

How to Match a Finish

New projects
sometimes
need to blend
in with existing
furniture

BY JEFF JEWITT





Sooner or later, most woodworkers will likely face the challenge posed by a client or a spouse: “Well, I know it’s pretty wood and all, but can you make it match the rest of the furniture?” The first time I heard those words my heart sank. I had made two matching nightstands for my wife using the most stunning figured ash I’d ever seen. The last thing I wanted to do was stain them, but I had to admit that pearly white wood didn’t exactly fit in with our decorating scheme.

Many factory finishing operations involve specialized stains (such as sap stains, equalizing stains and pad stains) applied to the furniture in as many as six separate coloring steps. But it doesn’t have to be that complicated. If you understand how stains work on wood and apply some basic color principles, the job can go a lot smoother. You don’t need dozens of different stain colors. Armed with a few dyes and pigment stains in wood-tone colors—plus red, yellow, green and black—you should be able to match just about anything by following a systematic process of staining, glazing and clear coating.

Before we get into the process of matching one finished piece to another, it will help to keep in mind the following:

- Matching a finish requires the correct lighting conditions. Incandescent and some fluorescent lighting will distort the color. It’s best to work in diffused natural daylight or under full-spectrum, color-corrected fluorescent lights.

- Work from light to dark gradually. You can always darken a color, but it’s very difficult to lighten wood tones under a transparent finish that are already too dark.

- It’s easiest to match colors when the finish has a high-gloss sheen. Most colors shift slightly when the finish over them is satin or flat. If the sample you want to match does not have a glossy sheen, wet the surface with some mineral spirits to simulate the effect of gloss.

You can build color in different ways

Wood stains can be grouped into two distinct types—dyes and pigments. Manufacturers sometimes mix the two together, but I find it easier to work with one at a time when matching color.

Pigment stains use an inert, finely ground colored powder as the colorant. This powder is suspended in a mixture of resin and thinner. When applied to wood and wiped, the small pigment particles lodge in the surface texture of the wood. When the

STEP 1 ESTABLISH A CONSISTENT UNDERTONE



A dye stain for the undertone. Start with a light-colored dye stain to even out different colors in the wood. If you use water-based dye stain, this step also raises the grain.



STEP 2 ADJUST THE COLOR WITH A DARKER STAIN

A second, darker color of stain should get you close. If possible, add this coat when the first one is still wet: It'll help prevent blotches.



thinner evaporates, the resin dries and binds the color in place. Soft woods with a spongy texture (such as pine and poplar) have plenty of minute cavities for the pigment to lodge in, so it's possible to make the wood very dark. Hard, dense woods (such as cherry and maple) have fewer cavities, so pigment stains won't work as well if your goal is a dark color.

Dye stains are colored solutions in which microscopic dye particles are mixed with either water or alcohol. When applied to wood, the color is distributed evenly and deeply, so you can stain all types of wood more effectively. The result is a more transparent color than what you get with pigment stains, because dyes don't muddy the surface. And because dyes penetrate deeper and contain no binder that would inhibit absorption, it's easy to shift a color that's slightly off the mark by using another dye.

Glazes are just modified pigment stains. Commercial versions are thicker, have a lower binder content, and they're slower drying because they're sometimes manipulated after application to produce special effects. Add mineral spirits to a pigmented gel stain, and you'll get pretty much the same thing as a store-bought glaze.

Paste wood fillers are pigment stains that contain a fine quartz-silica additive to bulk

STEP 3 FINE-TUNE THE COLOR WITH A GLAZE



Learn to mix your own. Store-bought, oil-based glazes can be tinted with concentrated Japan colors to get the exact shade you want.

Glaze refines the process. Liberally coat the workpiece with glaze, then wipe it off.



up the pores of open-grained woods to attain a glass-smooth finish. Oil-based versions are easier to apply and control.

Match a finish in four basic steps

To match a finish, start with the undertone color of the wood (using dye stains). Over that you often need to change the color using a second dye stain or a pigment stain. When the color is close, add a coat of sealer to lock it in. To tweak the color even more, use a paste wood filler (on porous open grain) or a glaze (on tight grain). And finally, you need to match the sheen of the original finish (with a gloss, satin or flat finish). Using the unfinished cherry side table in the photos to illustrate the process, let's go through each step.

Match the undertone first—When matching old furniture or woods that change color easily, this step establishes an underlying golden-colored patina, which evens out different colors in lumber and veneer and helps blend sapwood to heartwood. The undertone is the hardest color to see, but it often is the lightest background color in the wood. It's best to use a dye stain and try it first on a stain board (see the story below). Also, if you're not sure about the color of the undertone, it's safer to go with a color that is a hair lighter.

Adjust the color, and seal it in—Adjust the undertone with a second color of stain, if necessary. This step is more often required with tight-grained woods (such as the cherry shown in these photos) and darker colors. On open-grained woods (such as oak or mahogany), the color of the pores has

STEP 4 MATCH THE SHEEN WITH A TOPCOAT



To match a color, always apply a gloss finish. After it dries, you can rub out the surface with fine sandpaper or steel wool to achieve the desired sheen, or you can use a satin or flat finish on the last coat.



a dramatic impact on the overall color and appearance of the finish. An oil-based paste wood filler or a glaze will vary that visual impact effectively. Before continuing, you can maintain more control in matching a finish if you first lock in the color with a sealer coat of shellac or lacquer.

Tweak the overall color with a glaze—Once the wood has been sealed and the basic color established, you should need to make only small adjustments to the final color. You can sneak up on it by using a glaze of thinned, concentrated colors. They're easy to apply and, if you get the color wrong, easy to wipe off before they set up. Start with a glaze of wood-tone colors and mix in pure Japan colors such as

red or green to adjust the final hue. Check the color of the glaze by smearing some on a piece of glass. When you have the color right, check it on a stain board. To darken a color, use dark brown rather than black, which makes the overall color "cooler," or less red. Swab the glaze on liberally, then wipe it off. A glaze should dry overnight before being covered with a topcoat.

Toning is another good way to produce darker color and tonal shifts, but you'll need to do this with a spray gun by mixing pigment stain or dye stain into the finish.

Match the sheen—The color will deepen and go to a shade slightly darker once a clear finish has been applied. Avoid using dark or strongly colored finishes (such as exterior varnishes and orange shellacs) because they will change the final color. If you use a varnish or polyurethane with a gloss sheen, you can rub out the finish to any sheen you wish after the topcoats cure. To determine the sheen of an existing finish, place the sample under a fluorescent light. If the reflection of the tube is distinct, the finish is gloss. If it's slightly fuzzy, the sheen is satin; and if the reflection isn't discernible, the finish has a flat sheen. Gloss topcoats deepen the color the most, and satin and flat sheens lighten up the color slightly or add a frosted look. □

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A stain board to guide the way

To help in the finishing process, make a stain board. Take a scrap cutoff from the piece you're working on and divide it into several sections to give yourself some leeway to tinker with colors until you get a match. You can test colors on the stain board before applying them to your project.

It's surprising how few colors I use regularly to match all the finishes my shop has to produce. For a basic color kit, start with an assortment of four dyes in wood tones: a honey-colored dye for undertones (especially the yellow undertones on antiques), a medium nut-brown color, a reddish-brown cherry color and a dark brown. Add red, yellow and green dyes to modify these wood-tone colors. For pigment stains, you should have comparable colors to those mentioned above plus concentrated versions of red, green, black and white—sold as Japan colors for oil-based finishes and universal tinting colors (UTCs) for oil- and water-based finishes.