Installing Synthetic Crown Molding

You can't cope polyurethane molding, but a template, a simple jig and a little bit of luck make it possible to preassemble perfect miter joints

BY DAVID MILLS

No one has ever accused me of being state of the art. I'm a seasoned, small-town carpenter who learned his trade the old-fashioned way. I prefer to work with traditional methods and materials, but I've seen a lot of changes over my 25 years in the trade. I know that you've got to adapt and make use of the tools and materials that become available. So when one of my best clients asked me to trim out his new house with rigid polyurethane molding, I was excited by the challenge. The house was an 8,000-sq. ft. mansion he was building on Lake Wylie in York County, South Carolina, and the job would keep me and my two-man crew busy for over a year.

Because I'd never worked with this material before, I swallowed my pride and read the manufacturer's instructions carefully before we started and throughout the process. As it turned out, installing the baseboard and casing was straightforward, but the 9-in. wide Shell and Bellflower crown molding (catalog #11140; Focal Point Architectural Products; sidebar facing page) was tricky, largely because we had to miter every corner and fasten each piece with adhesive.

Every room in this house, including the garage, was scheduled for crown molding, so the garage was the ideal place to get up to speed. With a 14-ft. ceiling, the garage offered us a chance to test our technique. It took three of us a day and a half to apply 150 linear ft. of crown and to join four inside corners, but that time allowed us to identify most of the problems we were to face and to devise an efficient plan to tackle the rest of the house.

A giant site-built bevel square measures the angles

The installation instructions compelled us to miter and glue, rather than cope, the inside corners. Anyone who's ever tried to assemble an inside crown miter in place knows it can't be done. Even if the corner is perfectly square, which is rare, the joint always tends to open while you nail it, especially when the molding is 9 in. wide. With this material, we were also instructed to maintain pressure on the joint while the adhesive set up. After a day and a half practicing in the garage, I concluded that the only way to achieve an acceptable level of quality was to preassemble the miter joints.

Preassembling miters meant we'd end up with more seams in the field, but this would not be a serious problem. The instructions required us to make field seams with butt joints rather than scarf cuts, and we discovered that with this synthetic material, it was easy to make seams disappear.

A more significant problem was that preassembling miter joints would allow no possibility for fitting and trimming to fine-tune cuts during installation. We solved this problem by creating a template and a setup jig that enabled us to replicate the exact angle and dimensions of each inside corner on our worktable (inset photos, facing page).

Our template was essentially a giant sliding bevel square made from ¾-in. birch plywood. Each leg was 4 in. wide by 3 ft. long. The pivot corners were rounded (to make it easier to fit into the corners), shiplapped and bolted together with a wing nut. A crosspiece made to slide in a slot in each leg allowed the bevel square to adjust from 85° to 140°. We held the square in the corner, adjusted for a tight fit and locked the wing nuts. Then we transferred the corner angle to the setup jig.

An adjustable setup jig replicates the corners

The jig we built was the most important tool in this process because it had to match the angles and hold the two pieces of crown securely in place while we fastened the miter joint together.

The work surface for the jig was a sheet of ¾-in. AC plywood, reinforced with 2x4s underneath, placed over sawhorses. Perpendicular to one another atop this surface were two separate high-back fences, each with a front lip that would hold the molding in the proper spring angle.

One fence that ran along the edge of the table was fixed. The other, by way of wing nuts and elongated mounting holes in its base, could be adjusted 5° each way of square (the jig was also set up for 135° angles to accommodate the bay windows). A 90° control line was drawn on the table to let us know if the angle we were working on was greater or

Photo this page: Tom O'Brien

MATCHING AN IMPERFECT CORNER

A crew member uses a 3-ft. long bevel square to measure the angle of an inside corner (below). After wing nuts are locked, the shape is transferred to the adjustable setup jig (bottom photo), used to dry-fit and glue up the miter joint

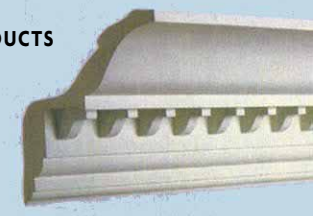
Sources of synthetic trim

Originally developed for exterior use, where large one-piece profiles are desirable and resistance to the elements is crucial, synthetic trim is now made for lots of uses. Listed below is a sampling of manufacturers and trim profiles.

