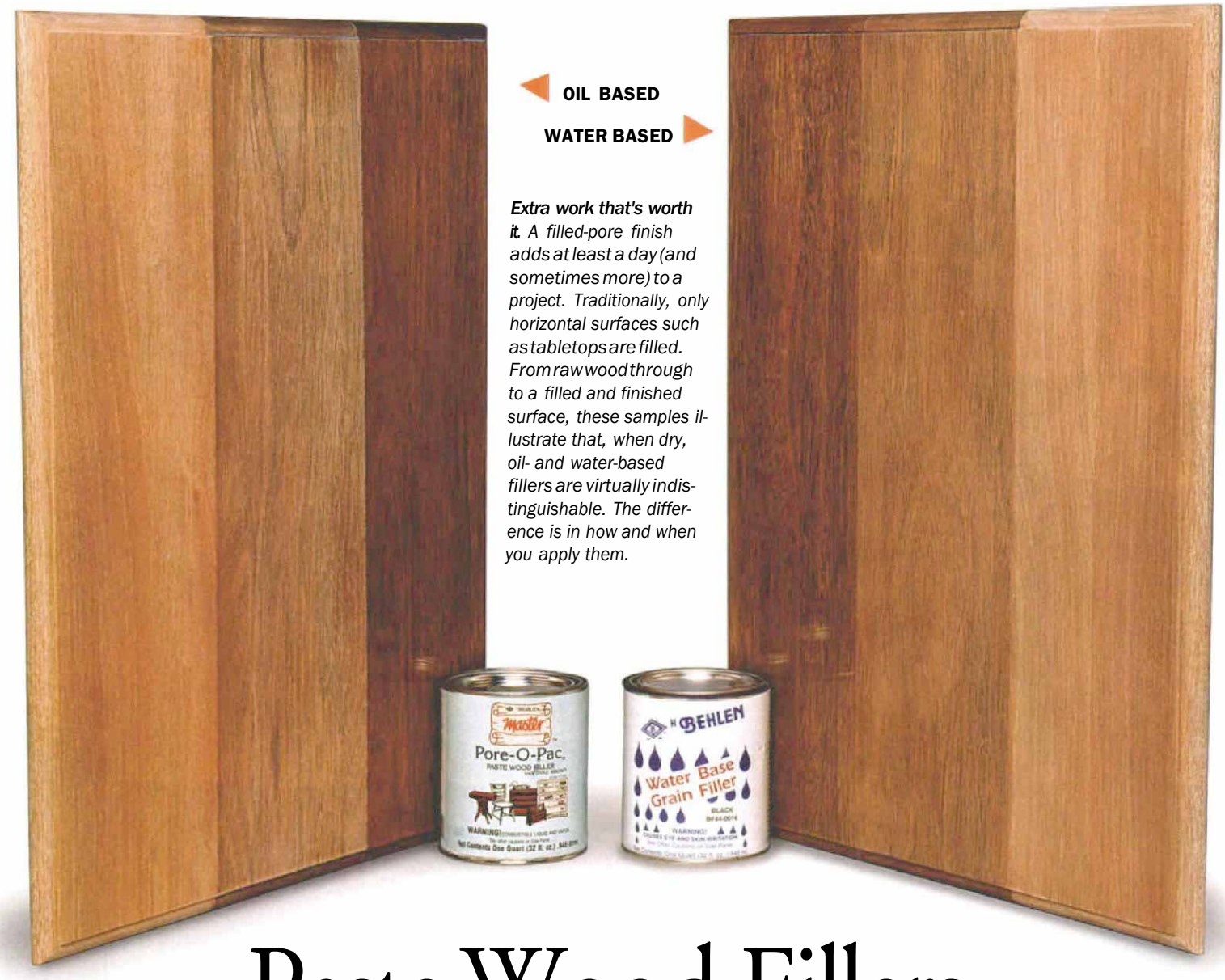


Extra work that's worth it. *A filled-pore finish adds at least a day (and sometimes more) to a project. Traditionally, only horizontal surfaces such as tabletops are filled. From raw wood through to a filled and finished surface, these samples illustrate that, when dry, oil- and water-based fillers are virtually indistinguishable. The difference is in how and when you apply them.*

Paste Wood Fillers

Oil or water based: how and when to use each type

BY JEFF JEWITT

All hardwoods have a unique surface texture created by the size and distribution of the pores, or vessels, that conduct sap in the living tree. When wood is milled into lumber, these vessels are cut at an angle, producing tight or open grain on the surface of the wood.

