Spray Finish

Waterborne lacquer and a modest spray setup yield quick, quality painted work

BY TYLER GRACE

People often ask why I spray finish a lot of my own cabinetry, built-ins, and trim on site. The answer depends on why you're asking the question. If you're wondering why I spray finish instead of using prefinished options, it's because a spray finish means more leeway for caulking transitions, filling nail holes, plugging screws, and sanding joints that need a bit of extra touchup work. If you're questioning my choice of a spray finish over a brushed finish, the answer is that a spray finish is faster to apply and smoother to the touch. If you're wondering why anybody would bear the hassle of doing a spray finish on site instead of in a dedicated booth, I'd ask if you were offering me a bigger shop. And if you're asking why I spray finish on my own rather than pick up the phone and call a painter to do the spraying for me, well, that just comes down to how much control I want over my work, and whether I'd rather pay a subcontractor or myself.

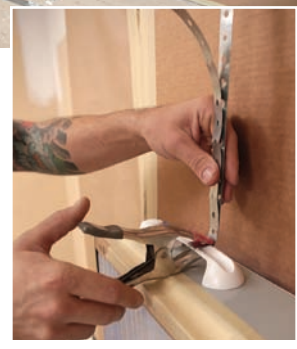
The truth is that spraying on site isn't always the best option—it takes time to set up and break down an on-site spray job, and time is money. But spraying on site has some definite perks for finish carpenters and remodelers who want to offer their customers one-stop shopping for their custom finish work. Besides, high-quality spray equipment is less expensive than ever, and modern waterborne finishes are safer, are easier to work with, and dry much faster than their solvent-based predecessors.

On a medium-size job like finishing the mantel, overmantel, bookcases, and console cabinet pictured here, I can easily spray two coats of shellac, two coats of primer, and two coats of waterborne lacquer in

PREP

Before spraying on site, you need to thoroughly clean the room to eliminate the chance of swirling dust, protect surfaces in the line of fire, set up steady airflow to draw away overspray, and protect yourself with the right equipment. Because I mostly use waterborne primer and lacquer, which are fairly safe compared to solvent-based finishes, ordinary box fans suffice for air movement, and a particulate respirator is all I need to protect my lungs.

Isolate face frames. *If the cabinetry has a different finish or color on the inside, apply painter's tape just inside the edge of the face frame to ensure a crisp line, then slide slightly oversize cardboard into place over the tape.*



Full-scope masking. *I use a combination of cardboard, Ram Board, kraft paper, painter's plastic, and tape to protect all of the doors, windows, floors, walls, and—if they can't be removed—lights, hinges and hardware, and other finished surfaces. After masking off the area around the windows, I set a finish nail into the top edge of the casing to secure the metal strapping hanging in front of the window. I use the strapping to suspend the box fans, each of which also receives a furnace filter to catch overspray and protect the motor.*

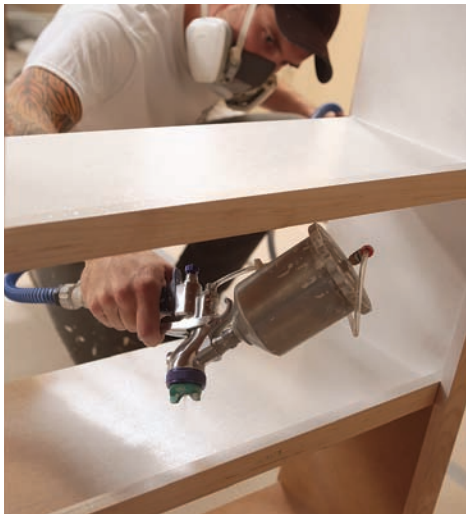
On Site

PRIME

Although often treated as nothing more than an obligatory step in the painting sequence, primer deserves as much care as the top coats that come after it. Aim for a smooth, consistent finish, sanding between each coat to get the surface completely level for the finish that comes later.

