Stain-Grade Finishing On Site

Use premium materials and a methodical approach to achieve a cabinet-grade finish

by Robert Wilson

I'm an independent painting contractor, and do most of the finish work for Gary Striegler, a builder in Fayetteville, Ark. He built the entryway featured in this article — a pair of mahogany doors framed by built-up door casings and an arched pediment — using birch plywood panels, a combination of pine and poplar moldings, and poplar trim stock (see sidebar, page 5).

Mixing wood species isn't a problem when trim gets a high-quality paint finish, but under a clear finish the color variations become too obvious to ignore. Over the years, I've found ways to cost-effectively color-match the various substrates Gary uses in his trim assemblies; then I give the trim a furniture-like finish on site.

Prep

Like most high-quality wood doors, these mahogany units needed to be sealed with a finish shortly after delivery to maintain their warranty. After giving them a light sanding, I stained them with Sherwin-Williams Sher-Wood BAC dark mahogany wiping stain (800/474-3794, sherwin-williams.com), an oil-based product that brushes or wipes on easily and penetrates well. Once the stain had dried, I seal-coated the doors (more on this process below) and left them for Gary's crew to install.

Gary and his crew generally do a good job of sanding their trim before I return to the job site to paint, typically finishing up with a random orbit sander and 80- to 100-grit paper. However, that's still not quite fine enough for me, so I always go over the trim by hand with 120- to 150-grit paper. As I sand, I double-check for excess glue and glue marks, which will interfere with the finish.

It's actually possible to sand wood so smooth it won't accept stain easily, especially hardwoods like maple. This usually isn't

a problem with interior trim, but some custom shops ship unfinished cabinets that have been sanded with sandpaper as fine as 400 grit, which tends to seal up the grain so that the wood won't take any stain at all. When that happens, I lightly spray the surface with a 3-to-1 alcohol-water solution before staining. Since the solution evaporates quickly, it doesn't open up glue joints — but it stays on the surface long enough to open up the grain, so that the wood will accept stain. I never use this technique on poplar, though, because the wood will come out too dark.

Stain

Most builders' familiarity with wood stains begins and ends with the popular brands carried by hardware stores and lumberyards. But I don't use those stains very often (except with some hardwoods like oak and walnut), because they tend to produce a splotchy finish unless the wood has been pretreated with a sealer. I usually use Sherwin-Williams BAC wiping stains or (less frequently) its Wood Classics interior oil stains, which are a little gummier and therefore a little harder to work with.

On softwoods like pine, I sometimes use Old Masters oil-based gel stains (800/747-3436, myoldmasters.com), which are good for mixing and matching colors. First, though, I condition the wood with a stain controller that I make from a 50-50 blend of oil-based varnish and paint thinner, which prevents the stain from being unevenly absorbed by the wood.

Color. On this project, I wanted to match the color of the stained and sealed doors. In other cases, the general contractor or client may have a specific wood color and shade in mind — light or dark, brown or red, or something else. Either way, sample boards are critical to the color-matching process, and I make up at least one for each species used in the trim assembly (**see Figure 1**).

To color-match the poplar with the doors, for example, I started with a dark mahogany stain. Poplar is unpredictable and can turn out looking too dark or even slightly green, while the same stain on birch plywood may not be dark enough. So, drawing from experience and a little bit of guesswork, I added other stains to the mix as necessary until my sample boards closely matched the desired color. Sometimes, a paint store can help you match stain colors, but more often it's a process of trial and error.

I typically mix my stains in old plastic water bottles with their tops removed, adding one stain at a time until the color is just right. To make a color lighter, I add small amounts of paint thinner, and for difficult matches I've even resorted to adding a little oil-based house paint. I always write down the ratios as I go so I can duplicate the color later, and I repeat this process for each type of wood used in the trim assembly.

I apply stains in a single coat using a

Figure 1. The author prepared sample boards of poplar and birch plywood, the materials used to build the entry trim (far left), then blended different stain colors together to find the combination that would most closely match the color of the stained and seal-coated mahogany entry doors (left).

Figure 2. The author brushes the oil-based stain onto each section of trim (left), then wipes it off with a rag to remove the excess and even out the finish (above). After the stain has dried overnight, the trim will receive two coats of fast-drying vinyl sanding sealer.

china bristle brush, then wipe off the surface with a rag to even out the color (**Figure 2**). If hidden glue or water spots emerge while I'm staining, I try to sand out the spot immediately with 150- or 180-grit sandpaper, then blend the spot back in with more stain, rather than trying to fix the problem later, after the stain has dried.

Sealer

Sanding sealer partially fills the grain, helps create a smoother final finish, and improves moisture resistance. There are a number of sealers on the market from various manufacturers, but I prefer to use Sher-Wood Fast Dry vinyl sealer because I know that it's compatible with BAC stains and the top coats I use. In most cases, I spray on two coats using a Graco 595 airless spray rig with a #411 tip, which has a 0.011-inch opening and an 8-inch spray pattern at 12 inches.

I allow at least 30 minutes drying time between coats and always let the second coat of sanding sealer dry overnight. Then I sand everything thoroughly with fine-grit 3M sanding sponges (866/279-1288, 3m.com) to prepare the trim for the top coat (**Figure 3, next page**). To remove the sanding dust from cracks and grooves, I blow the trim off with compressed air before wiping the surface down with a rag dampened with mineral spirits.

I have a gallon bucket filled with jars of different-colored Minwax putty (800/523-9299, minwax.com), which I use to fill in nail holes. To get the right color match, I'll mix up two or three slightly different colored balls of putty and choose the one that most closely matches the shade of the wood around each hole I'm filling. Minwax also makes stain markers, which I use for glue marks or if the putty doesn't quite match. I also use the stain markers to darken lighter grain patterns that would otherwise be too prominent.