ARCHITECTURAL PRODUCTS BY OUTWATER
22 Passaic St.
P.O. Box 347
Wood-Ridge, NJ
07075
(800) 835-4400

CHEMCREST ARCHITECTURAL PRODUCTS
830 King Edward St.
Winnipeg, MB,
Canada R3H 0P5
(800) 665-6653

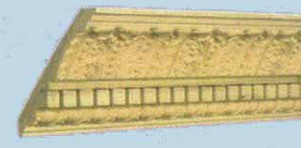
FOCAL POINT ARCHITECTURAL PRODUCTS
3006 Anaconda Road
Tarboro, NC 27886
(800) 662-5550



FYPON MOLDED MILLWORK
22 W. Pennsylvania Ave.
Stewartstown, PA 17363
(800) 537-5349

STYLE-MARK INC.
960 W. Barre Road
Archbold, OH 43502
(800) 446-3040

WHITE RIVER HARDWOODS
1197 Happy Hollow Road
Fayetteville, AR 72701
(800) 558-0119
(MonReale is a synthetic ornamentation applied to standard hardwood—red oak or poplar—molding.)



Sidebar photos: Judi Rutz

ASSEMBLING A PERFECT MITER

Wait a minute. That's upside down. Because the front edges of the molding are manufactured to more exacting tolerances than the backside, the manufacturer of this molding requires that all cuts be made face down.

Adhesive makes it permanent. After dry-fitting the miter cuts in the setup jig, a ¼-in. bead of proprietary adhesive (see p. 120) is applied to each side of the joint.

Pulling it all together. With the jig set to the exact dimensions of the corner where it will be installed, one worker holds the glued-up joint together while another secures it with drywall screws. Note how the shell pattern neatly turns the corner (inset photo below).

The hardest part is getting through the door. Synthetic crown is so strong yet light that two men can easily lift an entire room's worth into place. Complete preassembly is possible only where walls are less than 12 ft., the maximum length of this molding.

Tracing lines for glue minimizes the mess. A crew member runs out full-length ¼-in. beads of adhesive just inside pencil lines that denote top and bottom edges of the molding.

After the glue is applied, polyurethane crown is nailed up just like wood. To anchor the molding solidly while the adhesive cures, 8d finish nails are driven into the wall and ceiling framing.

A rag moistened with mineral spirits takes care of squeeze out. Glue that gets on the face of the molding is wiped off before it sets up. Glue that squeezes out and dries can be scraped off with a knife.

less than square and by how much. When we built the jig, we stopped the fences a few inches short of the inside corner to enable us to fasten the miter joint through the back with screws.

A sliding compound-miter saw is a must

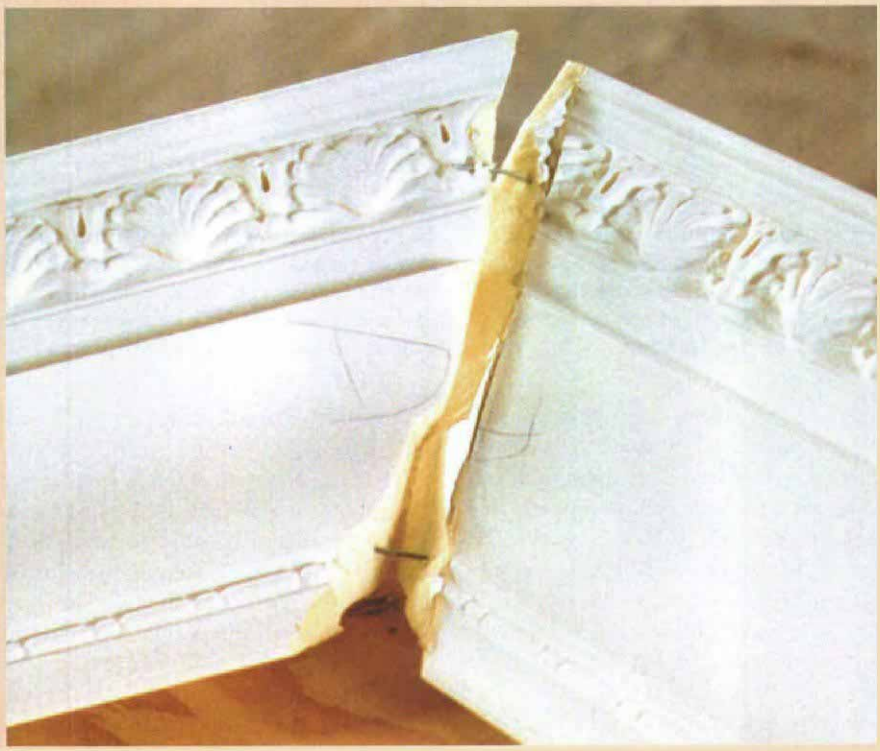
"Upside down and backward," the standard mantra for a carpenter cutting crown molding in a miter box, doesn't cut it when the crown molding is 9 in. wide. Fortunately, the manufacturer provided the proper angle and bevel settings to cut the miters laid flat in a sliding compound-miter saw, but to ensure accuracy, they insisted that their molding had to be cut face down (photo top left, facing page).