Seal with shellac. *Waterborne primer will raise the grain on raw wood, so I start by applying two coats of thinned, dewaxed shellac to any stock that isn't factory primed, and to any spots where the factory primer was sanded through.*

Open for airflow. *Rather than spraying into closed cabinetry, which can cause blowback, leave the backs off and set the cabinetry in front of the exhaust fans so that airflow helps draw away the overspray.*



Start upside down. *Even though all of the surfaces will be sanded, I spray cabinetry upside down so that overspray will land on what will be the underside of the shelves, where a dead-smooth surface is less crucial.*

Simple spray rack. *For small parts that need to be coated on both sides, I suspend the pieces from coat hangers using small hooks spun to face opposing directions, all hung from an old rolling garment rack.*

Sponge sanding. *After priming, sand all surfaces to ensure a glass-smooth surface that's ready for top coats. I use a 150-grit sanding sponge, then I vacuum and use a tack cloth to pick up every bit of dust.*

a single day, with results that are as good as you'd see in any cabinet shop.

Experience will guide your workflow

If I'm building cabinetry on site, I generally set up a shop in the room where the work will be installed. Since I'm already isolating and protecting the entire room when setting up my tools, it's easy to get it ready for spraying too. In addition to vacuuming thoroughly, set up includes masking the room and ensuring proper airflow.

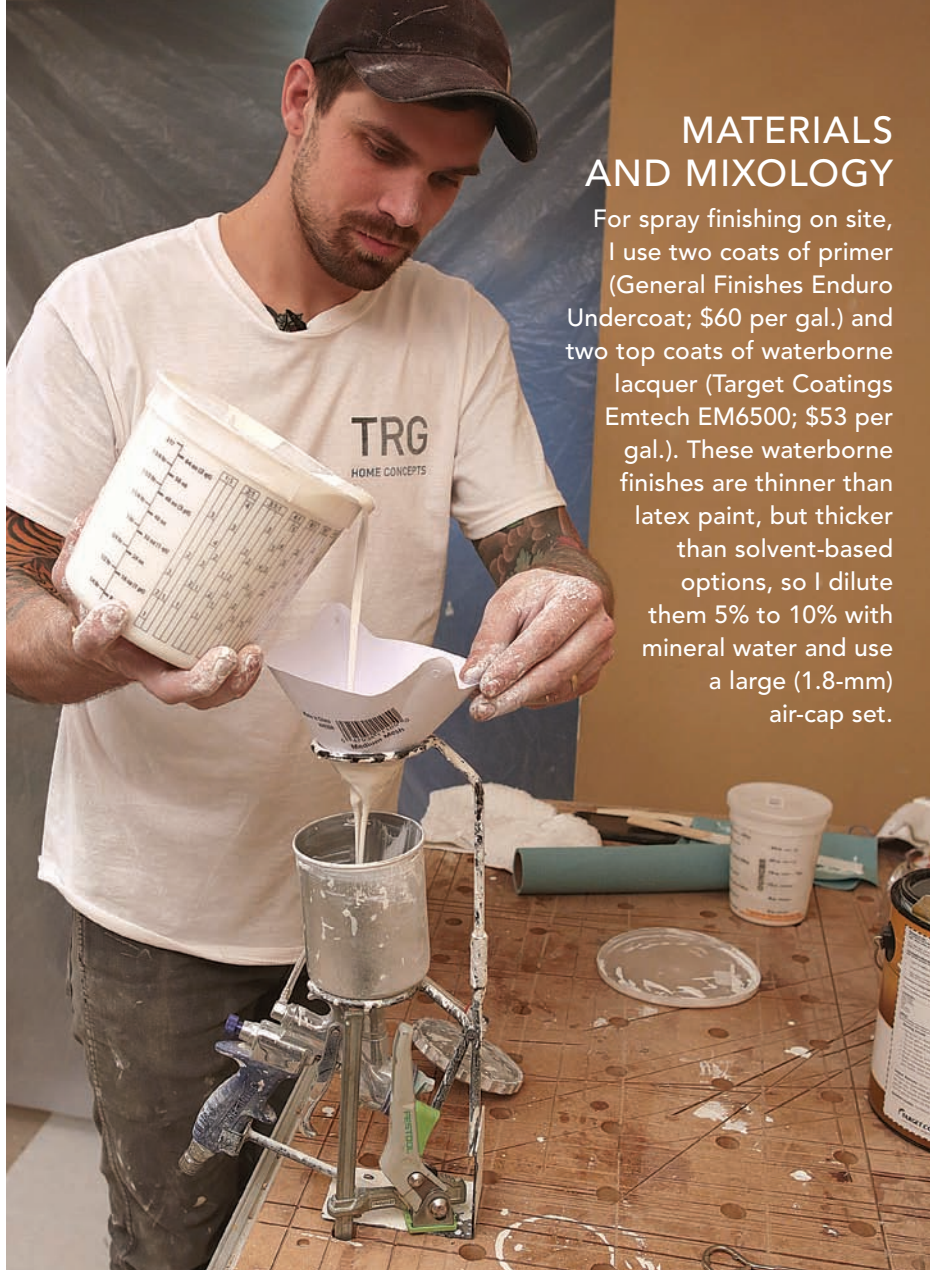
Spraying on site also means deciding what should be installed before finishing and what should be left free to move around. Most of this decision comes down to the risk of overspray. When spraying quick-curing waterborne finishes into enclosed spaces, the overspray can blow back toward you and settle on surfaces that are already beginning to cure, leaving a gritty finish. Trimwork and relatively flat items aren't as problematic as boxes, which is why I chose to install this mantel and overmantel and then finish them in place. I also fit and fastened the console cabinet because I only needed to spray the outside of that piece (the interior was built using prefinished plywood).

