

The Making of Sails

Doc Williams admits that he did not develop the technique he uses to make sails. However, like all good modelship builders, he did add his own touches to the procedure.

Doc stated that the first step in making sails is to determine the dimensions. Although some plans actually show them, it is possible to figure out their sizes by measuring the yards and the space between them. It's a good idea to increase this second measurement so as to allow the sail to take on a slight "billow" when installed. When the sails are first cut, a generous border is advisable (at least an inch).

Paper patterns are made and test fitted on the model for proper fit. A carefully drawn pattern is then made, which shows all the individual panels of the sail. Don't forget to add a generous border as mentioned earlier. Doc likes to make all the patterns at once. It's a good idea to label them as you go, since a suit of sails can exceed 30 if you're doing a clipper ship.

Quite a bit has been written about the "correct" material for sails, but Williams prefers cotton muslin, which is used for curtain liners. It's straight grained, and has a nice flat white color that allows free reign when staining. Obviously, this material would not be suitable for models under 1/8" scale. Miniatures require something much thinner, such as rice paper.

Once the sails are rough cut, the staining process is next. Doc accomplishes this by dipping them in Minwax stains. The color is pretty much a personal decision, which can be influenced by the type of vessel you are building - grungy for a "bum boat" to pristine white for a yacht. This is where experimentation comes in. Williams likes a mixture of Natural and Fruitwood, and has used this combination on two models.

After the stain has been allowed to dry overnight, the sails are dipped in lacquer, and again allowed to dry properly. Doc uses his own personal clothespins (Not his wife's!), and clips the pieces of material to an improvised "clothesline." He recommends doing these smelly jobs late at night so that any fumes will be dissipated by morning.

Once the lacquer is dry, each sail is ironed. Remember to keep the iron moving, or you'll burn the sail and possibly damage your wife's appliance, which could lead to a very unpleasant experience! At this point the material will be quite stiff and very flat.

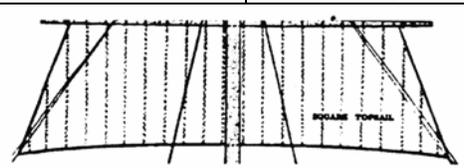
Transfer the sail pattern to the sail by superimposing the sail cloth and pattern on a light box. If you don't own one of these devices, a sunny window will work just as well. The pattern is then drawn on the sail with a hard, sharp pencil. Another technique, which works equally well, is to tape the pattern to the sail, and sew over both. The pattern can then be easily removed.

All seams are sewn using a sewing machine, fine white thread, and the smallest stitch possible. It's a good idea to try running some scrap material through the machine first, so that you can get a feel for this operation. Don't be surprised if your initial efforts get rolled up into little balls. You may not want your wife around when you do this - the reasons being obvious. At this point, remove the paper pattern if it is attached.

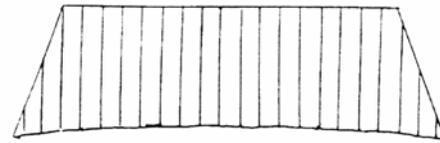
The sail is now re-stained using the same color as before. Doc recommends using a brush for this phase. The Minwax will only be absorbed by the thread, since the cloth has been sealed with lacquer. Don't try pre-staining the thread, and running it in the machine. It'll gum up the works, and probably end a beautiful marriage, especially if you've already messed up the iron!

The stitched lines are then seized. Williams recommends Sobo glue, which dries clear and flexible. This step prevents the stitching from becoming unraveled. Once the glue is dry, all loose ends are trimmed.

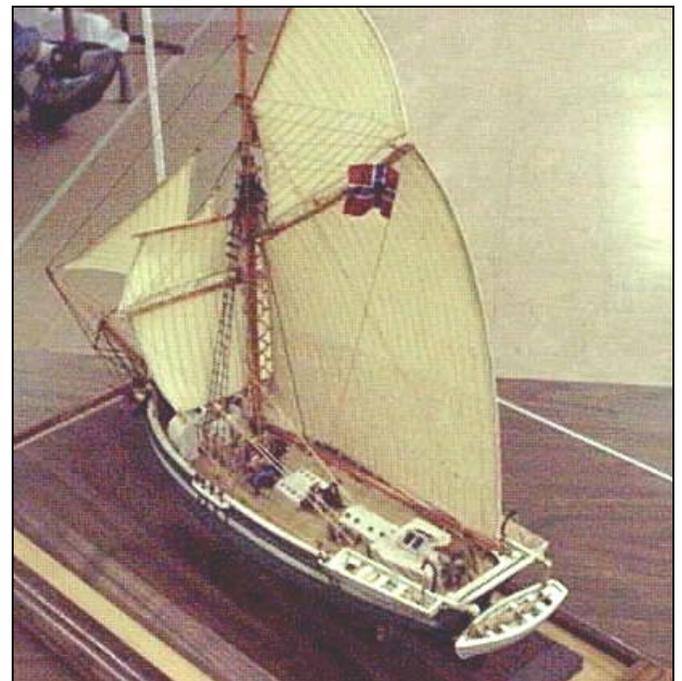
The sails are then cut to size, leaving a small margin on all four sides for the hems. These are folded over, and glued down, again using Sobo. Hems can be stubborn, so it might be necessary to do a section at a time, employing spring type clamps to hold them down while the glue sets.



