Early in my woodworking career, I lived by the maxim that I would never artificially color the wood I was using. It was my firm belief that the wood should speak for itself and any attempt to add color was unnecessary. In a large part, that belief stemmed from bad experiences that I had with pigment-based stains. Too often I would see the wood grain obscured by a stain application, rather than enhanced.

My feelings about coloring wood changed when I decided to give dye stains a try. Dye stains allow me to achieve the deep rich browns on a piece of mission furniture or the wonderful amber tones on classic Shaker pieces.

The difference between dye stains and pigment-based stains is all about particle size. In a traditional pigment-based stain, each pigment particle is 1-2 microns in size. Dye particles are roughly 60% smaller. The larger pigment particles tend to stay on the wood’s surface. This results in obscured grain, and distracting contrast on open-grained woods. Dye stain, on the other hand, can penetrate more deeply and allow more grain detail to show. This creates a color effect that can be deep and intense, without blocking grain patterns.

Transform Curly Maple with DYE STAIN

Here’s how to add color without sacrificing clarity, and make figured grain really POP!

By Chris Hedges
Get set to work with dye stain

The gear shown here is what I use to color wood with concentrated liquid dye stain. The color wheel comes in handy when you want to combine colors to create a custom blend. Paper cups are useful for mixing colors and making small test batches.

The ability of dye stains to penetrate more deeply makes them especially effective at emphasizing the natural chatoyance of figured woods like curly maple. The dye stain technique shown here has become my standard treatment for showing off figured grain.
Surface prep is the first step

Sanding has an extra purpose when using dye stain: In addition to smoothing the wood surface, it needs to enhance the penetration of the dye. Sanding with too fine a grit can actually reduce penetration.

Mix and apply

When you’re working with dye stains, it helps to think about concentration, formulation, and experimentation. The concentration, or mixing ratio of dye to water, will determine the intensity of your stain. To alter a standard dye color, create a different formulation by blending in another dye color. By mixing small test batches, as shown at right, you can experiment on scrap wood, and fine-tune your concentration and formulation.

Medium grit for maximum penetration.

Prior to making the first application of dye stain, sand the wood with a medium-grit like 120. If necessary, sand by hand to remove swirl marks. Then go over the wood surface with a shop vac to make sure all sawdust is removed.

Flood on the color.

I use a lint-free, 12" square cotton rag to apply dye stain. Flood the wood surface with dye to ensure maximum penetration. Work quickly to avoid lap marks. If they do occur, applying more stain should remove them. Wipe off all excess after a few minutes.
Make a test batch. I rely on a calibrated syringe to get the mixing ratios right when using concentrated liquid dye. It’s wise to make a small quantity of dye first to test the color effect.

Blend your brew. To make a quart of my favorite stain for maple, I combine equal parts of “Vintage maple” and “Honey amber” to make an ounce of concentrated dye. Then I add distilled water. A mason jar with a positive-sealing lid will prolong the shelf life of your dye.

Sand lightly with 180 grit. This final sanding step removes raised grain and the topmost layer of stain. The dye that has penetrated deep into the pores remains in place. After sanding lightly with my random-orbit sander, I remove the swirls by lightly hand-sanding with 180-grit on a sanding block.

Apply the second coat. Flood on the color again, then wipe off any excess. When the dye dries, it will look dull. Don’t worry—the pop returns when you apply clear finish.

Protect and beautify. Using a water-based clear finish over water-based dye stain can result in some bleeding of the dye. To avoid this, I apply a thin coat of shellac after the stain has dried, then topcoat with a water-based varnish.

Results to dye for. Keep your samples! By creating a catalog of dye effects (record your mixing formula on the back of each piece), you’ll know just what to aim for on the next project.
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