Tight-grained woods, such as cherry and maple, have pores that are too small to see. But open-grained woods, such as ash, mahogany, oak and walnut, have larger pores that create a more pronounced surface texture. When finishing these open-grained woods, you have the option of filling the pores with a paste wood filler if your goal is to achieve a refined, elegant, glass-smooth look to your furniture project.

Paste wood fillers are available as either oil-based or water-based products, and they can do more than simply make the finished surface level. They can be colored to blend with or provide a contrast to the rest of the wood. You can buy the filler in a clear or neutral-beige color for use on unstained woods or in darker factory-mixed shades. You can also tint your own for a specific custom color (see the story on p. 53), as long as you use a colorant that is compatible with the oil- or water-based filler that you decide to use.

Photos, this page: Michael Pekovich; all others: William Duckworth

OIL-BASED FILLERS

Oil-based products offer more choices

At what stage in the finishing sequence you apply the filler will change the look of the finished piece. With oil-based fillers you have several choices. You can apply the filler to bare wood, to stained wood or to wood that has already been sealed, but you can't apply stain over oil-based filler without inviting problems, Water-based stains aren't compatible, and oil-based stains might soften the filler so much that it never fully dries.

A neutral color will blend well with lighter woods, though the oil in the filler will darken them slightly. You can add any oil-based stain or concentrated coloring (such as artist's pigments or Japan colors) to the filler before you apply it. This technique will impart some color to the wood in addition to that deposited in the pores. If you stain and seal the wood before applying filler, you can maintain more control over the final color of the finished piece.

Oil-based fillers come two ways—as a thick paste that needs to be thinned with mineral spirits (or turpentine or naphtha), or as a premixed variety that can be used right out of the can. If the filler contains a varnish binder, it will dry faster—usually within one day. Some oil-based fillers require three or four days to cure.

If you want to seal the wood first, you can use any sealer you prefer, but oil, lacquer, shellac and thinned varnish work best. A thin coat will partially seal the wood and allow some of the filler color to stay on the surface. A thicker coat will completely seal off the wood surface, limiting the filler only to the open pores. If you do apply a sealer first, you should lightly scuff-sand it with 320-grit paper before adding filler.

