of how you handle your sails. Dragging them along the non-skid deck or down the dock will damage the stitching as will a leeward running backstay that is up against the back side of your main. It won't take long for the running backstay to wear away the thread resulting in your stitching coming undone and the sail coming apart.

Care and maintenance

Taking care of your sails at the end of the sailing season is very important and there are some basic things that you need to do. First all all rinse off all your sails with fresh water and dry them thoroughly. If you do not rinse them the salt water will crystalize into tiny salt crystals that are barely visible to the naked eye. The crystals have sharp edges that can wear away at the individual fibers and, over time, weaken your sail.

You can use a mild detergent like dishwashing liquid to clean most areas that are dirty, but you will need to apply special treatment to places that have stained. For oil and grease use an automotive degreaser such as Simple Green. There is only one chemical that removes rust stains and that is hydrofluoric acid, but be aware that it's very toxic and this should be done by your sailmaker in a controlled environment. For mold and mildew you can use bleach but never use bleach on nylon sails or aramids like Kevlar, Twaron and Technora. Those fibers will disintegrate rapidly. Bleach is fine



on Dacron, Spectra and Vectran. Also never rinse your spinnaker in a swimming pool. The chlorine will have the same effect as bleach and your spinnaker will be rotted through by the next sailing season.

Once the sails are dry either roll them if you have enough storage, or fold them and put them in the bag. Pay particular attention the patches and make sure that they are completely dry otherwise you may end up with a mildew problem. The best place to store your sails is any place that is warm and dry. The most important thing is that it's dry. The temperature does not have a great deal of effect on the sails except if you have a laminated sail. Freezing cold weather can damage the film. If you are going to roll your mainsail you can leave the battens in the sail. Just be sure to release any tension on the battens.

High tech sails require quite a bit more attention than Dacron but it's not an excessive amount and if you pay attention and carry out good end-of-season maintenance your sails will last for many years.

I hope that you enjoyed this article. There are many more at my website www.greatcirclesails.com. If you need new sails for your boat just click this box and I will send you a no obligation quote.



BRIAN HANCOCK
Owner Great Circle Sails