BY MICHAEL FALCO || PHOTOS BY MICHAEL FALCO & PETE HALL

Homemade LOZENGE FABRIC

WW I German camo from your ink-jet printer

During WW I, Germany developed a camouflage pattern that consisted of irregularly shaped polygons called "lozenges." From 1916 to 1917, the lozenge pattern used four colors; from 1917 to 1918, a five-color pattern prevailed. Typically, the top surfaces were covered with a lozenge pattern of a darker hue, while the bottom surfaces were covered in lighter colors. These patterns were initially painted on but were later printed directly onto the covering material to save time and weight. The printed fabric sheets were stitched together and the pattern ran chordwise, but variations included spanwise and even diagonal patterns.

To accurately duplicate this complicated pattern on a scale model has until now proven tedious at best and downright frustrating at worst. In this "how-to," I will show how I printed my own lozenge fabric using a desktop ink-jet printer.

EXPERIMENTS

I had successfully used my computer to print water-slide decals for aircraft markings, gauges and cockpit control-panel details, but when I first tried printing the lozenge pattern on MonoKote and Coverite, it did not work; the ink wouldn't dry or adhere properly. I knew that ink-jet ink would stick to cotton; you can purchase T-shirt transfer paper to use in printers just for this purpose.

After some experimentation, I discovered that a 35-percent cotton/65-percent polyester blend fabric works nicely. You can print on it, the color saturation is good, and the ink immediately bonds to the fabric. Also, because of its polyester content, the fabric can be shrunk tightly into place using a standard modeling iron and a hot-air gun! It comes in 45-inch widths and, at $1.99 per linear yard, it's inexpensive.

I used card stock as a glue-application fixture to prepare the carrier paper. Here, the carrier paper is in place. The lozenge pattern shown is from a previous printing.

The completed ink-jet-printed lozenge pattern exits the printer.

THE PRINTER

Most ink-jet printers can accommodate a sheet of paper that is 8.5 inches wide and up to 14 inches long. For my Sterling Models 1/6-scale Fokker D-VII, I needed a fabric length of 9.5 inches for the bottom wing and 12 inches for the upper wing. I printed the sheets in standard "portrait" orientation. To make the material long enough to cover the wings tip to tip in one piece, I bonded individual 8.5-inch-wide sheets together along the long edge. Eight sheets needed to be joined for the top wing, while seven were required for the bottom wing. The stitching together of individual panels is the same technique as that used to apply the full-size lozenge fabric to the aircraft.

A five-color lozenge pattern (upper and lower) in a scaleable .BMP file is available in a Click Trip on the *Model Airplane News* website.

PRINTING THE SHEETS

Using a rotary cutting tool, I cut the fabric into widths for the bottom and top wing lengths. Because the fabric cannot be fed directly through a printer, I used plain 8.5x14-inch printer paper lightly sprayed with contact adhesive as a carrier sheet.

I used two parallel strips of manila card stock to mask off the ends of the carrier paper while I sprayed on the contact cement. The width between the card-stock strips is set for either the top or bottom wing-chord lengths needed. To help prevent paper jams in the printer, keep the adhesive off the leading and trailing ends of the carrier paper.

Once I had applied the adhesive to the carrier paper, I kept it fairly vertical with the manila card-stock mask oriented top and bottom, laid a section of the cut fabric over the glued area and gently smoothed it into place. I used a rotary cutter to trim away any excess overhanging fabric along the left and right edges.

With the printer software I use, I can control the amount of ink used during printing. To get a good print, I set the settings to maximum, but you should do some testing on sample pieces to determine the proper setting for your printer.

I placed the carrier sheet and fabric into the printer feed and hit "Print." Since the process takes a few moments, I prepared a second carrier sheet and applied the next sheet of fabric to it. By the time the first sheet had printed, the second sheet was ready to go, and I could repeat the process.