Of course, those angle settings applied only to perfectly square corners. With a little practice, we figured out how much to tweak the angle settings to get our first cuts close before we dry-fit them in the jig. (If we were to do another job of this size, I'd probably calculate those settings using the electronic Angle-Finder for crown molding that Bosch recently introduced; Bosch Power Tool Co., 877-267-2499.)

As if there wasn't enough complexity to this job, the molding we were using had a repeating shell pattern running along the bottom edge. Ideally, I wanted every miter to break in the center of a shell so that the pattern would turn the corner perfectly (inset photo, facing page). After the first corner, though, we were at the mercy of the length of the walls, so on successive corners, we had to be content with cutting the miters so that the adjacent pieces reflected a mirror image

THE RIGHT GLUE MAKES ALL THE DIFFERENCE

Don't think you can save money by using the cheap stuff. As a test, the author glued up one joint using the manufacturer's adhesive and another one with standard construction adhesive. The joint made with standard adhesive (photo above) was easily pulled apart, but the one made with the manufacturer's adhesive was stronger than the molding itself (photo below).



of each other. Getting a mirror image right took some trial and error. We'd make the first cuts a little long, check the fit in the jig and then fine-tune the settings on the saw before making the exact cuts.

Using a fine-tooth carbide blade, this material cut cleanly without splintering. However, the sawdust it produced clung to the saw like a magnet, requiring frequent cleaning with compressed air.

Once we were satisfied with the fit of a miter joint, we'd apply a ¼-in. bead of the manufacturer's proprietary adhesive to each side; then one crew member would draw the joint tightly together while another fastened it through the back with 2-in. drywall screws (bottom photo, p. 118).

The screws served mainly as clamps to secure the joint while the adhesive cured. Being the skeptical type, I glued up one miter joint with the $5-a-tube proprietary adhesive and another with $2 construction adhesive. We let them set up overnight and then tried to break them apart. The construction adhesive gave up easily, but the manufacturer's stuff proved stronger than the molding itself (photos left).

Small rooms are glued up in one piece

Making perfect miters on a worktable was only half the battle; we still had to hang the stuff on the walls. Fortunately, once the corners were screwed together, the moldings were solid but not heavy. So for the closets, small bathrooms and coffered ceilings, we found we could glue up all four corners on the table and install the whole shebang in one piece (top photo, p. 119). Of course, we had to be sure we could get through the doors and make the turn up to the ceiling.

