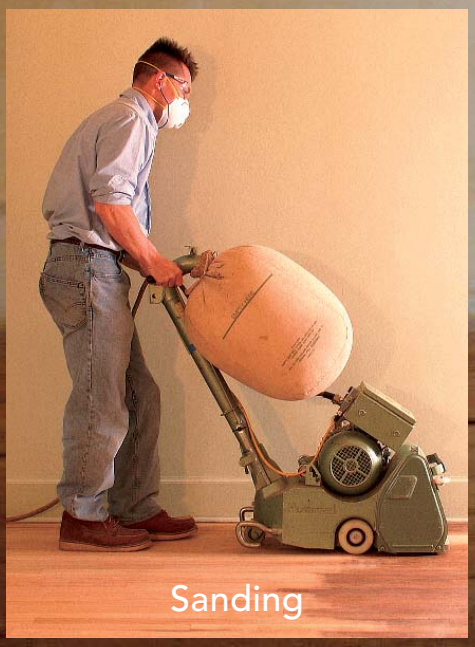
New Life for an Old Floor

How to prepare a wood floor for a new finish



Patching

To match the grain of the existing floor, the author uses a replacement board from a closet where a new wood patch won't be noticed. After replacing damaged floorboards, he fills nail holes and cracks to prepare for sanding.



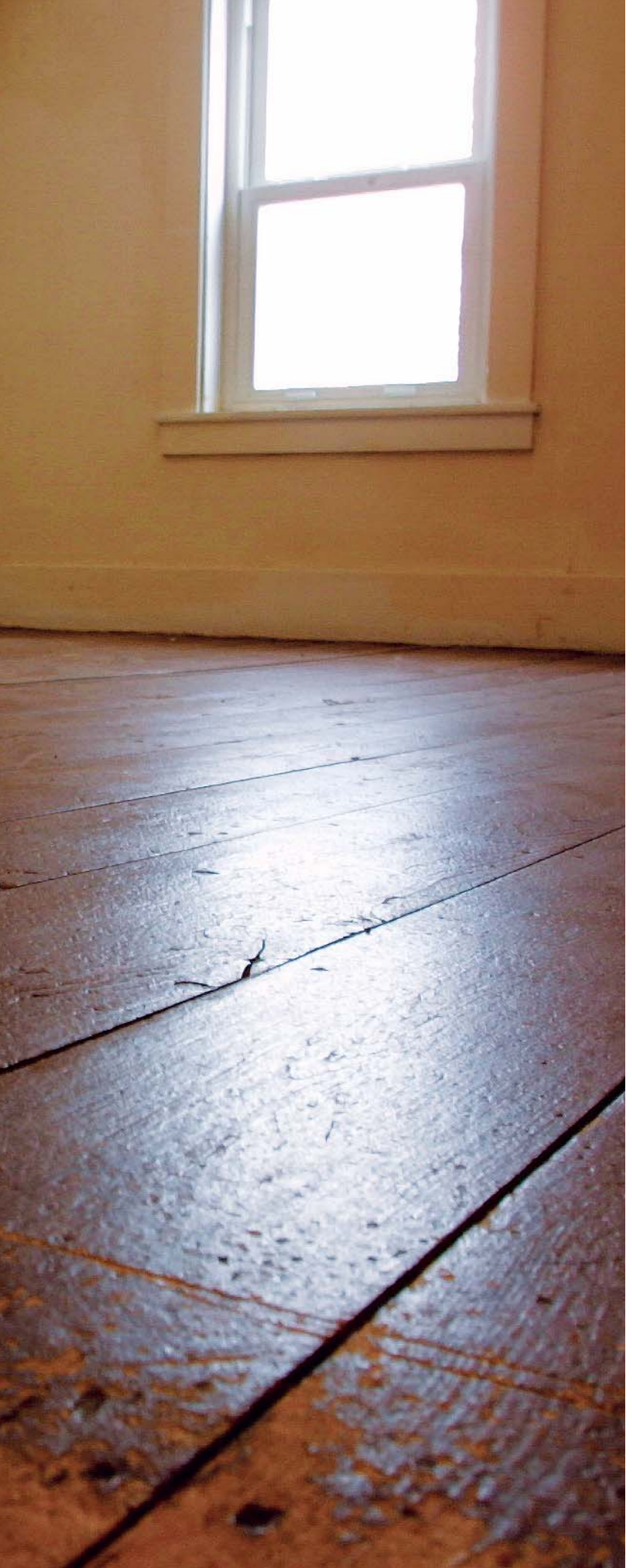
Sanding

Going from coarse grit to fine removes the existing finish and leaves the floor ready for a new one. Drum sanders and edgers can be rented.



Scraping

Where the sanders won't reach, you need to scrape. A sharp carbide blade works well, although it's hard work.



