

THE JOY OF FILLETS AND FLASHING

By George White

After a few experiences at adding fillets around flying surfaces and flashing around windscreens, with results in some cases which would gag a buzzard, I once again went back to one of my favorite "older boy" sources, Rich Adams, for sage advice.

Here's Rich's take on the subject:

"For my Do335, I used file folder stock, much like Mike Midkiff does. It's a little stiffer than bond paper and adds a wee bit more weight but there's an advantage to that. (Ed.Note: He uses file folder stock only on 30" wing span models, otherwise, it's bond paper) I cut the bond paper into the rough curvature that I think will get close to what I need. Leave about 1/8 to 1/4 excess because you won't get it right the first time. Make a copy.

Again, here comes the damp cotton ball (I use a lot of these, don't I?). On the reverse side of the paper, run the damp cotton ball down the paper allowing some of the moisture to seep in to paper. Don't use too much, just enough to dampen the paper and get it to soften a little. Take a piece of dowel about 3/8 diameter and slowly roll the paper on it starting at one end and at an angle about 10-15 degrees from what you would think the centerline of the fillet is. Then roll the paper along the centerline. Work it in different angles until you begin to see the shape of the fillet start to form. Take the paper to the fuselage and fit check adjusting the curvature a little each time. If the paper starts to dry out, just dampen it a bit more. You're trying to soften the fibers and let the paper binder give a little so you can mold it to the complex shape. I also use my fingers to push the paper into the corner a little at a time and see how it behaves. Trim a little at time as you go until it sits right in the corner. Sometimes I hold one end and lightly pull on the other to stretch the paper into the corner as it also molds along the wing. The trickiest part is usually where the back end of the fillet tapers into a point at the fuselage. This is where I seem to spend the most time getting that intersection to work out. Sometimes I glue a thin sheet balsa fillet planform to the trailing edge and the fuselage to make an extension of the trailing edge as it curves back to the point where the end of the fillet intersects the fuselage. This gives a way to mark the edge of the fillet when the paper is still damp (Ed. Note: And also something to glue the bottom of the fillet to). Eventually, you'll have something that fits fairly well but has some rough trimmed edges. Let this side dry as you work on the other side. When they are dry, you can trim the edges with a pair of scissors.

At this point you can cover them with tissue or wait until you get them glued on the fuselage. I use thinned white glue to stick the tissue, UHU will work I guess. When the tissue is almost dry, I dampen the back again to allow a little give, add a little glue to the back sides and lay them in the corner, adjusting things until the glue has set to where you can leave it alone.

Overall, fillets are an annoying process and takes a period of undisturbed time. When I did the fillets on my Dornier, my wife interrupted me three times and I had to pull them off and throw them away. For small fillets, I use bond paper.

Another use for bond paper is creating a fillet where the vertical tail meets the fuselage. Take a piece of bond paper the appropriate length and an inch wide. Fold it lengthwise and crease it hard with a straight edge. Cut the folded section to 1/16" from the fold so you now have a 1/8" piece of paper folded in half. Open the paper so it has about a 60° inside angle. Now brush some 50% white glue and wet the corner of the joint and lay the paper in the joint, letting one side make contact first. Use the brush to slowly press the paper into the joint smoothing as you go. Adds very little weight, lots of joint strength and hides that nasty glue joint.

The metal flashing around canopies can be handled using bond paper and getting it a little damp. Start with a rough shape, get it damp, and mold to the canopy/fuselage joint with just enough pressure to coax the paper into form. Let dry, trim, and reapply with 50% Titebond.

I guess the hardest thing to do is to be patient and also realize when you might have to pitch what you have, drink a beer, and then go back and try again."