



Ebonized finishes created with chemical stains can blacken mahogany and other woods without obliterating the natural grain patterns. Here the author stains a piece of wood with a mixture of iron (from steel wool) and vinegar, then protects the finish with lacquer.

Ebonizing Wood

Home brew lets the grain glow through

by John McAlevey

I first started using ebonized or black finishes several years ago when I needed a dramatic touch for a special piece of furniture I was designing. Inspired after seeing the exhibit "The Art That Is Life: The Arts-and-Crafts Movement in America 1875-1920" at the Museum of Fine Arts in Boston, Mass., I returned to my studio eager to sit down and draw the multitude of lines, shapes and forms racing through my mind. I wanted to build something very special, something I would one day look back at and call a personal milestone in the way I approach my work.

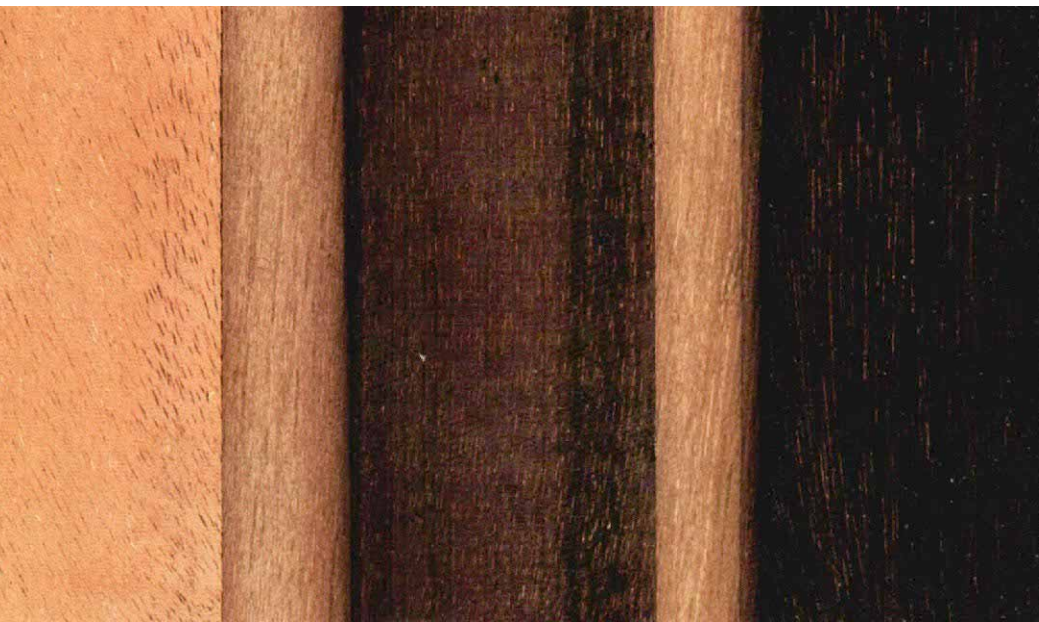
The design I came up with was for a mahogany settee. I continued to refine the details of the piece in my mind as I worked on other furniture pieces that were already commissioned. Even after I began working on the settee—cutting joints, carving and modeling the top rail to flow into the side pieces and deciding on the spacing of the back slats—I continued to mull over ways to refine my design, especially how I would finish it. The settee was turning out to have a dramatic presence; the finish should be equally special.

While scraping and sanding away, my thoughts wandered back to a recent meeting of the League of New Hampshire Craftsmen's

wood jury. I'm one of the jurors who screens prospective members. Ruth Hurt, director of standards at the League, had mentioned an ebonizing process where a precipitate, formed by mixing iron and vinegar, turned wood black. Since ebonized finishes were in vogue during the Arts-and-Crafts period, I thought a black finish might be appropriate for my settee.

Taking a break from sanding, I hurried out to a nearby convenience store and purchased a bottle of cider vinegar. Since I didn't have any rusted iron nails around, I found some rusted pieces of steel behind the shop and put them into a container with the vinegar. After an hour or so, expecting instant gratification, I dipped some mahogany scraps into the solution. Nothing happened. The following morning again nothing happened. Impatient, I tore up a piece of steel wool and threw it into the vinegar. I then left the solution to "cook" all day. Before leaving the shop that evening, I again dipped a scrap of mahogany in the solution. It quickly turned black. I next tried dipping a piece of red oak in the solution, and it also turned black.

The following morning, I sanded another piece of mahogany



A strip of mahogany, above, illustrates how each coat of stain darkens the wood. The left side is plain; the center has one coat of the steel wool/vinegar mixture; and the right, three coats. Each coat is sanded with fine paper before the next coat is applied. Applying a coat of aniline dye on top of the stain darkens the wood even further (see p. 50 for more on aniline dyes).

Deft spray lacquer makes a good finish. Just make gentle overlapping passes with the spray, as shown, then sand lightly between coats.

and then brushed on my mix of steel wool and vinegar. As I applied the solution, the mahogany blackened. After the panel dried, the grain had raised, so I sanded the panel before reapplying the solution. I later experimented with white and red oak, walnut and cherry, and each of the woods darkened. The mixture didn't do much to improve poplar, but that's understandable. From my research and what others have told me, I've concluded that the mixture is most effective on woods containing tannin or other acids that react with the steel wool/vinegar mixture.

I've ebonized quite a few pieces since my first experiments, but my method remains pretty simple. I cut off the top of a ½-gal. milk container to create a plastic bucket. I rip up a pad of steel wool and add it to the container, to which I add 1 in. or so of ordinary vinegar, available from any supermarket. Then I let the mess sit for four or five days. You could use other kinds of iron, such as nails, but steel wool seems to work the fastest, and it just about dissolves in the vinegar, so you don't have much residue to worry about.

