

AMERICAN WOODWORKER®

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REPRINT

You Can Build a **Custom Kitchen**

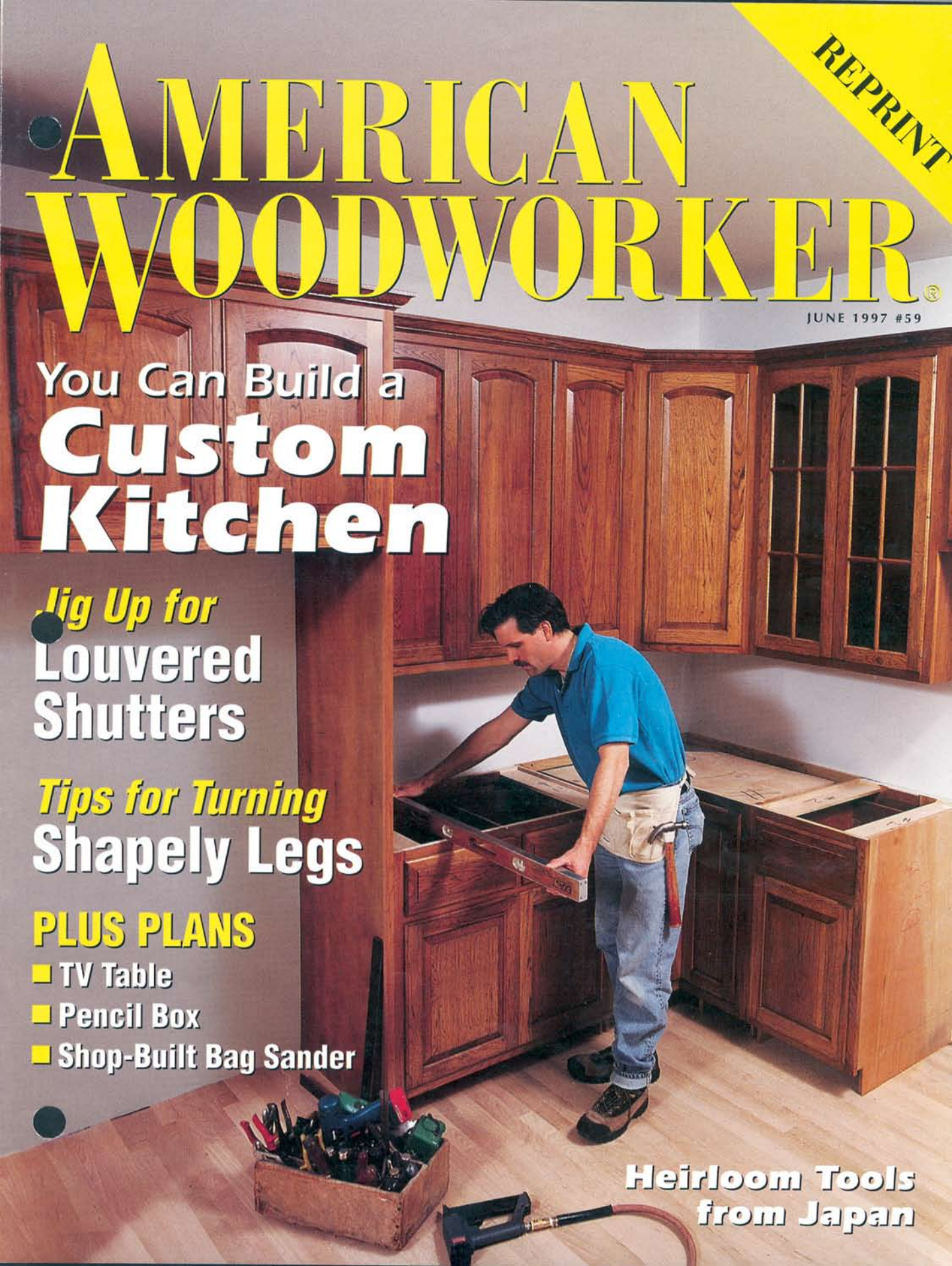
Jig Up for
**Louvered
Shutters**

Tips for Turning
Shapely Legs

PLUS PLANS

- TV Table
- Pencil Box
- Shop-Built Bag Sander

**Heirloom Tools
from Japan**



BUYER'S GUIDE TO **Wood Putty**

How to choose
and use the goop

Hardware stores, home centers and mail-order catalogs are crammed with cans and tubes of the stuff: Wood Rebuilder™, Ezy-Fill™, Plastic Wood™, Rock Hard™, Miracle Wood™. The product names are persuasive, and the promise is clear: This artificial wood can fool the eye and cover a multitude of sins, from dents made by an errant hammer to the accidental dings and depressions that eventually mar all manner of furniture, trim and other woodwork.

