

Padding on Shellac

A durable finish that's quick to apply, easy to repair

by Jeff Jewitt



Padding on shellac doesn't require lots of fancy equipment. You can get a beautiful finish with a minimum of materials: shel-

lac flakes, solvent, boiled linseed oil and wax. The author finished the tabletop in the background by padding on shellac.

Padding shellac is a low-tech process that is perfectly suited to the professional and amateur finisher. The advantages of shellac are numerous. It is a nontoxic, Food and Drug Administration-approved natural resin. The carrier for shellac, ethanol, is relatively nontoxic (ethanol is the same kind of alcohol that's found in liquor), and the fumes are not unpleasant. Shellac dries quickly, so dust does not pose a great problem, and finishes can be done in two to three days.

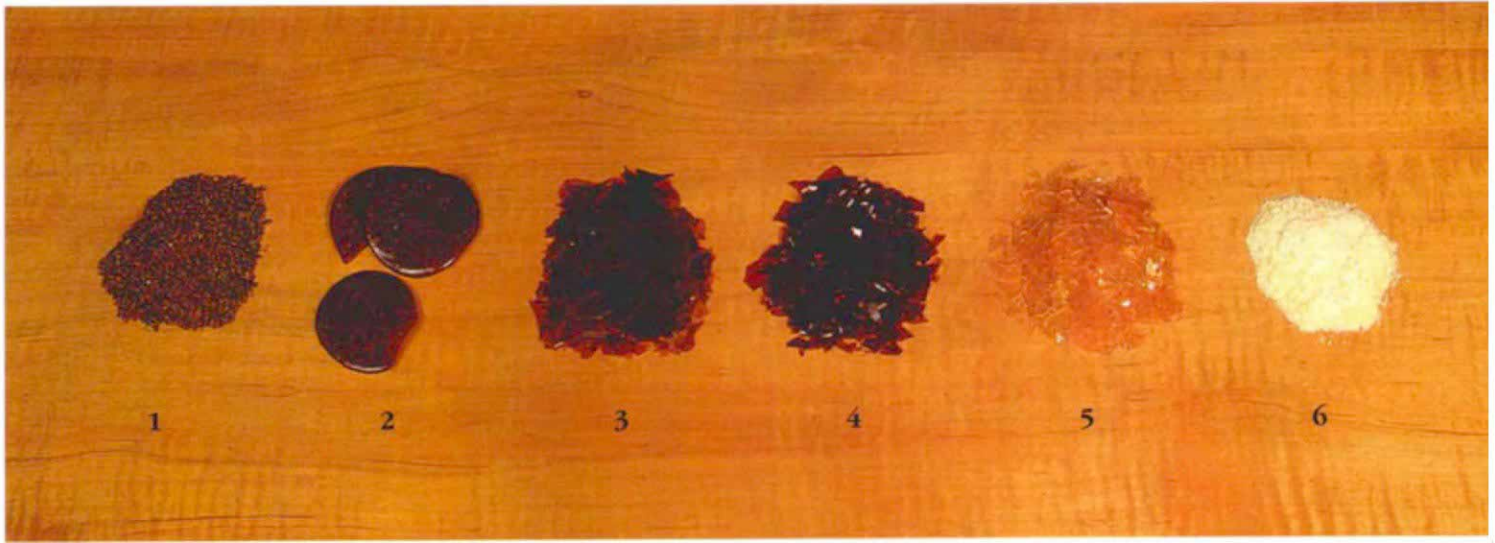
Applying shellac by padding it on is an easy technique to master. I rub on a freshly dissolved shellac solution over a sealer coat of oil, which increases the finish depth. I let each coat dry overnight and continue rubbing on shellac until I've achieved the desired

depth and gloss I'm after. Shellac is a good-looking, durable finish that can easily be repaired if damaged. But because shellac can be dissolved by alcohol, this finish is not a good choice for a bar top.

The materials for padding shellac are inexpensive and easy to obtain through most finishing companies (see the sources of supply box on p. 62). They consist of shellac, denatured alcohol, padding doth, a drying oil such as boiled linseed oil or tung oil, sandpaper and synthetic steel wool.

The materials

I prefer to make my own shellac solution of 2 lbs. of dry shellac flakes dissolved in a gallon of alcohol (a 2-lb. cut; for more on this,



Shellac in dry form is available in a variety of grades. Seedlac (1) and buttonlac (2) are among the least refined forms of shellac. The most common shellac is #1 orange (3). The next two

are more highly refined dewaxed shellacs, available in dark-golden brown (4) and pale amber (5). Bleached white shellac (6) yields a colorless solution.

see the story at right). Using fresh shellac will help you avoid one of the classic complaints against shellac as a finish—it won't dry. Shellac is made up of organic acids that react with alcohol in a process called esterification. This gradual reaction produces esters, gummy substances that inhibit drying in old shellac.