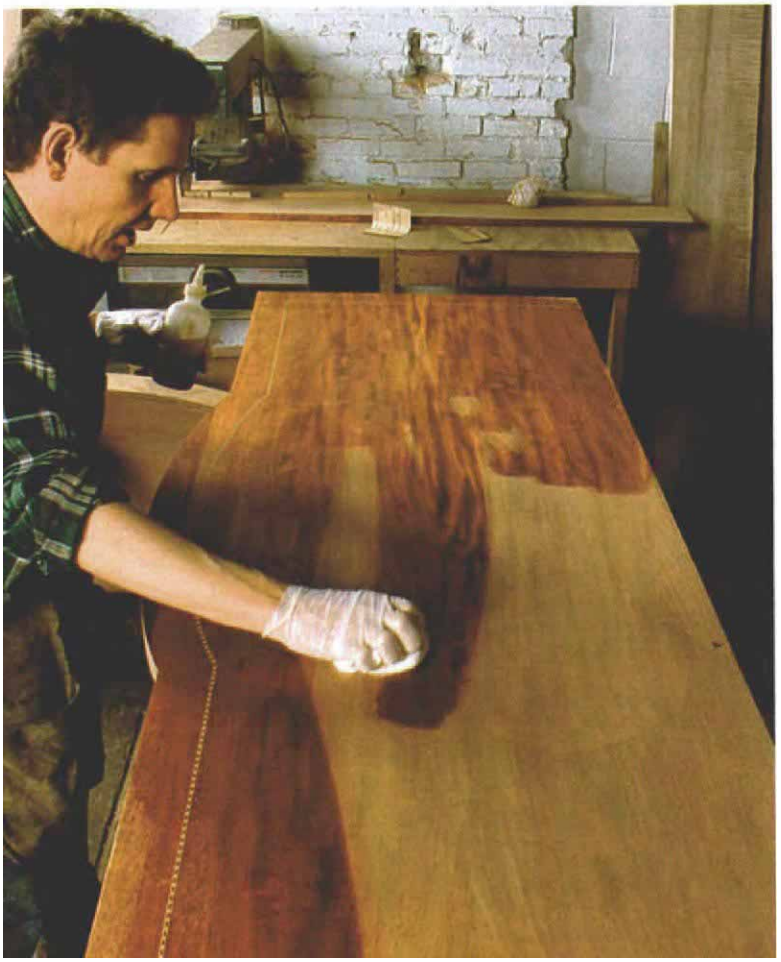
Traditionally, filler is applied only to flat, horizontal parts of furniture, not to surfaces such as aprons, carvings and turned legs. Before applying filler, make sure the pores are clear—vacuum or blow off any dust or debris from the surface. Use a stiff bristle brush to lay it onto the surface of the wood, and then work it into the open pores. With a rubber squeegee, credit card or piece of stiff cardboard, immediately scrape off the excess filler, going with the grain. I use a disposable plastic pan for the excess filler and periodically wipe the squeegee with a clean rag. The filler hazes over as the thinner on the surface evaporates, signaling that you can

Get rid of the sanding dust. *A good vacuum works better than a tack cloth or compressed air.*

Brush on filler against the grain. *A stiff bristle brush forces the paste into the open pores.*

A light coat of shellac helps control the final color. *By sealing the wood first with a light coat of shellac (diluted to a 1-lb. cut), you can prevent the filler from staining the bare wood.*

A rubber squeegee can be the secret to your success. *As it scrapes the surface clean, removing excess filler, the squeegee compacts the remaining filler tightly into the open pores of the wood.*



Use burlap for a final wipe. *A quick, vigorous rubdown will remove marks left by the squeegee and any traces of excess filler remaining on the surface of the wood.*

wipe off any remaining filler from the surface of the wood with a piece of burlap or cheesecloth. Wad it up and wipe across the surface, perpendicular to the grain. If you wipe with the grain, you may pull some of the uncured filler out of the pores.

Follow the cross-grain wipe with one in a figure-eight pattern, then inspect the surface in backlighting to see if there's still some filler on the surface. If the excess is too difficult to remove with the dry burlap, moisten a rag with naphtha or mineral spirits to get it off. When you're satisfied with the surface, let it cure for at least a day or more, as the directions on the label suggest. If the weather is cold or damp, extend the drying time.

After the filler has cured, sand it with 320-grit paper in the direction of the grain. Go lightly: Most fillers stay a little soft because of the large amount of oil used in their manufacture. The sandpaper will load and gum up quickly, so change to fresh paper often. Then wipe the surface with a tack rag or a clean cloth.

You can apply any oil- and solvent-based finishes over dried oil-based paste wood filler. If you plan to use a water-based finish, apply a coat of shellac over the filler to prevent adhesion problems. If you use lacquer, the solvents in the lacquer can soften the dried filler and wrinkle it. To avoid this problem, seal the surface first with shellac, especially if you're brushing on the lacquer. For a sprayed lacquer finish, mist on the first several coats lightly and let them dry before applying full, wet coats.