But if you've spent any time with this goop, you know that the camouflaging claims on the can are often overstated. It's difficult to make a wood-putty patch that truly disappears into the surrounding wood. The texture of the patch can differ from that of the surrounding wood. And when you apply a clear finish or stain, the patch can emerge with

eye-popping clarity. Even when a patch is painted, shrinkage can sometimes cause the repair to telegraph its location through the paint.

Despite these problems, wood putty plays an important role in all kinds of woodworking. Wood putty remains the preferred way to fill the holes that result from countersinking finishing nails. And it's much quicker to repair a small hole or dent with a putty patch than with a solid wood patch, or "dutchman." As you'll see on the pages ahead, it is possible to make a nearly invisible patch if you choose the right product and use grain-painting techniques. In this article, we'll help you pick the right putty and maximize its defect-hiding potential.

For this test, we rounded up 29 products and tested their performance when

*Plenty of products.
To test 29 wood putties
we filled hundreds of holes,
sanded the patches flush
and then coated them
with clear finish and stains.*



treated with different finishes: paint, clear lacquer, dye stain and pigment stain. All of the putties in our test group have a doughy consistency when fresh. This distinguishes them from paste and semipaste wood fillers, which sometimes get used as pore fillers when finishing open-pored woods such as oak and mahogany.

There are four basic types of wood putty. *Solvent-based* putties come ready to apply, and they usually contain wood in the form of fine sawdust. These preparations can be thinned (and sometimes rejuvenated) with lacquer thinner or acetone. *Premixed water-based putties* contain acrylic or latex compounds, while *powdered putties* get their doughy feel from either powdered wood or plasterlike compounds. *Two-part* wood putties are similar to the fillers used at auto-body shops to repair dinged fenders. They consist of two separate compounds that must be mixed together just prior to application. When you blend the compounds, a chemical reaction causes the putty to harden and adhere to the patch area.

What's Important?

Shrinkage and adhesion—Most wood putties shrink slightly as they dry. You usually compensate for this by overfilling a shallow hole, or by filling a deep hole with several shallow applications. But our tests revealed that some putties shrink excessively, even in shallow holes. This excessive shrinkage caused adhesion problems and cracking in the poorest performers. (See top photo, right.)

Texture—After curing and sanding, most wood putties show a smooth, uniform surface ready for finishing. But we found that some putties dried with a texture that was too coarse, creating enough surface variation to show beneath a coat of paint. Not surprisingly, finishing these coarse-textured putties with clear lacquer and stain only caused the patches to stand out more. (See center photo, right.)

Stainability—If you plan a stained or clear finish, it's important to know how your putty will respond to these finish treatments. Most solvent-based putties and some water-based products are available in wood-tone colors as well as in a "natural" or "neutral" tone. Another approach is to pre-stain the putty yourself by mixing it with a compatible stain or with tinting colors prior to application.

But even if you get an excellent match when the putty has been sanded flush with the bare wood, a coat of stain or clear finish can cause your patch to re-emerge dramatically. This is because wood absorbs finish differently and less uniformly than dried putty does.

To get an idea of how different putties respond to clear finish, dye stain and pigment stain, see the photos on page 56. You'll notice that some putties "take" stain better than others—well enough, in fact, that a small patch can be difficult to detect. To make a truly invisible patch, you'll need to test your putty and finish treatment on some scrapwood and try your hand at grain painting. (See Making a Patch Disappear, page 57.)

Workability and working time—A fast-drying putty can be a help or a hindrance, depending on how many holes you have to fill and how quickly you're able to work. The workability of the putty is also an important consideration. Good workability means that the putty is easy to pick up, pack and level. (See bottom photo, right.) As you'll see on page 56, each type of putty has certain workability and working time characteristics.

Shelf life—Some wood putties can last indefinitely in the can, while others are prone to hardening in a matter of days if you don't reseal the container tightly. Check out the shelf-life information given with each of the four types on page 56. It will help you decide which putty to buy and how much.