BY CHARLES PETERSON

Quite honestly, I hate refinishing old floors. It's ten times the work of finishing a new one, but I can't charge a premium price. And aside from the potentially hazardous materials involved (see "Floor-finishing hazards," p. 96), I don't like refinishing because of the hand-scraping—sometimes the whole perimeter—to remove the old finish. The saving grace is seeing my customer's glee when I transform an old, destroyed floor into one in pristine condition.

Much like finishing a new floor, refinishing an old one involves sanding and applying an appropriate finish. However, before you start, you must determine whether the old floor can in fact be refinished.

Should the floor be refinished?

After establishing what the existing finish is, I look over the floor to see if it really needs to be refinished (see "Refinish or touch-up?" p. 96). If it does, I check whether the floor is solid wood or a veneer. Veneered floors can be sanded once or twice, but you should consult the manufacturer for advice on the wear-layer thickness. (The wear layer is the amount of stock above the tongue.) You can get a peek at the wear layer by removing floor registers, if present; otherwise, remove a threshold or trim piece and drill a hole.



If it's safe to drive, it's safe to sand. *The penny gauge for tire-tread wear works for tongue-and-groove floorboards, too. If you can cover part of Lincoln's head, there's enough wear layer for another sanding.*

A solid floor should have at least ⅛ in. of wear layer, or the flooring may splinter when you sand it. The wear-layer thickness should be measured in a few different spots. Many times, an existing floor will have separations between some of the strips, allowing an easy measuring spot (photo right).

It may be tempting to strip a thin floor with a chemical stripper, but I caution against it. It is difficult to neutralize the stripper and clean it from the cracks between the flooring strips. Stripper trapped in these cracks most likely will cause problems with the finish.

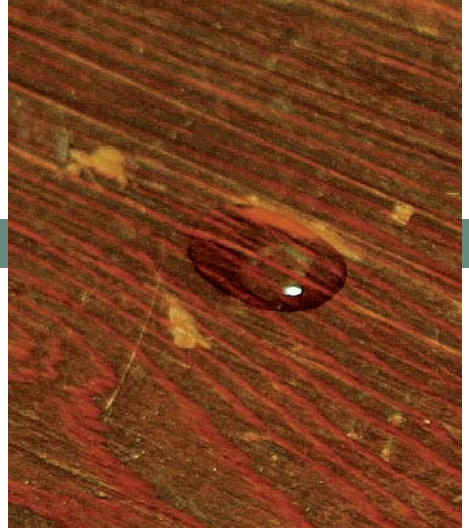
If the wear layer will support another sanding, I sweep the floor clean, countersink any nails, remove all staples and inspect thoroughly for damaged or loose boards (see "Replacing a damaged floorboard," p. 98).

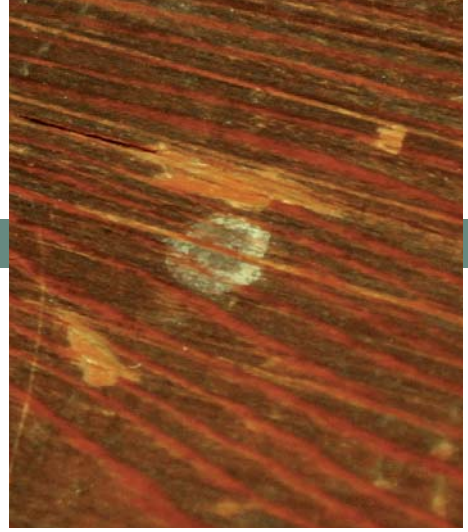
The moisture content of a floor can be an issue when it's time to apply a finish, but unless the floor has been flooded recently or there's

Photo this page: Daniel S. Morrison

HOW TO DETERMINE YOUR FLOOR FINISH

Five finishes are typical on old wood floors: wax, shellac or varnish, polyurethane, penetrating oil and paint. Here are a few tests you can perform to determine the finish on an existing floor. Start with the least disruptive, then work your way down the list.





First, test for a wax finish

A drop of water will make a white spot on a waxed floor after about 10 minutes. To remove the spot, rub with wax-dampened #000 steel wool. Floors that have been waxed will be difficult to coat with a nonwax finish. The new finish will roll off the flooring. It may be difficult to sand through the wax because it penetrates into the sides of the wood through the separations between the floorboards. Trowel-filling the entire floor with wood filler will help to seal the impurities and improve the chances of the new finish adhering, but the only sure bet for a wax floor is to reapply a wax finish. If no white spot appears, move on to the next test.

REFINISH OR TOUCH-UP?

Before going to the work and expense of sanding a wood floor, you should eliminate touching up the existing finish as an option. If damage is localized to small areas, repairing the finish may be a good alternative.

- **Polyurethane, shellac or varnish finishes**

Refinishing is needed when the old finish has been worn through to the wood in a substantial area of the floor. If damage is localized to the finish layer (scratches), the floor can be buffed and recoated.

