Sand Between Coats for a Flawless Finish

New products have changed the game

BY JEFF JEWITT

Whether you spray, brush, or wipe, one of the keys to a great finish is learning to sand between coats. When I began finishing in the 1970s, there weren't many choices when it came to sanding a finish: Steel wool shed tiny hairs that got embedded in the finish; regular sandpaper (if you could find it above 240 grit) clogged quickly when sanding shellac or lacquer; and if you wanted to flatten defects between coats of finish, you used wet-or-dry paper, which was messy and made it hard to gauge your progress.

Today, not only are there much better choices among consumer-oriented abrasives, but the Internet also has given everyone access to industrial abrasives. I'll narrow down what to use with film-forming finishes like lacquer, varnish, and shellac (in-the-wood 100% oil finishes and thin applications of oil/varnish mixes typically don't require sanding). I'll describe new products to use for dry-sanding between coats, and I'll cover the better use of wet-or-dry paper for sanding the final coat in preparation for the rubbing-out process.

Fine grits and a light touch

Going from sanding bare wood to sanding a finish involves a change of gears. Instead of power-sanding using grits mostly P220

Photos, except where noted: Mark Schofield; product shots: John Tetreault

or coarser, you typically hand-sand using grits P320 and finer.

The first coat of finish, whether a purpose-made sealer or just a thinned coat of the final finish, generally leaves a rough surface with raised grain embedded in the finish. At this stage you aren't flattening the surface, just smoothing it, so there is no need to use a sanding block. Using P320-grit stearated paper, you can make a pad by folding a quarter sheet into thirds. This pad works best if you have to get into corners and other tight areas. Otherwise, you can just grip a quarter-sheet of paper by wrapping one corner around your pinkie and pinching the other corner between your thumb and index finger. An alternative is pressure-sensitive adhesive (PSA) paper in the same grit (P320) that comes in 2¾-in.-wide rolls. You can tear off only what you need and temporarily stick it to your fingers.

Another option, which costs a bit more, is hook-and-loop pads that allow you to hand-sand using disks designed for random-orbit sanders. If the sandpaper starts to load up with debris or corns, I swipe the grit side of the paper against a piece of thick carpet (Berber is best). You also can swipe it on a gray abrasive pad.

It's important to remove the residue after each sanding, or it will cause problems with the next coat of finish. If your finish is oil-based, solvent lacquer, or shellac, dampen a clean cotton or microfiber cloth with naphtha or mineral spirits and wipe away the debris. I prefer naphtha because it evaporates faster and leaves a little less oily residue. For waterborne finishes, I make a mixture of 5% denatured alcohol in tap water (roughly 1 oz. denatured alcohol to 16 oz. water). It's OK to follow the solvent

Stearated sandpaper: No more clogging

The biggest advance in sanding between coats of finish has been the increasing availability and improving quality of stearated sandpaper. A waxy-feeling powder, zinc or calcium stearate (or a mixture), is incorporated into either aluminum-oxide or silicon-carbide sandpaper. The stearate prevents the dry finish residue from sticking and forming clumps, or corns, or clogging the spaces between the abrasive particles.

Dry-sanding between finish coats is better than wet-sanding because it allows you to see what you're doing much more clearly. If a surface is wet with lubricant, you could be sanding right through the sealer or finish because the lubricant creates an illusion of finish on the wood.

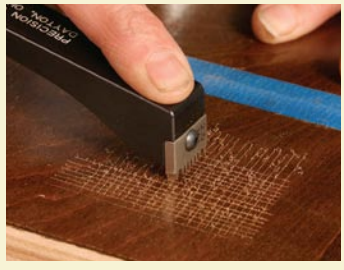
Myth-buster: New paper works with water-based finishes, too

Tough test reveals the truth. *Jewitt applied eight waterborne finishes to a sample board and then sanded sections with different stearated sandpapers before adding a final coat of each finish.*

I've always assumed that stearated sandpaper caused adhesion problems with waterborne finishes. However, after finding little hard evidence, I decided to test several consumer and industrial sandpapers with a variety of waterborne finishes.

I applied one coat of each finish to a separate sample board. When it was dry, I divided the board into sections and sanded this coat smooth with a variety of P320-grit stearated sandpapers. After I removed the sanding residue, I applied another coat of finish and after 72 hours, evaluated the surface for flow-out and adhesion (right).

I found no compatibility issues with any of the sandpapers and waterborne finishes. If you use a premium stearated paper, you'll have no problems as long as you remove the residue after sanding.