HOW WE TESTED

We tested 29 wood putties, evaluating four important performance factors: shrinkage and adhesion; stainability; texture; and workability. We drilled a series of 1/8-in.-deep, 3/8-in.-dia. holes in red oak and packed the holes carefully with neutral-color putty. We overfilled each hole slightly, so we could sand patches flush with 80-grit, 120-grit and 180-grit sandpaper. We left one patch of each brand unfinished. The remaining patches we finished with clear lacquer, water-based dye stain and pigment stain. The results are shown on page 56.

PUTTY Problems

Shrinkage



Excessive shrinkage led to adhesion problems with this powdered putty.

Texture



Sawdust in this solvent-based putty resulted in a coarse-textured patch that looked bad and absorbed too much finish.

Workability



The thicker consistency of some solvent-based putties makes packing and leveling difficult.

Putty Performance

Solvent-based putties

Pros: Fast drying—puttied nail holes can be sanded in about 15 minutes. Minimal shrinkage and good adhesion are typical of most brands.

Cons: Strong solvent odor. Solvents are flammable, so good ventilation is required. Requires solvent cleanup. Not as easy to work with as water-based putties. Working time is short—typically several minutes or less—so you have to fill the hole fast and shape the patch quickly. Prone to hardening in the can; shelf life is limited.

Recommendations: The best performers in this group are great when you want to fill holes, sand them flush and then apply finish in the same day. This rapid drying can occur in the container, too, so it's smart to buy solvent-based putty in small quantities.

Water-based premixed putties

Pros: No solvent odor, non-flammable. Good workability; longer working time than solvent-based putties. Can be thinned easily and used as pore fillers.

Cons: Slower drying than solvent types—at least 45 minutes. Typically more shrinkage than solvent types. Unused putty must be protected from freezing temperatures.

Recommendations: Water-based putties come ready to apply and are the easiest putties to work with. This is the type of putty to use if you need extra time to "tool" or shape patches over curved or contoured areas. And you can buy in larger quantities, because water-based putties aren't as prone to drying out as solvent-based putties.

Water-based powdered putties

Pros: No solvent odor, non-flammable. Good workability; longer working time than solvent-based putties. Easy to thin with water. Can be thinned and used as pore filler. Unlimited shelf life when powder is protected from dampness.

Cons: Slower drying than solvent types—at least 45 minutes. Mixing and measuring required, and unused mixed putty must be discarded.

Recommendations: Powdered putties offer most of the benefits of water-based premixed putties, plus unlimited shelf life. Even if you normally use another type of putty, it's smart to have some powdered putty on hand in case your other putty hardens in the can or simply runs out.

Two-part putties

Pros: Strongest type of putty; can be used for structural repairs. Minimal shrinkage. Long shelf life.

Cons: Most expensive type of putty. Careful mixing required; limited working time. Once mixed, unused putty must be discarded. Dried putty is more difficult to sand than other types.

Recommendations: Here's the putty to reach for when your patch is deep or along an edge, where structural strength will be important. Mix only as much as you need: Once you mix it up, it's a use-or-lose proposition.



Sanded without finish	Clear lacquer	Dye stain	Pigment stain
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Best: Elmer's Pro-Bond Wood Filler (shown), Famowood Professional Wood Filler, Plastic Wood.



Worst: Mend All (shown), Red Devil Instant Wood Filler. The main problems with these putties were slight shrinkage and more porous texture, which led to excessive stain absorption.



Best: Fix Wood Patch (shown), Famowood Professional Wood Filler, Franklin Mendwood, Dap Latex Wood Dough, Zar Wood Patch.



Worst: Wunderfil (shown), J.E. Moser's Fill 'N' Stain, Miracle Wood-2, Behlen Wood-Fil, 3M Just Like Wood. Poor performers dried with more shrinkage and took stain unevenly.



Best: Durham's Rock Hard Water Putty (shown), Bix Stain Putty.



Worst: Hydrocote Ezy-Fill (shown). Shrinkage and poor adhesion caused our test patches to fall out of a 3/8-in.-dia. hole after we sanded the dried putty. Stainability was also poor.



Best: J.E. Moser's Epoxy Paste (shown), Lake One Wood Rebuilder, Minwax High Performance Wood Filler. There were no bad performers in this group; all the putties dried with minimal shrinkage and took stain evenly.

At left, a structural repair. Edge repairs like this one are no problem for two-part putties.