Although it's possible to use premixed shellac, any liquid shellac older than six months should be tested for drying problems (Wm. Zinsser Co. makes shellac with a longer shelf life). To test shellac, place a drop or two on a piece of glass. If it's not dry to the touch in five minutes, don't use it. Premixed shellac is available only in orange or white (chemically bleached) varieties; there are more choices if you buy it in dry form (see the photo above). And if you mix your own shellac, you are guaranteed a fresh solution.

There are four alcohol solvents for shellac—methanol, ethanol, butanol and propanol. Methanol is an excellent solvent, but it's extremely poisonous. The fumes will pass through organic vapor respirators, so I avoid using methanol in my shop. Ethanol is far better because of its low toxicity. Butanol has an odor I find disagreeable, so I don't use it as the main solvent. I do add it occasionally to ethanol-reduced shellac as a retarder because butanol's higher molecular weight makes it evaporate slightly more slowly than ethanol. Propanol, the alcohol in rubbing alcohol, can be hard to get in chemically pure form. Don't use rubbing alcohol to dissolve shellac; it is 30% water and will cause problems in the shellac film.

An excellent product made specifically for reducing shellac is a Behlen product called Behkol (see the sources box on p. 62), which is 95% anhydrous ethanol and 5% isobutanol. The isobutanol slows down the drying time slightly.

The best cloth for applying shellac is manufactured from bleached, 100% cotton and is sold as padding, trace or French polishing cloth. Whatever cloth you use, it should be clean, not dyed, lint-free and absorbent. Avoid old T-shirts or cheesecloth because of the lint. My favorite cloth comes in 12-in. squares and has a rumpled texture similar to surgical gauze, as shown in the photo on the facing page.

Use either boiled linseed oil or tung oil to seal the wood and to give greater depth to the finish (only a small amount is needed). I have not been able to discern a difference between the two under the shellac finish. Make sure the linseed oil is boiled, though, because raw linseed oil contains no driers and never really hardens.

What's shellac, and how is it used?

Shellac is derived from a natural resin secreted by a tiny insect called *Laccifer lacca*. This insect alights on certain trees indigenous to India and Thailand and feeds off sap in the twigs. The insects secrete a cocoon-type shell, which is harvested by workers shaking the tree branches. In this form, the resin is called sticklac and contains bits of twig, insect and other contaminants. The sticklac is then washed to remove impurities. At this point, it may be refined either by hand or machine. The next step up is buttonlac, which is processed in India. It is reddish-brown and is sold in 1-in.- to 2-in.-wide buttons.

Seedlac is another impure form of shellac and is processed further in India for better-quality lacs or exported to other countries for further refining. White shellac is made in the United States by Wm. Zinsser Co. from imported seedlac that's dewaxed and bleached by bubbling chlorine gas through it.

Shellac grading is complex because it is a product with wide commercial applications. But the most important characteristics for woodworkers are those based on color and wax content. The best grades of shellac for finishing have less than 1% wax and are light-amber in color. Wax in shellac decreases its moisture resistance and makes it less transparent.

The most common shellac is industry-graded as #1 orange, which usually is 4% wax and is a brownish-orange color. Dewaxed shellacs can range in color from a dark-golden brown to a pale amber, as shown in the photo above. Fresh shellac is always better, so I mix my own, making just enough for the job at hand. For padding, I prefer a 2-lb. cut, which means 2 lbs. of shellac flakes dissolved in a gallon of alcohol. For most projects, a pint (¼ lb. of flakes in 1 pint of alcohol) is sufficient.

I mix shellac in a clean glass jar. Avoid metal cans because they will discolor the solution. Periodically shaking the jar prevents a jelly-like mass from forming at the bottom. Most shellacs take about a day to dissolve, so plan ahead. If it takes longer, the shellac may be bad. After dissolving in alcohol, lower-grade shellacs like buttonlac and seedlac always should be strained through a medium-mesh or fine-mesh filter to remove impurities. —J.J.

After the oil dries for a few minutes, charge the pad with a squeeze bottle to get just the right amount of shellac. The pad should be a lint-free cloth folded so that there are no wrinkles or seams on the bottom of the pad.

First apply a primer coat of oil for a deep finish. The author rubs in a light coat of oil, either boiled linseed or tung oil, to seal the wood. Shellac can be padded on after the oil has dried for several minutes.