Deep scratches. *Jewitt used a special tool to scratch a pattern in the cured finish.*

Perfect adhesion. *No finish from the scratched area stuck to the tape when he pulled it away.*

How to handle flat surfaces

2 WAYS TO HOLD PAPER

Fold into thirds for tight spots. *Fold a quarter sheet of sandpaper into thirds. All the paper can still be used but there is no grit-on-grit contact.*

Sand inside corners. *Folding the sheet into thirds allows you to work your way into tight spots.*

Hand sander. *For sanding flat surfaces, just wrap a corner of the sheet around your little finger and grip the opposite corner between your index finger and thumb.*

2 WAYS TO USE DISKS

Handy pad. *You can hand-sand using disks designed for random-orbit sanders by attaching them to a Velcro-backed pad.*

TIP

KEEP SANDPAPER CLEAN

Unlike power sanders with onboard dust extraction, hand-sanding can clog the paper quickly. A quick wipe on a carpet remnant gets it clean again.

wipe with a tack cloth, but most tack rags can leave a residue that will interfere with the adhesion of waterborne finishes. One waterborne-friendly tack cloth is 3M's item No. 03192.

Higher grits for subsequent coats—After you have smoothed the sealer coat and applied the first real coat of finish, you should generally use P400- or P600-grit paper to sand; otherwise, you might see tiny sanding scratches in finishes that don't melt into each other, such as oil-based products and most waterborne ones.

You can use a power sander on large, flat surfaces, once you have built up enough finish thickness (at least four to six coats). Use caution when sanding, staying away from the edges and using P400-grit paper or higher. For better visibility, I always do this with dust extraction. The better papers out there have holes punched to match the ports on the sanding pad, or are made up of a mesh like Mirka Abranet. An industrial product called Clean-Sand by 3M is disk paper with a spiral progression of small holes for dust extraction.

Special products for moldings, carvings, and turnings—Although you can use sheet sandpaper with shopmade or commercial profiled sanding blocks on gentle profiles, this won't work on sharp curves and other extreme profiles. For these areas, use ultra-flexible sanding sponges or a synthetic steel-wool substitute.

TIP

REMOVE THE DUST

It is very important to remove all the sanding residue before applying the next coat of finish. For solvent-based finishes, dampen a cloth with naphtha or mineral spirits. The former dries faster (but is harder to spell).

Neither of these products has stearates because the face is more open and clogging isn't an issue. After use, most of them can be cleaned with soapy water and re-used. I like ultrathin synthetic steel wool, which more easily conforms to profiles and turnings. Choices include Mirka's Mirlon Total and 3M's Multi-Flex, both of which are available in a convenient roll, but look for 3M's SandBlaster flexible pads, which

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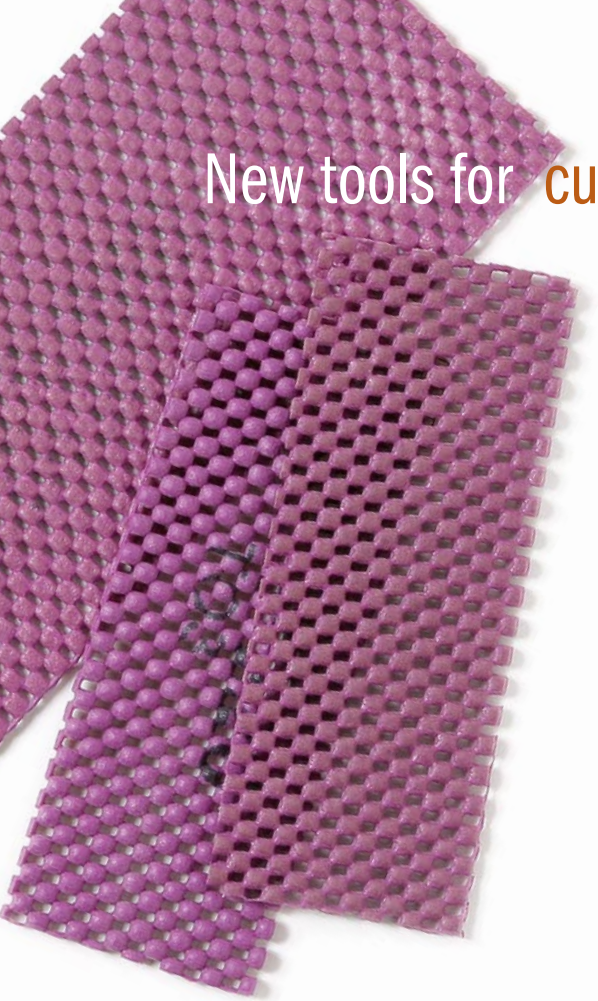
Power-sanding comes later. *Once you have applied five or six coats of finish, you can safely use a random-orbit sander equipped with P400-grit disks.*