SECRETS OF SUCCESS

How to get great results with wood putty

- **Use fresh putty.** Don't use putty that has partially hardened. Remove the spoiled part from the container, and just work with the fresh stuff, if any remains. If you only make infrequent, small repairs, it's best to buy putty in small containers.
- **Test it first.** If grain and color matching is important, test your putty on a piece of scrapwood the same species and grain characteristics as the workpiece, or on a hidden section of the workpiece. Experiment until you get a good match.
- **Apply it with an artist's palette knife.** A palette knife has a thin, flexible blade that's ideal for applying putty. These tools are commonly sold at art supply stores. (See bottom photo, page 55.)
- **Clear the sawdust.** Before you apply the putty, blow sawdust out of the area to be filled. This improves adhesion.
- **Don't go too deep.** Two-part putties can be used to fill deep holes. But our tests show that other types of wood putty can crack or shrink excessively when applied to holes deeper than 1/8 in. and wider than 3/8 in. A test application will tell you if this is a risk. The solution is to apply in two or more layers, letting each one cure before applying the next.
- **Overfill the hole.** Pack the putty into the hole firmly, making sure there are no voids. Form the putty into a small mound over the hole to account for shrinkage as the patch dries.
- **Use a sanding block.** When you're sanding a patch flush, back up your sandpaper with something firm—you'll find it much easier to achieve a flat surface. (See AW #56.)

MAKING A PATCH DISAPPEAR

How to grain-paint a wood-patty patch

Coloring putty before applying it is an easy way to approximate wood, but you can get better results by coloring the patch after it is dry and has been sanded smooth, as shown in the photo. Coloring putty after application allows you to imitate the colors in the surrounding wood more exactly. For



Adding camouflage. To match the surrounding wood, use an artist's brush to paint in grain details.

the coloring medium, you can use glaze or thinned varnish with some japan or oil color added. Or you can use shellac or padding lacquer and add powdered pigment colors or universal colors. The advantage of glaze and thinned varnish is that if you don't like the result, you can remove the finish by wiping with paint thinner. Here's how

grain-paint a putty patch:
Step 1: Apply your first coat of finish (the sealer coat) to the entire surface, putty and all, in order to see the correct

colors you want to imitate. This also creates a nonporous surface for painting.

Step 2: Paint in the grain and figure using an artist's brush. If you're trying to approximate a deep-porous wood, such as oak or mahogany, you can also scratch "pores" into the patch with the point of a knife.

Step 3: Once you have a close approximation of the grain, let the patch dry and protect it with a thin coat of finish.

Step 4: Then apply the background color (the lightest color visible in the surrounding wood). If you paint the background first, you'll probably get the patch too dark when painting the grain.

—Excerpted from *Applying Finishes: Techniques, Tips and Problem-Solving Tricks* by Bob Flexner (1997, Rodale Press, 33 E. Minor St., Emmaus, PA 18098).

WHERE TO BUY Wood Putty

Wood putties are available at retail outlets and by mail order. Brands of putty are keyed to the sources below.

Sources

- 1 Hardware stores and home centers
- 2 Amity Coatings (800) 733-1776
- 3 Constantine's (800) 223-8087
- 4 Garrett Wade (800) 221-2942
- 5 Highland Hardware (800) 241-6748
- 6 Hydrocote Co., Inc. (800) 229-4937
- 7 Lee Valley Tools Ltd. (800)267-8767
- 8 Leichtung Workshops (800) 321-6840
- 9 The Woodworkers' Store (800) 279-4441
- 10 Woodworker's Supply (800) 645-9292

WHAT & WHERE

Brand Source

SOLVENT-BASED PUTTIES

Dap Wood Dough	1
Elmer's Pro-Bond	1
<u>Famowood Professional</u>	10
Fix Wood Patch	1
Mend All	3
Miracle Wood Filler	8
Plastic Wood	1
Red Devil Instant Wood Filler	1
Wood Tex	10

WATER-BASED PUTTIES

3M Just Like Wood	1
Amity Wood Putty	2
Behlen Wood-Fil	3, 7
Behlen Master Wood Filler	4
Dap Latex Wood Dough	1
<u>Famowood Professional</u>	5, 10
Fix Wood Patch	1
Franklin Mendwood	1
LV Wood Filler	7
Miracle Wood-2	8
J.E. Moser's Fill 'N' Stain	10
Latex Plastic Wood	1
Wunderfil	9
Zar Wood Patch	1

POWDERED WOOD PUTTIES

Bix Stain Putty	1
Durham's Rock Hard Water Putty	1
Hydrocote Ezy-Fill	6

TWO-PART PUTTIES

Lake One Wood Rebuilder	4
Minwax High Performance Wood Filler	1
J.E. Moser's Epoxy Paste	10