Preparation

No finish can hide sloppy surface preparation. On new wood, I plane, scrape and sand to 220-grit on highly visible surfaces. I also do as much surface preparation as I can on the project before it's glued up. For new work, I'll even apply the oil and the first coat of shellac before assembling a project. Applying at least the first coat of shellac before the piece has been glued up makes it much easier to get an even finish, even in hard to reach places.

I generally tape off tenons and other joints so that oiling doesn't contaminate the wood. If the wood is to be colored, I use water-soluble dyes before the oil sealer coat. These dyes raise the grain, so I knock down the raised fibers with maroon synthetic steel wool (equivalent to 00 steel wool or 320-grit sandpaper) after the dye dries. I prefer synthetic steel wool because it's not as likely to cut through the dye on the edges. After the wood is smoothed down, you're ready for the first finishing step.

Oiling

Oil seals the wood and gives it greater depth. On refinished pieces, you can omit this step. Oils will accentuate the figure and deepen the color of wood, particularly curly maple and cherry. I have used a variety of oils, but I like linseed and tung oil the best. Apply just enough oil to make the surface of the wood look wet (about a thimbleful per square foot), as shown in the photo at left. Do not flood the surface with oil. Apply the oil with a clean, soft cloth, and rub the surface briskly. It will penetrate quickly. After several minutes, begin applying the shellac.

Padding shellac

Fold the padding cloth into a rolled ball, as shown in the top photo. There should be no creases or seams on the pad bottom. Pour about 1 oz. of alcohol into the pad and work it in. Then pour about ¼ oz. to ½ oz. of a 2-lb. cut shellac into the bottom of the pad. I keep my shellac in round squeeze bottles to simplify dispensing into the pad. Use just a little; you shouldn't be able to squeeze shellac from the pad.

To apply the shellac, start at the top, right-hand edge of the board, and work across the board with the grain. Bring the pad down lightly, drag it across the board and right off the opposite

Sources of supply

The following companies manufacture or supply dry shellac flakes in various grades, padding cloth, alcohol solvents, oil and other finishing products.

H. Behlen & Bros., Route 30 N., Amsterdam, NY 12010; (518) 843-1380

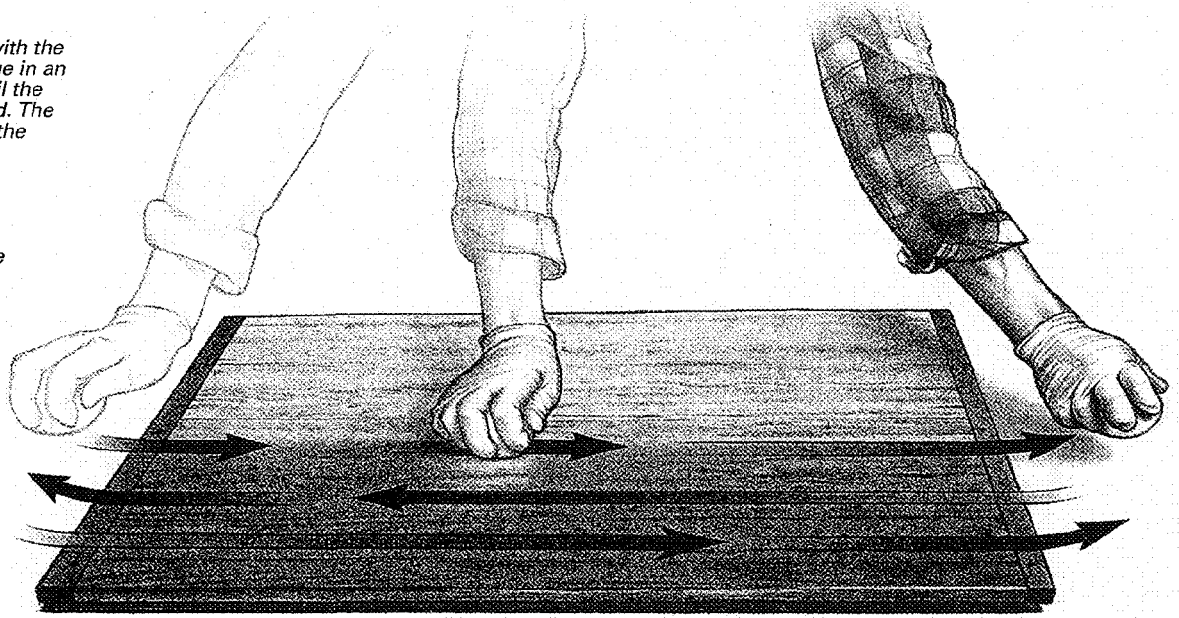
Garrett Wade Co., Inc., 161 Avenue of the Americas, New York, NY 10013; (800) 221-2942