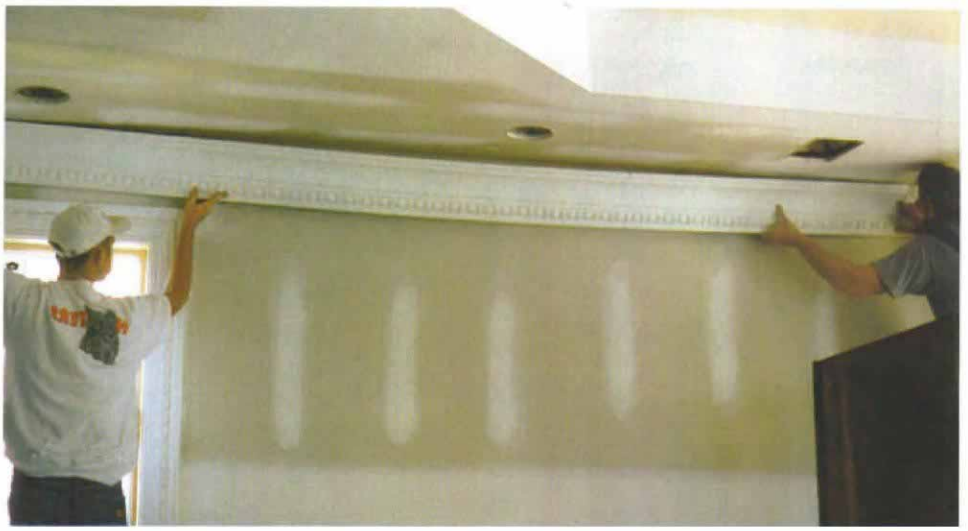
Unlike wood, this material had to be glued and nailed in place. To double-check our work and to minimize squeeze out, we dry-fit the molding in place and traced the top and bottom edges with a pencil. Then we lowered the molding and ran a ¼-in. bead of adhesive inside the lines (photo bottom left, p. 119).

After fitting the crown back in place, we fastened it with 8d finish nails driven into the wall and ceiling framing just as we would have done if it were wood (photo bottom center, p. 119). Despite our best efforts, glue would always squeeze out somewhere, so we kept plenty of rags and mineral spirits on hand for cleanup (photo bottom right, p. 119).

Large rooms are built up in sections

The maximum available length for this molding is 12 ft., so the crown for large rooms had

CREATING AN INVISIBLE BUTT JOINT



Spring long pieces into place. To make the seams disappear, butt sections are cut ¼ in. long, glued up and sprung into place.

Shim to align the faces. Because molding thicknesses are inconsistent, a shim here and there is necessary to blend the faces where they butt together.

A little dab'll do ya. With the miters preassembled and the seams tightly butted, a little bit of Spackle here and there is all it takes to fill in the gaps.

to be assembled in pieces. In these cases, we glued up and installed one corner section at a time, working our way around the room in a circular pattern, saving the least conspicuous corner for last. We worked this way because by the time we assembled the last corner, the chances that the shell patterns would meet perfectly were slim.

Wherever there was an outside miter, we joined two corner sections there; otherwise they were joined at a butt seam in the field. To ease carrying and installation, we built each corner section with one long leg and one short one. If a room was 14 ft. by 14 ft. for example, the first piece might have a full 12-ft. leg to the right of the corner and a 2-ft. leg to the left. The long leg of the second section would then butt square to the short leg of the first.

For a proper fit, we were instructed to cut our butt seams ¼ in. long, apply adhesive to both ends and then spring the long leg into place, forcing the joint tightly together (top photo). This pressure closed any gaps in the joint and allowed room for the molding to contract without opening a gap. While assembling butt joints, we discovered that the thickness of this molding varied from sample to sample, sometimes considerably. We often found ourselves having to add a shim behind one piece to make the faces come out even (center photo).

Do I like working with this stuff?

Following the instructions, we used vinyl spackling to fill minor gaps and imperfections. Where there were high spots in the joint, we pared them down with a sharp chisel, then lightly sanded and spackled (bottom photo). Once the Spackle was dry, we sanded it with 120-grit sandpaper and turned it over to the painter. Under a coat of paint, the butt joints almost disappeared.

After installing 8,600 linear ft. of casing, base and crown molding, my feelings about polyurethane trim remain ambivalent. I much prefer the smell of sawdust to foam; I still prefer to cope corners and minimize field seams. But I appreciate the creative possibilities these materials offer. At $12 a ft., the crown molding we used on this job is no bargain. But the Shell and Bellflower profiles would otherwise have been available only in plaster. I also really appreciate the material's stability: It has been over three years since we finished this job, and not a single miter joint has opened. □

David Mills is a carpenter and a contractor in Clover, South Carolina. Photos by the author, except where noted.