

Easy-to-make stains offer unique effects

BY JEFF JEWITT

Long before there were man-made dyes, woodworkers discovered that chemicals could change the color of wood. Applied chemicals react with others naturally present in the wood to form compounds that add color or an aged appearance.

There are several reasons why woodworkers still should consider chemical staining. First, the chemical reaction usually produces a pigment colorant within the wood fibers rather than one that sits on top. This makes the color lightfast, transparent, and less prone to bleeding and transfer. (Transfer happens when a clear finish is brushed or wiped on, and it dissolves the stain beneath.) Second, the color intensity depends on the variable concentration of chemicals in the wood, so you get interesting and sometimes offbeat effects not achievable with regular dyes.

Rules that apply to all chemical stains

The three chemicals that I use to stain wood—ferrous sulfate, iron buff, and sodium carbonate—aren't

toxic or caustic. However, all chemicals need to be treated as hazardous and kept out of the reach of children.

One important thing to remember when using chemical stains is that the reaction between chemicals and wood is highly unpredictable, so you should test the color on a scrap of wood, the same kind used in your project. Likewise, avoid using sapwood or boards from different trees in the same panel. If you need to control the color closely, such as when trying to match an existing finish, it's far better to use dyes or pigment stains.

Most chemicals can be purchased as powders (with the exception of iron buff) and dissolved in warm water. A starting point is 1 oz. powder (by weight; equals roughly 2 tablespoons) to 1 qt. water. Add



Safer chemical stains. Unlike nitric acid or lye, used in the past to stain wood, these chemicals aren't toxic or caustic and are easily available.

Mixing the stains

For chemicals in powder form, stir 1 oz. (by weight) of powder into a quart of warm water. Let the mixture cool, and try it on scrap.



Ferrous sulfate. Also known as copperas, this chemical turns most woods various shades of gray.



Iron buff. Shred a pad of steel wool into a pint of white vinegar. The solution turns some woods black.



Sodium carbonate. Available as washing soda, this chemical mimics the effects of age.

Apply with a brush

All of the chemicals are applied the same way as a water-based stain would be applied. Flood the surface evenly with a synthetic bristle or foam brush. Blot up the excess and wait at least four hours for the color to develop.



the chemical to the water while slowly stirring. Wait for the solution to cool to room temperature and strain the mixture to remove any residue. Try the mixture on a test piece and dilute as necessary.

All of the chemicals are applied the same way as a water-based stain. Flood the surface evenly and liberally using a synthetic bristle or foam brush, working from the bottom to avoid drips on bare wood, and then blot up the excess. Never spray a chemical stain. Wait at least four hours for the color to develop completely. If you don't want to apply another coat, make sure you rinse the wood with plenty of clean water to neutralize any residue.

Smooth the raised grain with 220-grit sandpaper, and then proceed with the remaining finishing steps.

Ferrous sulfate turns most woods light gray

Also known as iron sulfate or copperas, ferrous sulfate can be purchased as dry granules (www.earthguild.com; 800-327-8448). It reacts with tannin in the wood to form iron compounds similar to the gray/black stains visible on wood that's been in contact with iron. It works well producing grays on most species, a color difficult to obtain with dyes and pigments.

Iron buff produces grays and blacks

The simplest way to make iron buff is to shred 1 oz. steel wool (one pad) into 1 pt. white vinegar. Mix the solution in a glass or plastic container that has a hole in the top to allow the hydrogen-gas by-product to escape. Before use, pass the liquid through a medium paint strainer and then through a coffee filter to remove all particles of steel wool.

One day of "cooking" makes a solution that creates light grays on tannin-rich woods such as oak, cherry, and walnut. Leaving the steel wool in the vinegar for a week yields stronger iron acetate that produces colors ranging from dark gray to a deep blue or black. For an ebonized look, apply iron buff to cherry, walnut, or oak. Let it dry and then sand with 240-grit paper. Apply the solution again, let it dry, and then do one of two things: Apply an ebony pigment stain (such as Minwax) or an alcohol-based dye. My preference is the pigment stain. On sapwood, an alcohol-based dye will darken the pores in open-pored woods such as oak, imparting a deeper color.

Sodium carbonate gives an aged appearance

Sodium carbonate is not as strong as lye, but it's much safer. It works well duplicating the yellowish-brown patina caused by photooxidation from sun and air exposure. Start with a mix of 1 oz. washing soda to 1 qt. water and increase or decrease the amounts to deepen or lighten the effect. □