Oil-based fillers are easier to apply, offer more creative options for matching a finish and are easier to control. But water-based fillers are easier to clean up, are nonflammable and are more compatible with finish topcoats. Also, the clear versions, which are similar to using a clear finish to fill the pores, shrink very little.

WATER-BASED FILLERS

Apply water-based products to bare wood

The composition of water-based fillers is similar to that of oil-based varieties, except that the solvents and binders have been replaced with water, glycol ether and an acrylic resin that is compatible with water. These fillers dry quickly, and because the glycol ether will attack most finishes used as sealers, it's best to apply water-based filler directly to bare wood.

Water-based fillers should be stirred thoroughly before using. Most are fairly thick and can be thinned by adding small amounts (no more than 10%) of water, until they have the consistency of thick latex paint. Because of the fast drying time, you can work only on small areas at a time before the filler starts to set. As with an oil-based filler, the pores must be clean of sanding dust. Also, have lots of clean rags and some clean water nearby before you start.

Using a synthetic bristle brush, apply the filler liberally to the surface of the wood and then immediately scrape off the excess with a squeegee or a white Scotch-Brite pad. Let the filler dry. Later, you can sand the excess filler level with the surface of the wood Any large, dried clumps can be removed with a rag moistened with water. Let the filler dry for at least three hours. Hot, damp weather will extend the drying time, but the filler is ready to sand when it powders easily as you sand it. If the sandpaper gums up, let the filler dry longer.

Sand off the excess filler with 220-grit paper. You can use an electric palm sander, but be sure to hold it flat on the surface. If you're nervous about using a power tool, then sand off the filler by hand. Periodically wipe off the dust. Inspect the surface in backlighting as you go. You're finished when the surface is clean, but you can still see filler in the pores. If necessary, you can wipe the surface lightly with a water-dampened rag to help you see it bet-

Stirred, not shaken. *Water-based filler should have the consistency of thick latex paint.*

Don't worry about being neat. *Water-based fillers set up fast and dry in a matter of hours. So work fast and wipe off the excess filler with an abrasive cloth.*

Sand it by hand or with a machine. *A random-orbit sander loaded with 220-grit silicon-carbide paper quickly removes excess filler from the surface of the wood.*

A brief window of opportunity. *You can stain water-based filler only with an alcohol-based stain or one that contains glycol ether, and you must do so within a day after the filler has been applied.*

ter. If you sanded through the filler to expose open pores, or if you missed a spot, just apply more filler with a small cloth and then re-sand when it's dry.

When the surface is filled to your liking, you can stain before the filler has fully cured—usually within a day. Use only alcohol-based stains, or any stain containing glycol ether. Oil-based and straight water-based dye stains will not work, but you can add alcohol to a water-based stain to get it to bite into the filler. Some commercial water-based pigment stains do contain glycol ether to make them work. When you wipe on the stain, work quickly and avoid overworking the surface because the solvents may soften the filler in the pores and lift it out. One good thing about water-based fillers: They're compatible with all finishes, so you can topcoat them with the finish of your choice. □

Jeff Jewitt restores furniture, sells finishing supplies and writes frequently for this magazine. His latest book for The Taunton Press is Great Wood Finishes *(published this year).*

Adding color to filler

You can mix your own custom-colored oil- or water-based filler, as long as you use a colorant that's compatible with the filler. Dry pigment powders, artist's oil colors, universal tinting colors (UTCs) and Japan colors all work with oil-based fillers. You can also use an oil-based stain if you are applying the filler to bare wood and want to color the wood and apply filler at the same time. Because the stain will thin the filler, you may have to adjust your thinning ratio if you're mixing filler from a thick paste. If you use artist's oil colors, it helps to mix the color first with a bit of mineral spirits. For coloring water-based fillers, you can use dry pigment powders, UTCs or artist's acrylic colors. UTCs are available at most well-stocked paint stores and in many woodworking specialty catalogs. They're sold under the Cal-Tint or Tints-All names. Always add a small amount of color at a time.