HAND LAY-UP OF FIBERGLASS PARTS ON A MOLD

1. PREPARING THE MOLD

Remove dust and dirt from mold. If mold is of plaster, wood, or new fiberglass, apply soft wax (Wax #2) and buff with soft towel. Then spray or brush with P.V.A. parting compound and allow to dry. If mold material is glass, metal, ceramic, or well-cured fiberglass, apply three coats of hard wax, carnauba type, buffing between each coat.

2. APPLYING THE GELCOAT

1. If gelcoat is to be brushed on, allow first coat to cure and then apply second coat to make sure there are no light spots.

2. If gelcoat is to be sprayed on with a gelcoat gun, spray up to a thickness of .015" to 020". When gelcoat has cured long enough that your fingernail cannot easily scrape it free (test at edge of mold where damage will not show on part) then proceed with next step.

3. LAY-UP SKIN COAT

Cut ¾ or 1 oz. mat to cover part. Brush catalyzed resin over gelcoat, then apply the mat. Work with roller adding more resin where necessary until all white areas in mat fibers have disappeared and all air bubbles have escaped. A mohair roller is ideal for rolling in the resin, and a serrated plastic roller assists greatly in popping any remaining bubbles. Avoid leaving excess resin standing in puddles. Resin-rich areas weaken the part. Where rollers will not reach, brushes must be used. When this step is complete, clean all tools in acetone. Allow skin coat to cure before next step.

4. LAYING FIBERGLASS REINFORCEMENT

For a 12 ft. boat, two layers of 1½ oz. or 2 oz. mat may be adequate, depending upon design. For a 14 ft. boat, an additional layer of woven roving will add considerable strength. Apply each layer as in step 3, but it will not be necessary to wait for curing between these layers. Be sure to shake all acetone out of brushes and rollers before applying resin. Acetone drips can result in uncured spots in the lay-up.

5. TRIM

On a small lay-up, the fiberglass laminate which hangs over the edge of the mold can be trimmed off easily with a razor knife if you catch the "trim stage," of the period after the lay-up has gelled but before it has hardened. On a larger lay-up, it can be trimmed with a saber saw and coarse sand paper.

6. CURE

May take from two hours to overnight, depending upon turnover desired, temperature, canalization, and nature of the part. If laid up in a female mold, longer cure will affect shrinkage and easier parting. In the case of the male mold, the part comes off more easily before it shrinks appreciably. If the part is subject to warping, a longer cure may be necessary. In any case, when the part is removed it should be supported in its desired shape until fully cured.

7. REMOVE PART FROM MOLD

First, examine the trim edge all the way around the mold and make sure there is no resin bridging the line between the mold and the part. Sand this edge where necessary. Then wooden wedges, such as “tongue sticks,” can be pushed into the edges to start the separation. Continue separation by pulling and flexing. In some cases it is necessary to drill a small hole in the mold and apply air or water pressure.

8. FINISH

Trim edges and back of part may need to be fine-sanded and coated with surfacing resin or gelcoat.

9. GELCOAT PROBLEMS

Alligatoring, or wrinkling, of the gelcoat may be due to the following reasons:

1. Gelcoat is too thin in spots, consequently it does not completely cure.
2. Insufficient hardener added, or hardener not mixed well enough. In general it is best to use about twice as much hardener in gelcoat as in lay-up resin at the same room temperature, since the gelcoat goes on thinner than a mat lay-up.

3. Gelcoat has not cured long enough before mat lay-up.

4. Acetone from tools drips onto gelcoat or into skin lay-up.