Choose your Glue

Edge truing the sheets before you start to glue them together helps the process immensely. Erik made his edge-truing guide from particleboard and a piece of angle aluminum with 150-grit sandpaper glued to it. First, trim the edges with a 4-foot straightedge and a sharp hobby knife or a razor blade then get a final edge by lightly guiding the sheets along the edge-truing surface.

There are several ways to approach gluing sheets together and several glues from which to choose. What we're striving for here is an analysis of the pros and cons of these differing methods. For this article I experimented with some of the more common methods—edge gluing with CyA, Duco (ambroid), and common carpenter's wood glue. All of these methods produce acceptable results, and with practice can be quite nice. All methods start by taping the edge-trued sheets together down the entire length of the sheet on one side and flipping it over and bending at the tape line to expose the edge. The glue is then applied to the edge and the sheets are then folded back together.

I found that thick CyA applied in a very thin line with a fine tip to the edge of the sheet worked very well with a little practice. As you move the bottle along the edge the glue seems to drag out of the bottle. Thin CA can be a mess and result in severe hard spots that are unsandable if you try to avoid the edge-gluing method and soak the seam with it. The thick CyA works well because it gives you a little more time to align the edges before it sets up.

Once the edges are together, dab up any excess glue with a paper towel and lightly sand with a block and 150-grit paper. Before the glue hardens completely, flip the

sheet over, peel off the tape and sand again. The trick here is to keep the glue to a minimum because any overspill will harden the wood and become very difficult to sand.

After I got the knack of using the CyA I liked it very much. It was the quickest of the edge gluing methods and yielded a clean, smooth sheet of wood. Too much glue will result in hard edges that cannot be sanded out, so the glue application is very important. I've read that CyA can soften with heat so I tested a sample. I heated the sheeting with my covering heat gun and measured the temp with a Raytek digital surface heat gauge. I got the wood hot enough to melt the foam underneath it (250 degrees Fahrenheit) with no noticeable sign of softening the CyA. Okay, so it's not a completely scientific test, but surely the act of covering your airplane or allowing it to set in the sun will not affect the joints glued with CyA.

Working with old-fashioned wood glue takes speed and practice. I found that I could not get the glue to lay out in as fine a bead as the CyA, even with the use of a glue syringe, so clean up was a bit more involved. After the pieces are folded together you need to work quickly to scrape the excess with a plastic squeegee. A damp rag will help to remove the remainder but the glue starts to set fast.

The added step of having to retape both sides after a cleanup and sanding step meant that there was quite a bit more work involved, and the need to let it set over night added to the time factor. Like CyA, wood glue was very hard once it set up completely and if you don't get it level and clean before the drying process you end up with an unsandable raised edge.

Duco cement (another form of ambroid) is what many of the old-timers may remember from the stick and tissue models of our youth; a time before CyA was invented. The method with Duco is very much like wood glue but it does not dry as quickly. After the glue is applied and the sheets are folded back together, it's just a matter of carefully scraping the glue off with a squeegee and wiping down the wood with a paper towel. Do a quick light sanding with 150-grit sandpaper on a block and retape. Flip the sheet over, peel off the tape, and clean up and sand this side like the first and retape to let it dry over night.

Our builder, Erik, likes the Duco method the best because Duco gives you more time to sand before it starts to set up. With Duco it may be easier to achieve a seam-free finish in the end. I personally still prefer the CyA because it is much quicker, and, being a little less picky, I was satisfied with the end result of the seams.

There is another method that has popped onto the scene in just the last few years that many people are using, especially in the SA arena. If you are going to sheet your wings using Probond polyurethane glue, you may opt to forgo gluing the sheets together completely. The polyurethane glues expand while drying, forcing their way into every crack and crevice, and with this action will actually glue the sheets together in the process.

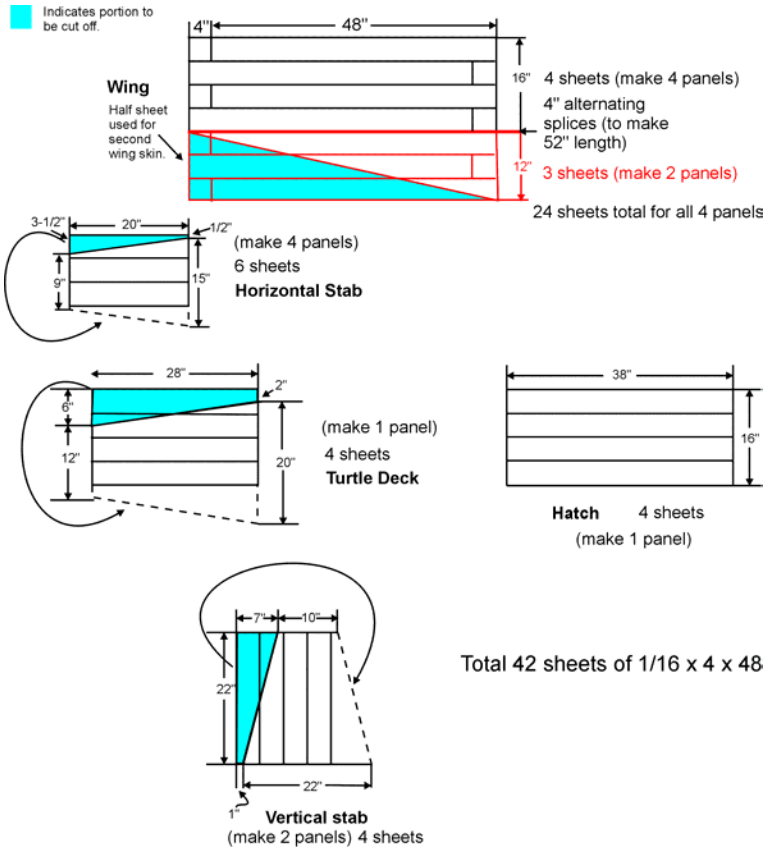
Simply tape the sheets together on the outside as you normally would and move on to the sheeting process. Most of the time only a small amount of glue gets past the tape onto the outside of the wood. We found that sanding the sheets smooth and clean afterward was possible with this method but it took a light touch and some patience.

For Project Extra, we used 42 sheets of 1/16-inch, 4" x 48" balsa. Below is a diagram showing the layout for each of the parts that will be sheeted. The blue shaded area indicates a section that will be cut off and used in another area on each panel to create the shapes you need for each part.

I made the wing panels 52 inches long to make fitting them easy. Four-inch pieces are spliced onto each sheet and positioned at alternating ends when assembled to promote a strong splice.

You will make four wing panels. Make the first two from seven sheets of balsa each then cut the blue shaded wedge shape from each panel according to the diagram. For the next two panels, glue together the top four sheets (in black) and use the two wedges for the bottom of the panel (in red).

Once all of the panels are done set them aside to get started on the foam cores, I like to lay them out flat and put a large piece of ¾-inch particle board on top of them to really flatten them out. Only stack like sizes and shapes so they don't crease each other.



(See enlargement of diagram)