New disks, better dust extraction. *Through-the-pad dust extraction has been one of the great innovations in wood finishing. The latest disks work even better and fit all sander models regardless of their hole configuration. Mirka's Abranet is an abrasive-coated mesh (top), while 3M's Clean-Sand disks have spirals of small holes (below).*

New tools for curves and carvings



Foam mesh. *3M's Sandblaster is a drawer-liner type of foam mesh coated with abrasive. It can be folded over to reach into tight corners or wrapped around curves.*

Abrasive pads. *These pads come in a variety of grits and are thin enough to get into carvings.*

Sticky paper. *Adhesive-backed sandpaper is useful for sanding narrow surfaces. Simply stick it to a finger.*

last a bit longer and are easier to find at most home centers and hardware stores.

On thin, flat areas like the inside edge of a picture frame or door, hold the pad with your thumb on top and the rest of your fingers underneath. This keeps it level. Or just use a small piece of the PSA paper mentioned earlier.

Wet-or-dry paper still the best for final flattening

Unlike stearated sandpaper, wet-or-dry sandpaper can be either FEPA (P) or CAMI graded. Make sure you know what you're using, because a P600 is equivalent to just under a CAMI 400 (for a comparison of grits, see Finish Line: "True Grit," *FWW* #176). All FEPA-graded sandpaper should have a P before the grit number; if there is no P, assume it's CAMI grade unless otherwise

Sanding sponges. *Less flexible than the other products, sanding sponges are good for gentle curves and can be washed out when finished.*

Switch to wet sanding on the final coat

specified. One feature of wet-or-dry paper is that you can get it in grits up to 2,000 and sometimes higher. If you have any trouble finding it, try an automotive parts supplier.

Wet-or-dry sandpaper is a very sharp and fast-cutting abrasive and works best for removing final defects and flattening the finish prior to rubbing out (where you polish the flattened surface to the desired sheen). You can use mineral spirits, a light mineral oil called paraffin or rubbing oil, or soapy water as a lubricant. Of the three, soapy water is the least messy, though it seems not to cut as fast or as well as the other two. I add a capful of Dawn dishwashing liquid for every pint (16 oz.) of tap water, and then apply the mixture using a plant mister.

Start with a quarter-sheet of P600-grit paper wrapped around a cork, or a cork-faced, block. Spray some lubricant on the surface and begin sanding with the grain if possible. On a top, I typically rub the outside 3 in. first so I can focus on keeping the block flat and not tipping it off an edge (that happens naturally with my arm motion if I'm taking a long sweep from one end to the other). Once I've gone around a few times, I come back and do the center. Wipe away the slurry and examine the surface. You're done when the surface looks about 80% to 90% dull. Don't try to make the entire surface perfectly dull, because you'll probably sand through the finish.

After using the wet-or-dry sandpaper, you can follow up with paste wax applied with 0000 steel wool for a satin finish. An alternative to steel wool is a very fine abrasive foam pad such as Mirka's Abralon. The 1,000, 2,000 and 4,000 grits can be used for sheens ranging from dull to satin. You don't need compounds or polishes with these products. For a gloss finish, follow the steps in "High-Gloss Finish Made Simple" (*FWW* #206). □

Flat surfaces. *Wet-or-dry sandpaper is the best way to smooth the surface prior to rubbing out the finish. Use soapy water as a lubricant and wipe away the slurry to check your progress.*

Tight curves. *Use 0000 steel wool lubricated with soapy water to remove the gloss on curved surfaces.*

TIP

ALL GRIT NUMBERS AREN'T THE SAME

Almost all stearated paper is FEPA (P) graded, but wet-or-dry papers can be either P or CAMI graded. The difference is significant in the higher grits, so make sure you know what you're using.

Finish up with wax. *Apply some paste wax with Liberon's 0000 steel wool and then buff the surface with a cotton cloth for a smooth, satin finish.*

A frequent writer on finishing, Jeff Jewitt lives in Cleveland, Ohio. His latest book and DVD, Spray Finishing Made Simple *(The Taunton Press) was released in February.*