Paper Tiger Catamaran
GUIDES

Scarfing Plywood

Warnings/Cautions

- As always, using any power tools, cutting implements or adhesives carries certain risks. Make sure you understand the hazards associated with each tool and substance you use and follow all safety advice given by the manufacturers and suppliers.
- Protect yourself from dust, flying objects and hazardous substances by wearing the appropriate personal protective equipment.

Definitions

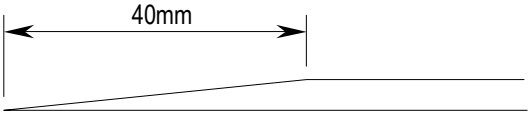
This article was written by Phill Brander (AUS), who has built many timber catamarans including a Paper Tiger.

Materials

- 4 sheets of 4mm Gaboon or Okume plywood (1220 x 2500mm)
- Epoxy Resin
- Micro-fibre Blend or milled fibres
- Chipboard
- Aluminium plate 100mm wide, 1300mm long and 3mm thick
- Screws
- Plane (Sharp)
- Plastic
- Squeegee

Cutting/Shaping

The four sheets of 2500mm x 1220mm ply are joined with a scarf joint to make two 4960mm x 1220mm sheets. This scarf joint is formed by first tapering one 1220mm side of each sheet from its 4mm to 0mm over a distance of 40mm. There are several different ways this can be achieved but the most reliable is with a sharp plane.

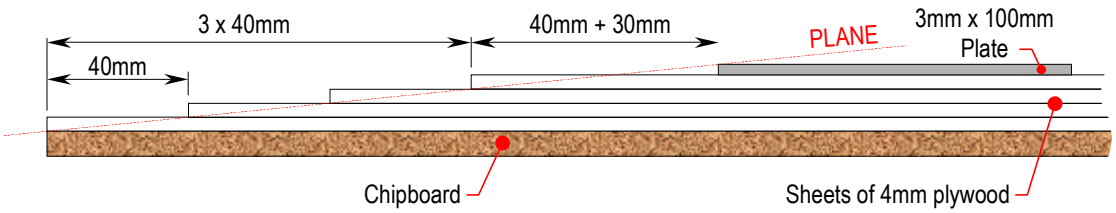


Examine the sheets to be joined to ensure the best face of each sheet will be on the same side, as this will be the outside of the hull. (Note which side the taper will need to be cut on each sheet to achieve this. Of two sheets to be joined it will be the good side of one and the bad side of the other to get the good and bad sides aligned). Once you have this worked out mark the area to be planed on each sheet with a pencil, just so you don't mix them up. Then stack the 4 sheets of 1220 x 2500 on top of each other with the surface to be tapered on the upside and all down one end.

Place the stack on a very flat surface. Something like a sheet of chipboard (Patrick board) or craft wood is ideal. This chipboard must have at least one very straight edge of at least of 1220mm long. Align the end of the bottom sheet to be tapered to this straight (chipboard) edge and place the others on top sliding each back exposing exactly the 40mm on each sheet to be tapered. Check they are set up accurately.

^ Stacking the plywood with the 40mm exposed.

On the top sheet draw a line exactly 40 mm back from the edge. Make sure you have the bottom sheet in line with the straight edge of the chipboard. Now check that the sheets are positioned accurately and clamped in place. Then check again for accuracy. Remember always "check twice and cut once!" In this I am a firm believer.



Now take your very sharp plane and carefully cut the 40mm taper on all 4 sheets in the one operation.

^ Use a plane to cut the 10 to 1 taper.

^ Fine sand with machine or block and sand paper.

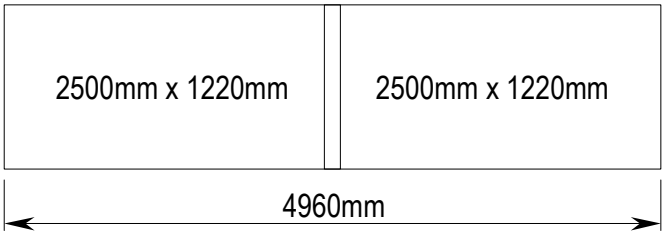
^ Taper finished - ready to glue to make scarf join.