The bookcases were scribed to fit, but then pulled out of position and placed in front of the windows and fans for better ventilation while spraying. Whenever possible in a situation like this one, I leave the backs off and spray them separately so there will be good airflow to pull away the overspray.

The right products used in the right sequence

After the cabinets are fabricated, I sand everything to 150 grit—first using a random orbital sander and then hand-sanding—being sure to ease any hard or sharp edges to aid with paint adhesion in these areas.

Waterborne coatings raise wood grain much more than solvent-based coatings. If you don't combat this reality early on, you'll fight it the entire finishing process. You could spray the primer on raw wood and then sand down the raised grain, but sanding off most of the primer you've just sprayed doesn't make much sense to me. Instead, I coat the unprimed wood and MDF with thinned dewaxed shellac. The shellac seals the wood without raising the grain, dries within minutes, and is compatible with just about anything you'd spray on top of it. The only hassle is that, because shellac is solvent-based, you



MATERIALS AND MIXOLOGY

For spray finishing on site, I use two coats of primer (General Finishes Enduro Undercoat; $60 per gal.) and two top coats of waterborne lacquer (Target Coatings Emtech EM6500; $53 per gal.). These waterborne finishes are thinner than latex paint, but thicker than solvent-based options, so I dilute them 5% to 10% with mineral water and use a large (1.8-mm) air-cap set.

A MODEST SETUP

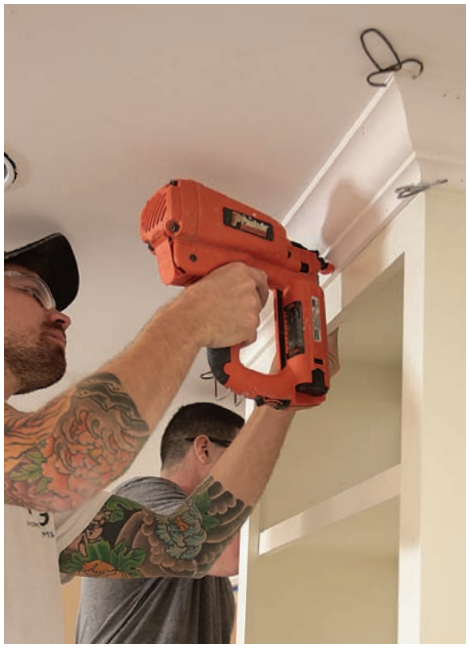
For anyone looking to break into spray finishing, I recommend looking at a high-volume low-pressure (HVLP) turbine unit. These all-in-one setups are simple to operate, and generally yield high-quality results. The sky is the limit on prices for these tools, but a relatively modest investment of $1,000 will be more than sufficient to get you up and running in the spray game. I use a Fuji Mini-Mite 4 gravity-fed setup, which sells for about $800 and includes a 25-ft. hose and a 1.3-mm air-cap set. To that I added medium (1.5-mm) and large (1.8-mm) air-cap kits, a cleaning kit, extra parts, and a 6-ft. flexible whip hose, which allows for easier maneuvering when spraying.