Top Coat

I sprayed the doors and trim on this job with pre-catalyzed Sherwin-Williams CAB (cellulose acetate butyrate) acrylic lacquer with a medium rubbed gloss, using the same spray setup I used to apply the sanding sealer but with a new #411 tip to improve atomization. Though this product is intended for shop use, I've had good luck spraying it on site (VOC regulations limit availability in some areas). It's a non-yellowing finish that can be tinted to even out the color or make the results redder, browner, or darker. Sherwin-Williams recommends the use of specific colorants, but I've found that I can simply add a few ounces of the same oil-based stain used on the trim to each 5-gallon container of lacquer. I mix lacquer thinner with the stain before adding it to the lacquer to prevent the stain from coagulating and developing a cottage cheese-like consistency (though adding too much stain and lacquer thinner

Figure 3. Before the sealed doors and trim can be top-coated, they must be lightly sanded again, typically with fine-grit sanding sponges or 220-grit sandpaper (A). Compressed air is handy for removing sanding dust from cracks (B), but the trim must also be wiped down with a rag dipped in mineral spirits. Then three to four coats of CAB acrylic lacquer are sprayed onto the entire assembly, with a light sanding between coats (C, D).

can dull the finish or make it look muddy). On this project, I didn't have to stain the top coat — but if I had, I would have tinted only the initial coats and built up to the color with multiple passes before spraying a clear finish on the final coat.

Lacquer retarder can be added in very humid conditions to slow down the curing process and avoid trapping moisture in the finish. If flushing, rainbows, and flat or shiny spots develop after the first coat, I mix lacquer retarder with lacquer thinner and spray it onto the finish before applying any additional coats. This seems to open up the finish enough to get rid of excess moisture without damaging it.

I typically spray three or four coats of lacquer, allowing 30 to 40 minutes drying time between coats. After each coat except the last, I go over the trim lightly with a fine sanding block to knock down any light fuzz or smooth out splotches in the finish. Since this finish is for interiors only, I finished the exterior door surfaces with several coats of brushed-on McCloskey Man O'War spar marine varnish (877/825-7727, valsparglobal.com).

I always paint walls after the trim, so I don't bother masking anything off at this stage, and I use a very light touch as I spray. But after the top coat has cured a few days, I mask off the trim with 3M's blue tape, keeping it back about a dime's width from the edge of the wall. After spraying but before removing the tape, I run a bead of caulk along this joint using a colored caulking that matches the color of the trim. When the tape is removed, the caulk line virtually disappears.

***Robert Wilson** is a painting contractor in Rogers, Ark.*

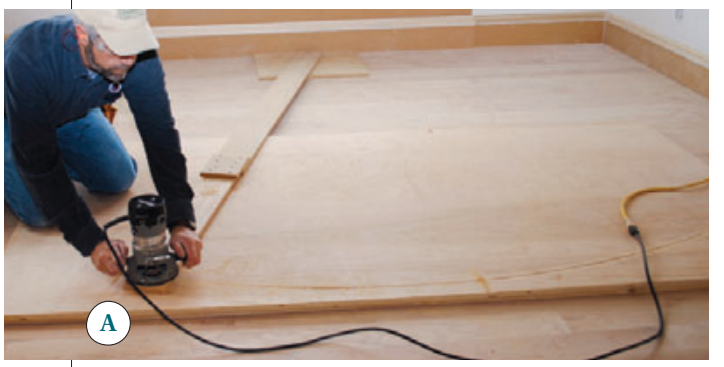
Making Radius Trim for an Arched Pediment

by Gary Striegler

The mahogany doors shown in this article were flanked with frame-and-panel pilasters and capped with an arched pediment. I assembled the pilasters with pocket screws, sizing them so that the pediment would be no wider than 8 feet and could be cut from a single sheet of birch plywood. The pediment consists of three basic parts: a plywood body, which is a segmental arch with an 8-foot radius, laid out so that the arch starts about 4 inches up each edge **(A)**; a transitional molding that covers the joint between the plywood and the casing below; and a curved molding at the top.

To look right, the crown molding capping the pediment needed to have a beefy profile. I don't have a shaper or molder that could accommodate the size I wanted, so I strip-laminated three wide curved blanks in thicknesses that could be profiled with a router, then assembled them into a built-up crown. Using 3/16-inch poplar strips 2½ inches wide, I glued up the three blanks at the same time **(B)**, separating the individual blanks with dry joints and tightening the radius slightly to allow for springback.

I then profiled the blanks separately and combined them to make one large piece of trim. The flat top cap measures about 5/16 inch thick and has a square edge, while the other two laminations measure about 13/16 inch thick. I cut the profile on the middle section with a ¾-inch roundover bit and used a ⅝-inch cove bit to cut the profile on the lower section **(C)**. Since I oversized each section, the bearing on my router bit had plenty of clearance while I profiled each piece; to prevent the router from tipping, I screwed a block of wood to the router base **(D)**. I also profiled short sections of matching straight material to use for the mitered returns. When installing the three-part molding, I started with the middle section, then fit the bottom and top sections and added the returns. Finally, I added the transitional molding, a combination of 11/16-inch-by-2⅛-inch and ⅜-inch-by-½-inch panel mold profiles, to hide the joint between the casing trim and the plywood **(E)**.



These days I can find prehung raised panel mahogany doors like the ones here for less than $2,000. I spent another $200 in materials to trim the doors, which took about 20 hours of additional labor. Robert finished other trim work while on the site, but estimates that he spent about six hours sanding, staining, and finishing the doors and trim. His materials cost less than $100, and included a gallon each of sealer and topcoat and about one quart's worth of stains.

***Gary Striegler** is a custom builder in Fayetteville, Ark.*