Gluing

To glue the 2500 sheets to make the 4960 sheets, I lay some chipboard on a level surface at least 300mm x 1300mm wide. I lay chipboard of the same dimensions either side approximately 600mm away. Lay the first two sheets of ply down with the joint along the centreline of the middle piece of chipboard.

This is a dry run to align the scarf joint. When you have the first two sheets down use a string line to check one (4960mm) side is perfectly straight. When you are certain of this, screw the sheets to the chipboard with four 16mm x 6 gauge screws 10mm from the side of the ply and at least 100mm back from the scarf. These screws go through the ply into the chipboard. This is to ensure when the joint is actually glued the 4960mm edge is perfectly straight.

The third sheet of ply is laid on top so it is exactly above the first. The fourth goes above the second. Again, four screws go in 10mm from the edge but spaced a little further out so they don't hit the screws beneath.



Make a final check that the edges are straight and then disassemble, marking them as you go so you know where they go. Cut six pieces of plastic at least 200mm x 1300mm. Obtain a 1300mm x 100mm x 3mm length of aluminium plate. Draw a centreline and drill a 2mm hole every 200mm, starting 50mm from one end. Lay all four sheets on top of each other spaced 40mm back from the edge of the sheet beneath, exposing the taper on each sheet.

Coat the taper with resin using a squeegee to remove all excess resin.

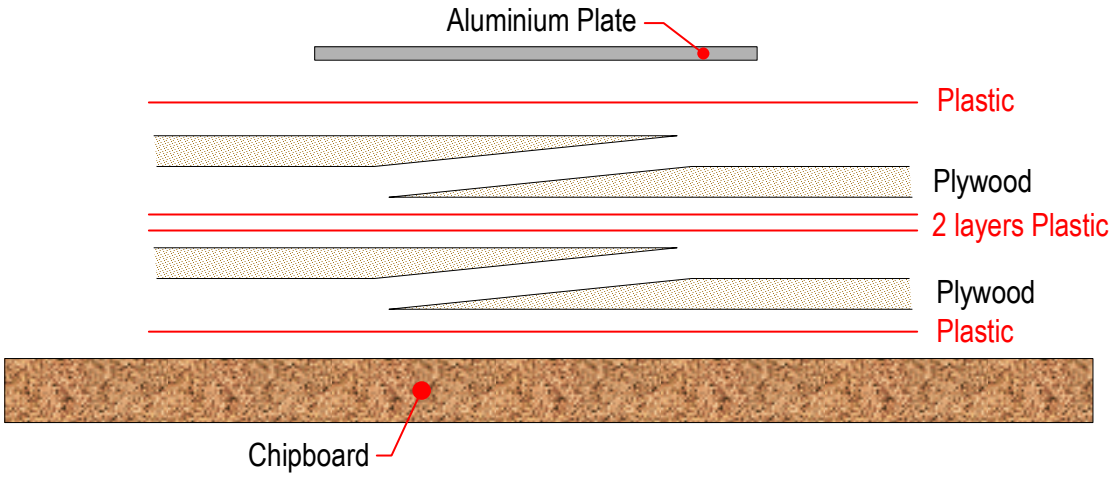
^ Apply Glue to all 4 ply tapers in one operation.

Using the remaining resin, mix in glue additive (eg. micro-fibre blend) and apply to tapers.

BE VERY CAREFUL NOT TO GET RESIN OR GLUE MIX ON ANYTHING OTHER THAN TAPER!!

Lay plastic over chipboard and then sheet 1 and sheet 2 so the glue surfaces meet. Use nail or spike to line up the screw holes in ply with screw holes in chipboard. Screw in 4 of 16mm x 6g alignment screws.

Lay down 2 sheets of plastic over the first scarf joint, then sheets 3 & 4. Same process as before with alignment screws, another sheet of plastic, then the aluminium plate, laid so its centreline coincides with the centre line of the scarf joint.



^ Separate ply with plastic - clamp joints for 24hrs.

^ Standing on aluminium plate to drill holes.

Stand on aluminium plate so balls of feet are positioned either side of first drill holes. Put all your weight (stand) on balls of feet. Screw through hole in plate scarf joints and into chipboard below. Move to next hole, then so on until finished.

^ Leave for 24 hours then disassemble.

For assistance with your Paper Tiger Catamaran, or suggestions for this or other Guides, please contact the Paper Tiger Catamaran International Association:
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