

TECH SESSION
MAY 22, 2007

FORMING 1:600 SCALE LIFEBOATS IN STYRENE

Problem: Making a total of 20 lifeboats (ten 35' and ten 30') in 1:600 scale.

Solution: Forming each lifeboat in styrene using a tea candle as a heat source.

Materials:

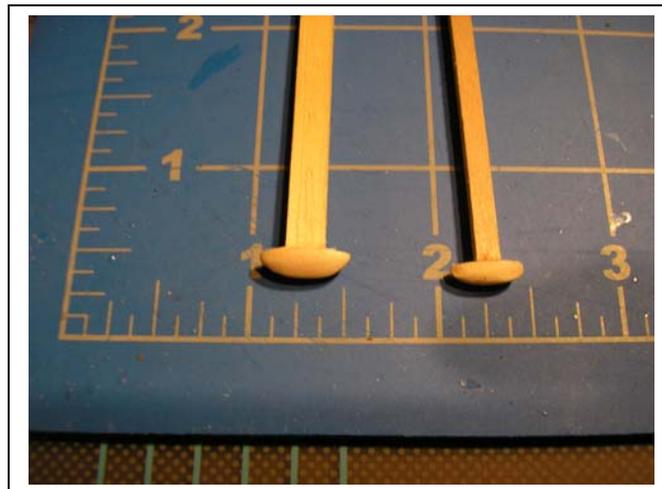
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|---|----------------|
| Styrene Sheets - 0.02" x 6"wide | Scrap Wood |
| Styrene Strips - 0.01" x 0.02" (for seat thwarts) | Tea candle |
| Styrene Channel - 0.100" | CA & Wood Glue |

Tools Used:

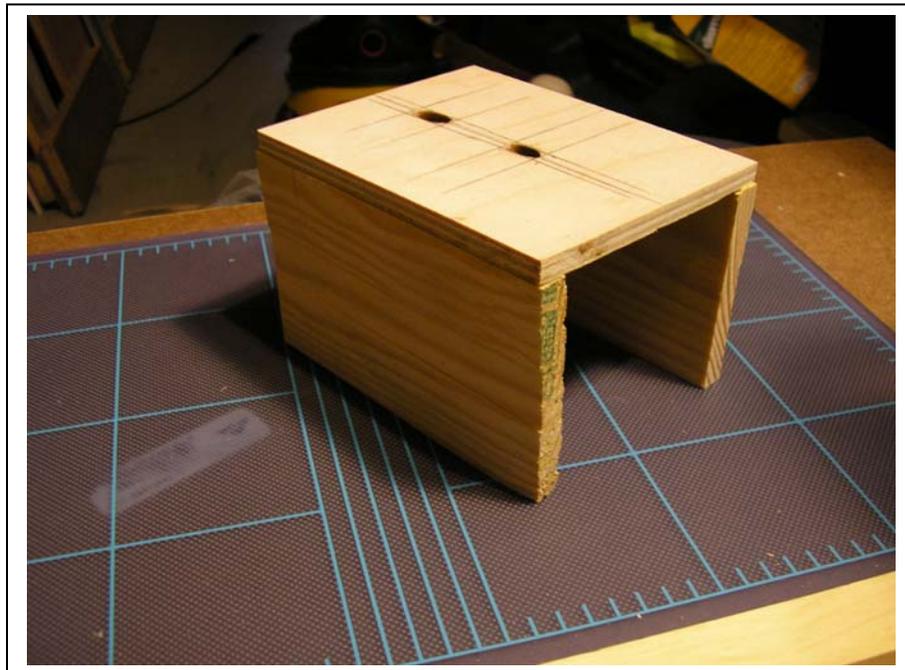
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| Microlux Table Saw | Model Machines Thickness Sander |
| Clamp | Single Edge Razor Blade |
| X-Acto Hobby Knife | X-Acto Sanding Block |
| Dial Caliper | Tweezers |
| Duplicator II by NWSL | "The Chopper" by NWSL |
| Dremel Rotary Tool w/ Sanding Drum | Scissors |
| Jig Saw | |

Procedure:

Using available plans, determine the overall size of each lifeboat (length, width & depth) in 1:600 scale and cut basswood strip stock to size. In this case the dimensions of the 35' boat were 1/4" wide by 45/64" long by 1/8" deep and the 30' boat was 13/64" wide by 39/64" long by 7/64" deep. Attach a wood strip to the top of each rough form to act as a handle and shape the life boat forms using sandpaper; I shaped the lifeboats by eye. The finished molds are below.