Square topsail of the *GJØA* from plans



Sail plan as drawn from above



One additional feature, which Williams has had success with, is the incorporation of fine, stiff brass wire in the hems as they are folded over. This allows the sail to be "formed", so it has a nice billow, which looks very smart. Doc's *GJØA* is an excellent example.

Ship's Sails

For those of you who have been around the hobby for a long time, it's probably safe to say that you've seen sails made out of drafting linen, balloon cloth, pillow cases, handkerchiefs, aluminum foil, silkspan, wood, rice paper, plastic, and tissue paper just to name a few. Model ship builders are constantly looking for materials that afford realism while still suiting their abilities and the equipment at their disposal.

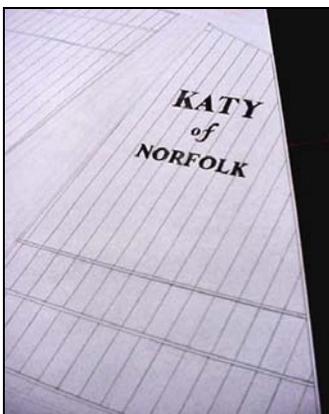


Ray Oswald discovered a material that is easy to work with, and certainly compliments smaller scale models. One look at Ray's Grand Banks Schooner confirms that statement. The Multi-Media Vellum used on this model allowed realistic billow without wire inserts, and a scale-like thickness with just enough translucency to compliment the delicate rigging.



Vellum combines the best qualities of paper and film, won't rip, has a uniform matte finish on both sides, and will not discolor or dry out with age. This material comes in different sheet sizes and weights, and is available at drafting and art supply stores. Oswald feels that 1000-weight works very well for this application.

Since the vellum has a certain amount of transparency, tracing the shape and seam patterns of a sail is quite easy. This should be done on both sides with a sharp 4H pencil. Ray recommends that the tracings be a little oversize so as to allow for the billow you will be incorporating. Because of the curvature of the finished piece, tabling must be



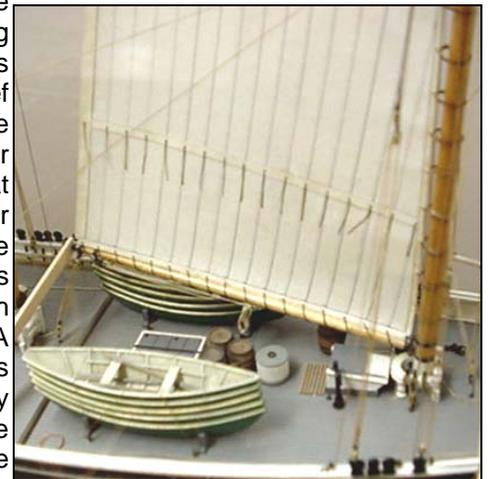
made as separate strips. Drawing two along each side of the head, luff, foot, and leech ensures that they are the correct length and shape, which makes gluing them to both sides of the sail a lot easier. Oswald prefers Elmer's white glue for this procedure.

As stated earlier, one of the big advantages of using this material is the fact that billow can be achieved without the use of wire inserts. Ray sprays the sail with a light water mist, and then carefully applies a warm iron to the vellum. He is careful not to come near the edges that must remain straight, and it doesn't take long before the billow starts forming. This may take some practice and experimentation, but the results will be worth it. Oswald stated that you don't have to be concerned about this procedure having an adverse affect on the traced lines, if you use a high quality 4H pencil.



To ensure that the sail retains its shape, Ray applies a thin coat of Jo-Sonia water based polyurethane, which develops a dead flat finish when dry. A soft 1" brush is recommended, with the first coat being applied to the "windward" side. Once dry, the other side of the sail can be sealed without fear of it collapsing.

Ray recommends mounting the sails before the masts are stepped. In fact, he advises that you do as much work as possible prior to gluing them. It is at this point that reef points can be applied. After drilling holes at the proper locations, a line with a stop knot is passed through each hole. A second knot is then carefully worked up to the sail on the opposite side.



The line is then wetted so as to create the appropriate droop, before being trimmed.

Ray likes to portray his models close hauled on a starboard tack. In this way the booms and gaffs are not swung out as far, which allows for smaller cases and easier modeling. When working with fore and aft rigs, Oswald offered this one piece of advice. For realism, the gaff should always be swung slightly further outboard than the boom. This is a subtle, but very important refinement.