As I mentioned earlier, seven sheets were needed to span the lower wing and eight for the upper wing. You must double this, as you need to cover both the top and bottom surfaces of each wing. Remember, the darker hue goes on the top surfaces; the lighter hue is for the bottom. I also printed additional material for the horizontal stabilizer. I estimate that I used approximately 1.5 color ink cartridges to print a total of 36 pieces of fabric.

BONDING THE FABRIC

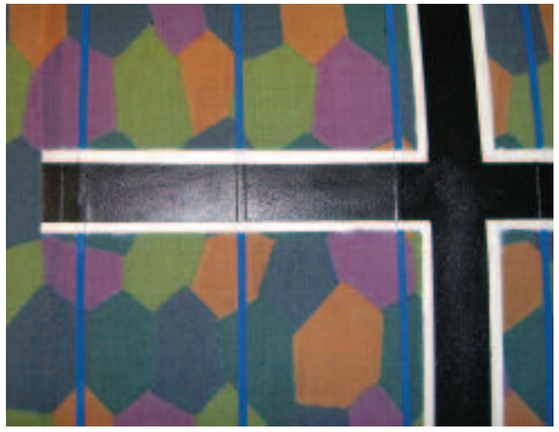
To bond the fabric sheets together, I headed to the fabric store and purchased a roll of ¼-inch-wide heat-activated "Heat 'n' Bond" iron-on fabric adhesive. I used my covering iron to attach the tape along the bottom surface (chord length) of the right edge of the first printed sheet. I peeled away the release paper from the tape and aligned a second piece of printed fabric beneath it, so the polygons of the first piece overlapped it by approximately ½ inch. I then used the iron to bond the two pieces.

BE SURE TO APPLY THE FABRIC AS TIGHTLY AS POSSIBLE WITH THE IRON BEFORE SHRINKING THE FABRIC.

I continued this process, adding additional pieces and aligning them edge to edge until I had the length I needed to cover the entire wingspan. I continued until I had all the pieces I needed.

Use the covering iron to bond the printed fabric panels together.

This close-up of the finished wing shows how real the fabric weave looks on the model. The blue rib tapes were added after the fabric had been shrunk tight.



I painted the wing markings with fuelproof dope after I had coated the fabric with clear dope.

FABRIC APPLICATION

To bond the long strips of fabric to the airframe, I applied a light coat of Sig Mfg. "Stix-It" heat-activated glue to the airframe. I then applied the fabric with my iron and heat gun. The fabric is a heat-durable material, but you should work carefully and use minimal heat. When all the edges have been tacked into place, remove as many wrinkles as you can; then use the heat gun to shrink the covering taut. The fabric will not shrink a lot, so be sure to apply it as tightly as possible with the iron. This is not difficult, as the fabric is very pliable. Compound curves at the wingtips are easy to cover. Be careful where the fabric pieces are joined together with the tape; too much heat can loosen the bond.

For additional scale detail, I cut rib tapes from a rectangular piece of the unprinted white fabric. I first painted the fabric with blue polyurethane paint applied with an airbrush; then I applied a large, 17x36-inch sheet of Heat 'n' Bond material to the unpainted side of the fabric using my covering iron. I cut the fabric into ⅛-inch-wide strips using my rotary cutter and a straightedge. I removed the release paper and ironed the strips into place atop the ribs.

FINAL STEPS

With the wings and tail surfaces covered in the lozenge fabric, the model will look great, but the fabric is not yet airtight, nor is it water- or fuelproof. This is achieved with a couple of coats of clear dope. The dope seals the fabric and helps set the colors. I then masked off and hand-painted the markings on the wings, also using fuelproof dope. I covered the fuselage with Solartex, a fabric whose texture is similar to that of the wing surfaces. When all the painting was complete, I sprayed on a topcoat of satin polyurethane to even out the sheen.

If you have a German WW I biplane that's waiting for an authentic finish, give this technique a try. Compared with hand-painting, ink-jet printing the lozenge pattern is a breeze. ✚

See the Source Guide on page XXX for manufacturers' contact information.

The author's ⅙-scale Sterling Models Fokker D-VII looks quite authentic in flight. (Photo by LIARS Harvey Rubenstein.)

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