I then made up the forming base using pieces of scrap pine and plywood I had lying around the workshop. In this instance, the pine was 5/16" thick and the plywood top was 1/4" thick which worked out quite nicely. Layout the top view of the lifeboats on the forming base and cut out the shapes with a jig saw. The openings need to be slightly larger than the molds to accommodate the thickness of the styrene. Military specs are not required here! Use sandpaper and files to smooth the edges of the opening and test fit the molds into their respective openings. There should be a slight even gap around the entire mold. As with shaping the lifeboat molds, all of this fitting was done by eye. Cut two additional pieces of scrap wood for the legs of the forming base and glue the components together with wood glue. The finished forming base is below. The final dimensions ended up being 4" long, 3" wide and 2 3/4" high.

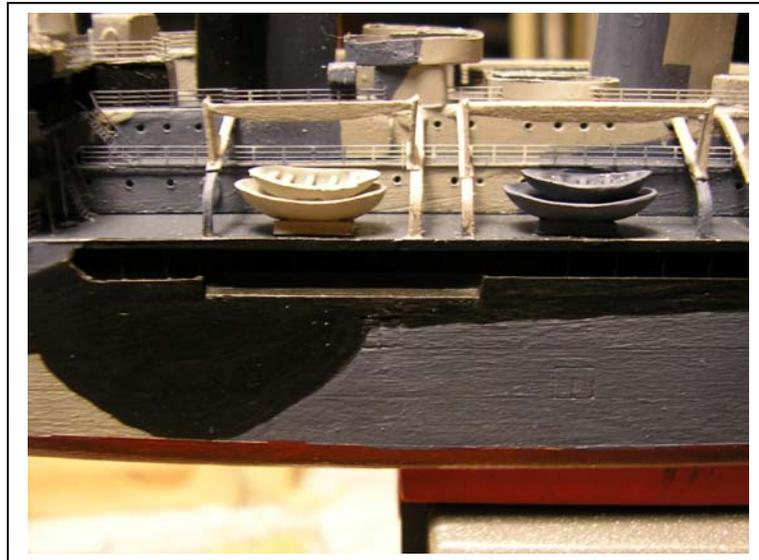


I cut up a supply of 0.02" styrene pieces that were 2" long by 1" wide using my "Duplicator II" and "The Chopper". Place the forming base over a lighted tea candle, centering the desired lifeboat opening directly over the candle flame. Place a piece of styrene over the opening and hold it down on the forming base with some more small pieces of scrap wood to hold it flat and more importantly, to keep your fingers off the hot base and plastic. For this particular setup, it took a little over a minute to a minute and a half before the styrene was soft enough to properly form the 35' lifeboats. The 30' lifeboats took well over 2 minutes for the styrene to become sufficiently soft, due to the smaller opening hole size, I presume. A watch with a sweep second hand is very useful for this task. After about a minute or so, begin testing the softness of the styrene by lightly pressing the mold into the styrene, being careful to keep the mold centered in the opening.

When the styrene can become easily depressed in the opening, slide the forming base assembly away from the candle and press the mold fully into the styrene making sure you are holding the mold perpendicular to the forming base. SHOP TIP – do not push the mold fully into the styrene while it is over the heat source – you will end up with a hole in the bottom of your lifeboat!

Hold the mold in the styrene for about 15 or 20 seconds as it cools. Remove the mold from the styrene and then the styrene from the forming base and set it aside and continue forming more lifeboats.

I cut the formed lifeboats from the styrene with a pair of scissors and, holding it with a clamp, sanded the sides to smooth them up and sanded the lifeboat to its maximum height. I then used a Dremel rotary tool with a sanding drum to give the lifeboat its shear. A final light sanding with 320 grit wet/dry sandpaper completes the hull work. The 35' lifeboat is glued to a small piece of 0.100" channel. Another small piece of channel is glued amidships inside the 35' lifeboat and then the 30' lifeboat is glued to this channel. I then marked off spacing lines on the inside of the hull of the 30' lifeboat and glued on the seat thwarts using .01"x .02" styrene strips. The final assembly is then painted and mounted on the boat deck as shown below.



This method is suitable for making life boats and ships boats in larger scale where the molds can be more accurately shaped from body plan sections. At larger scales, however, one can also consider the use of vacuum forming techniques in addition to this method. It is to be expected that a number of unsuitable pieces will result during the learning process of this forming technique but as with all modeling techniques, the more practice you have, the more consistent the results will be.