Homestead Finishing Products, 11929 Abbey Road, Unit G, North Royalton, OH 44133-2677; (216) 582-8929

Olde Mill Cabinet Shop, 1660 Camp Betty Washington Road, York, PA 17402; (717) 755-8884

Padding shellac

Shellac is padded on with the grain from edge to edge in an alternating pattern until the piece has been covered. The stroke should start off the edge of the board, continue across the board and off the opposite side. Stop when the finish becomes tacky, and the pad begins to stick.



edge, as shown in the drawing. Reverse directions, working back from left to right. Continue down the board, applying the shellac in alternating stripes. When you've reached the bottom, start again at the top; the board will be dry enough to repeat the process.

When the pad dries out, recharge it with more shellac. The amount of shellac you'll use depends on the size of the piece. A 24-sq.-in. piece should take about 10 or 15 minutes and will use three or four charges of shellac. On tops, do the edges first, and then continue the same sequence as above. If there is a complex molded edge, make the pad conform to the shape of the molding. The other parts of the piece (aprons, legs and sides) get the same padding coat of shellac. When the board is tacky and the pad starts to stick, stop. Store the pad in a jar with a screw-type lid.

The first application of shellac should be dry enough to scuff-sand in approximately 1 hour. Using 320-grit, steared sandpaper (aluminum oxide mixed with zinc stearate as a lubricant), lightly scuff-sand the surface. Scuff-sanding is applying just enough pressure to barely scratch the surface. After this, smooth out the surface with maroon synthetic steel wool. Then apply shellac to the other sides of all surfaces, such as the undersides of tops and the insides of carcasses in the same way you did on the top.

When this coat of shellac is dry, after about an hour, scuff-sand and rub these surfaces with synthetic steel wool. After the first coat of finish has been applied, it's time to glue the project together. Be careful to avoid excess glue, and make sure that clamps are properly padded. If any glue squeezes out, you can pull it off like scotch tape after 30 minutes to an hour. Don't let the glue dry completely, it may pull off the finish when you try to remove it.

The next day, once the piece is glued up, the finishing sequence is repeated. The pad should glide easily over the surface, and you should have an even coat of shellac on the surface. As the pad starts to dry out, you can switch from polishing in a stripe pattern to a circular pattern or a series of figure eights to get even coverage on the board. Stop when the finish is tacky and the pad sticks. At this point, the surface should have an even shine, indicating a surface build of shellac. Put the pad back in the jar, and let the finish dry overnight.

The next day, examine the finish. You should have an even coating of finish on the surface. If you are working with open-pored

woods like walnut or mahogany, you'll see crisp outlines to the open pores. This level of finish is appealing to some. If so, you can stop applying shellac; simply go on to the rubbing-out stage, which I'll explain in a minute, and you're done.

For surfaces that will receive a lot of wear and tear, you may want to apply several more coats for maximum protection. If so, repeat the procedure until you've built up the finish to the film thickness that you want, allowing each coat to dry overnight. You don't gain any added protection after four or five applications, but there is an aesthetic difference. After the final padding application, let the project dry for several days before rubbing it out.

Rubbing out

Rubbing out the shellac finish results in a smoother, better-looking surface. The beauty of the padding application is that there are no brush marks or other surface irregularities to level, so this step usually goes quickly. The first step is to level the surface of the finish with 400-grit, wet-or-dry silicon carbide finishing paper. Then switch to 0000 steel wool, squirting mineral spirits onto the pad and dipping it into a can of paste wax.

I prefer steel wool for rubbing out because it has a better bite and leaves a better-looking finish. My favorite wax is Behlen's Blue Label paste wax, available in brown for darker finishes and natural for lighter finishes. Working with the grain, I bear down fairly hard with the steel wool and rub the wax on the surface. I wait until it begins to haze, wipe off the excess and buff to a satiny sheen. If a higher gloss is desired, rub the surface with rottenstone mixed with mineral spirits before waxing.

Maintenance

If the piece is not subjected to a lot of wear and tear, a yearly re-waxing keeps it looking great. For tables, chairs and other high-wear items, you can rejuvenate the finish by removing the wax with mineral spirits and rubbing with maroon synthetic steel wool. Then apply a light coat of shellac, let dry and re-wax. □

Jeff Jewitt runs J.B. Jewitt Co., Inc., specializing in restoration and conservation of period furniture. He owns Homestead Finishing Products in North Royalton, Ohio.