The stain will be strong enough after sitting overnight to turn most woods black, but the extra aging time just richens the color. I usually apply at least three coats, but after that additional coats are kind of overkill, giving the color a reddish cast. The greatest advantage of my mixture is that in addition to producing an even coat of color, the three coats don't obliterate the natural wood grain the way some commercial products do.

You can strain the mixture through a paper coffee filter, but I don't usually bother. The small amount of steel-wool residue that might end up on the wood is easily blown off with compressed air once the wood dries. I apply the stain with inexpensive throw-away foam brushes, available at any hardware store. Brush strokes aren't a problem here: The coats blend together very nicely and everything evens out. This even blending makes the mixture ideal for large pieces, such as a tabletop, as well as for smaller pieces, where you want to use color to accent the lines of the piece, such as the coffee table shown on the facing page.

I leave each coat on for 30 minutes, during which time it will soak in pretty well, depending on the heat and humidity. I then wipe off the excess and allow the wood to dry completely before sanding. Because vinegar is largely water, the stain will raise the grain of

most woods, especially on the first coat. I usually sand the wood with 220-grit silicon-carbide paper. For subsequent coats, 400 grit is ample. You might be worried about the strong vinegar odor on the wood, but leave the piece overnight and the odor will dissipate.

One problem with chemical stains like this is that they don't penetrate very deeply. You can sand through the stain, especially near edges. To avoid any major problems, always do all your shaping and other edge treatments before applying the stain. In cases where I've sanded through, I touch-up with a black felt-tip pen.

If I want a black that's darker than the color produced by three coats of stain, I'll apply a coat of Solar-Lux nongrain-raising stain (Jet Black B503-1A46), available from H. Behlen & Bros. Inc., Route 30 N., Amsterdam, N.Y. 12010; (518) 843-1380. It's also available by mail from Woodcraft Supply, Dept. FW98, 41 Atlantic Ave., Box 4000, Woburn, Mass. 01888; (800) 225-1153 or (617) 935-5860 in Massachusetts, or from Garrett Wade Co. Inc., 161 Ave. of the Americas, New York, N.Y. 10013; (800) 221-2942 or (212) 807-1757 in New York. This stain also doesn't seem to obliterate the grain. I don't like using the stain by itself, though, because it doesn't produce the same sense of richness and depth I get with the three coats of the steel wool/vinegar mixture.

Lacquer finishes work well over the stains; I generally use an Apollo low-pressure spray system (Apollo Sprayers International Inc., 11577 Slater Ave., Unit H, Fountain Valley, Calif. 92708; 714-546-3100). You can also get good results from an ordinary can of Deft Semigloss Clear Wood finish, available at most hardware and department stores. The key here is to relax. If you get uptight, you'll make a mess, just as you would if you panicked during a glue-up. Just make gentle overlapping passes, as shown in the photo above, right. Sand between coats with 400-grit paper, then spray again. You can spray up to three coats with no problems, and the finish will be pretty durable.

To rub out the lacquer, I use 0000 steel wool, lubricated with water and ordinary grocery-store yellow soap. Always work with the grain; once the suds get going, the soap will work like rubbing compound. Rinse off the piece, dry it and then finish with a coat of paste wax, such as Minwax. □

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Black finishes for dramatic accents

Small tables can be attractive and functional accents in any home. And for the small-shop woodworker, they can provide a satisfying and profitable introduction to production runs on a modest scale. The table shown here is a fairly simple design, but it is striking, especially with the strong lines created by the ebonized components.

Mahogany is used throughout. I plane all the stock and cut it to the dimensions shown in the drawings at right; the legs are the only tricky part. I rough-cut them on the tablesaw, then refine their outer edges to the curve, as shown in figure 1A, with a block plane, spokeshave, scraper and pad sander. Before shaping these 1 $\frac{1}{8}$ -in.-thick pieces, I cut all the joints.

I do all the mortises with a plunge router and a simple box jig (see *FWW on Joinery*, p. 45, for more on this box jig). The jig looks like a miter box but with end stops to set the length of the mortise and a reference surface for the router's fence. You can clamp the workpiece to the box and rout the mortises easily and accurately. You can also chop the mortises by hand.

For the legs, I first cut the mortise for the lower cross brace while the stock is still rectangular, to make it easier to clamp the piece to the mortising jig. The next step entails ripping the corners of the outside edge of the leg, as shown in figure 1A. This eliminates much of the waste, making the final shaping much quicker. Finally, I rip both inside corners at a 45° angle to mate with the tenoned rails that will support the top frame. One advantage of this miter box is that you can use shaped blocks to hold irregularly shaped pieces at any angle while they are being mortised.

After shaping the legs as described above, I cut the tenons on the apron pieces and cross braces, and the lap joints on the braces. Again, use your favorite technique: router, tablesaw or handsaw and chisel. The corners of the top frame are simple butt joints reinforced with a plate joiner and small biscuits. Screws that run up through the apron, as shown in figure 1, secure the legs. Before assembling the frame, rabbet its inner edge with a straight router bit or dado blade to accept the 1/4-in.-thick tempered glass top.

After all the pieces are glued up, I let the joints dry overnight and then finish-sand the table with a pad sander. Finally, I ebonize the wood as described in the main article. —J.M.



Black ebonized finishes create a dramatic accent and highlight the lines of small pieces like the table above. The distinctive curved legs are first roughed out on a tablesaw, then refined with a block plane, spokeshave, scraper and pad sander.