PAINT

The top coats on any piece should only be for color. If you're looking to achieve build or correct any inconsistencies in the previous coats, you didn't do an adequate job with the prep or priming sequences. Most importantly, take the time to test-spray on scraps or masking and adjust your settings before spraying the actual work.

To see a video of Tyler's spraying process, visit FineHomebuilding.com/magazine.

Finish flatwork in place. *Relatively flat or open surfaces are less prone to blowback, so they can be leaned against a wall, set on a table, or installed and painted in place.*



In with the trim. *After repositioning and fastening the built-ins, apply the prefinished trim elements. Every fastener used at this stage must be spackled—I use Dap Crackshot—and spot finished, so be frugal with your fasteners.*

Caulk the transitions. *Seams between components look best when sealed with caulk. After taping both sides of each joint, I apply Sherwin Williams SherMax and smooth it with a wet finger, then peel off the tape for a perfect bead.*

Spot finish. *For blending and touch-up work, I set the air cap to the focused setting so I can limit my spray pattern to just the spot where I want it without creating a lot of overspray.*

either need to break down and thoroughly clean your sprayer before moving on to the primer coats, or have a dedicated gun. After years of cleaning between finishes, I bought a second gun just for shellac—a basic AeroJet RS1 spray gun for about $130.

After sealing all the raw wood, I apply two coats of a waterborne, high-build, sandable primer, knocking down the surface between coats to ensure I'm creating a glass-smooth base for the top coats. If site conditions are ideal—warm and dry—I'm usually ready to sand the primer within one hour of applying it. I use 150-grit sanding sponges, then vacuum the dust and wipe it with a tack cloth if needed; whatever it takes to remove any residual dust that could interfere with the adhesion of the finish. After the second round of primer, vacuuming, and tacking, the piece is ready for the top coats.

The top coats of waterborne lacquer are applied in the same sequence as the primer coats, but I switch from the 150-grit sanding sponges to either 220-grit or 320-grit between coats. At this point, the sandpaper is simply scuffing the surface so the finish has something to bite into.

When spraying all coats, I apply the finish in slow passes, holding the gun perpendicular to and 6 in. to 12 in. away from the surface being sprayed. To avoid buildup, it's important to start spraying before moving the gun over the surface, being sure to keep steady pressure on the trigger until each pass is finished. This method, when paired with passes that overlap by about 50%, ensures an even build and a perfect sheen.

Touch it up in place

After everything is coated, I re-install the cabinet backs, re-install the cabinets (which have already been scribed for a perfect fit), and trim out the remainder of the casework with stock that I've already primed and top-coated prior to cutting and fastening.

After installing the trim, I putty nail holes, caulk any transitions, and then touch up the trim right in place. This way, every part of the cabinetry and trim appears as if it is one cohesive piece with a consistent finish, reaffirming the wonderful results you can achieve by spraying on site. □

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Photos by Brian McAward.

GET YOUR SPRAYER DIALED IN

Knowing the quirks of your sprayer is crucial to maintaining a proper balance between spray pattern and film thickness, and this comes down to understanding three settings on the spray gun: airflow, material, and air-cap orientation. The key is to make practice passes on masking paper to ensure you have the right results.

1 Airflow to the gun will affect the amount of atomization and overspray. Ideally, use the least amount of air possible while still maintaining full atomization. You want the material to be fully atomized so the finish is completely broken apart without large particles or splatters appearing anywhere.

2 Adjusting the amount of material that comes through the needle allows you to match the volume of finish with the pattern. Spraying too thinly will leave a gritty finish that does not level out correctly. Spraying too heavily will lead to sags and runs and lengthen the cure time. But don't worry if it doesn't look perfect while wet. The goal, unlike with solvent-based finishes, is to get a heavy enough coat of waterborne finish on the surface that it will level out as intended. Generally, I aim for a 2-mil to 3-mil wet-film thickness, which can be checked with a gauge (photos below).

3 Most air caps allow you to spray in three patterns: a horizontal fan, a vertical fan, or an isolated point. Adjust the width of your spray pattern and volume of finish to correspond with the item you are spraying. If you're spraying a large flat area, use a wide fan pattern. If you're touching up a caulk line or nail holes, dial the spray pattern to a small point.