

Sheeting Foam Wings

By Bill Ervin

This is the method I've settled on for attaching skins to my foam wings. As far as I know there are only two types of glues that can be used for this procedure; epoxy, or some type of contact adhesive. I've kind of gravitated to using the epoxy because, as I've said before, I am slow and methodical, not fast and clever. The epoxy suits me. I think the biggest concern when using this type of adhesive is excessive weight build up. One of the things I want to show is that when done carefully this shouldn't be a concern.

First picture shows all the tools needed, most important are the gram scale and the disposable nitrile gloves. The hazards of exposure to epoxy are cumulative. Wish I'd known about this when I was a kid. I included a close up of the spreader I use, the notches are made with an X-acto knife. It's just a plastic card similar to a credit card. I only used this because I don't own any credit cards; it's an old airport access card.

Next pic is the skin I'm going to attach. Notice the chord wise curve? It's there because I brushed on a coat of nitrate dope onto the side that will go against the foam-core. This is very important; the dope creates a barrier so that when you're spreading the glue onto the skin it won't soak into the balsa allowing you to scrape off the excess. This is the single most important bit of info in this article. This is not my idea; I got from an article in an R/C sailplane magazine. With this dope barrier the glue actually puddles on top of the skin.

The epoxy is mixed by weight; my container is four grams so that's the tare. I go to eight on the scale with the hardener (four grams of hardener) then to twelve with the resin (four grams resin). Mix well but remember that in that small container the heat from the chemical reaction and the additional heat from your hand will dramatically reduce the pot life, even with the Z-poxy I'm using. Mix it up then get it spread on the skin.

I drizzle the glue around the perimeter then into the center of the skin. I then spread toward the center of the skin working all along the LE then pick up the skin, turn it around, and work all along the TE. The glue will discolor the skin so you can see where you've been and where you still need to go, but the glue won't all soak in and disappear. Once the center is covered with an even coat get all the edges working/spreading out toward an edge, no dry spots! When the whole skin is covered in glue start using your spreader as a scraper. Scrape off as much as you can and then scrape it back into your mixing container. When you're done you should have evenly spaced ribbons of glue running chord wise on your skin. The whole spreading/scraping procedure probably takes me 5 minutes but I believe I could spend up to 20 minutes and it wouldn't make a difference. There is a picture of the scale with the glue container on it after I got done; it's showing a reading of 5.5 grams. If you count the glue I got on the spreader, mixing stick, gloves, table etc. you end up with about 6 grams of glue used to attach the skin. 5 to 6 grams is typical for the 700 sq. inch wings I'm building, multiply this by the four skins and it's 20 to 24 grams per wing. This is acceptable to me.

This is the press I use to hold my skins while the epoxy cures. That's 3/4 inch Melamine and those are 3/8 inch bolts providing the squeeze. This is the first time I've tried using a press and I like it, much better than stacking jugs of water, cinder block, old magazines etc. With this I can squeeze that foam as much as I want to the point of crushing it so be careful! When tightening I only use my fingers and I tighten using a similar pattern as tightening head bolts on an engine. In other words evenly and in steps.

Finished wing panel on scale reading 5 1/2 oz. and I still have to core them. Hope this works for you.

Below are the photos in order of the sheeting process