- **Wax finishes**

Refinishing is necessary when dirt and other impurities have been so ground into the wax layer that they can't be buffed out. Thin areas can be patched and buffed to blend with the old wax layer. If the repaired area doesn't tie in to the old, too much dirt has been ground in, and the floor should be refinished.

- **Penetrating oils**

Refinishing is necessary when the floor has been gouged or scratched. Because oil finishes penetrate the wood, scratches expose the bare wood without leaving a protective layer (as with polyurethane).

For more information on caring for wood floors, visit the National Wood Flooring Association's Web site at www.woodfloors.org/caringforfloors.asp.

ONLINE CONNECTION

See the author's previous article, "Finishing Hardwood Floors," on our Web site at www.finehomebuilding.com.

excess moisture in the basement or crawlspace, the moisture content is probably okay. Relative humidity should be between 30% and 50%. For wetter or drier conditions, consult the finish manufacturer.

Before sanding, I protect heating, ventilation and air-conditioning openings. If the systems can't be shut down, I use protective filters over the ducts. I also protect smoke alarms and carbon-monoxide detectors from dust and seal the doorways with plastic. If possible when sanding, I remove dust from the room with a fan.

Sanding: Grit sequence is crucial to a smooth floor

I use three or four sanders for a refinishing job: a 220v drum sander, an edger, an orbital palm sander and sometimes a right-angle orbital sander (bottom photo, facing page). Make sure there's sufficient power to handle the sanding equipment. A professional 220v sander generally requires no less than a 30-amp breaker; 110v rental units require at least a 20-amp circuit. (For information on renting a sander, see *Fine Homebuilding* #145, p. 62.)

When sanding a floor, I always start with the least-aggressive sandpaper grit that will sand the floor effectively, then proceed with a sequence of smaller grits until I reach the size specified by the finish

Floor-finishing hazards

LEAD-BASED PAINTS AND ASBESTOS FLOORING ADHESIVES

If there's a painted floor in a house built prior to 1978, there's a good chance the paint contains lead. For more on working with lead paint, see "Lead-Paint Safety, at Home and on the Job" (*FHB*

Top photos this page, facing page: Daniel S. Morrison



Second, test for a shellac finish

If the floor flakes, it's probably finished with shellac or varnish. Floors installed or finished prior to the mid-1960s are often shellac, varnish or a mix of the two. Shellac and varnish aren't common finishes these days due to their frequent maintenance requirements. They must be fully sanded off before a new finish is applied.



Third, test for a polyurethane finish

If paint remover bubbles the finish, it is polyurethane. Water- or oil-based polyurethane can be applied over either water- or oil-based polyurethane. Either can be touched up with the corresponding poly, but oil-based poly takes the repair slightly better. If the above tests are all negative, the finish probably is penetrating oil.

manufacturer. To determine which grit to start with, I try the first sanding pass with a medium-grit paper (50 or 60) and adjust up or down, depending on the result. If the paper gums up too quickly, I move down in grit. If I'm removing a substantial amount of wood, I move up in grit size. No more than one grit size should be skipped in sequence, or it will be difficult to remove the scratches left by the previous step.

Wax and other old finishes tend to gum up sandpaper, so for the first pass, I use an open-coat paper. Open-coat paper has coarse particles that are spread out on the paper, so they will not readily gum up.

Floors that are cupped, damaged or otherwise not flat should first be sanded at an angle of 15° to 30° to the strip direction. Sanding at a slight angle will remove old finishes more aggressively. But the floor should be sanded parallel to the boards with the same grit size prior to changing to the next grit. This parallel run removes cross-grain scratches.

After the first pass with the big drum sander, I sand the perimeter with an edger (disk sander). I usually use a finer grit on the disk than on the belt, unless I'm sanding a waxed floor, which would gum up finer-grit paper. Again, you need to experiment to find a grit size that will remove wax reasonably. Wax buildup may be thicker at the edges than in the field, so you may need coarser-grit paper. Sometimes, even

PRO TIPS



Increasing a belt's life

Sanding dulls one side of the grit. Reversing the belt after it's about 60% worn exposes the sharp side of the grit, roughly doubling the belt's usefulness. The author draws an arrow inside the belt before installing it. Unidirectional belts (with arrows printed by the manufacturer) cannot be reversed.

Minimize dust

The sander's dust bag acts as a filter. To minimize dust, empty it often. If the bag gets more than one-third full, its surface area is reduced, thus reducing its filtering ability.

Right-angle sanding

Sometimes you get lucky, and you can use a right-angle orbital sander. Otherwise, you need a duckbill scraper for places that can't be reached with an edge sander.



#150, pp. 66-73), or visit www.finehomebuilding.com.

Asbestos adhesives were typically used for asbestos floor tile and linoleum, so if you have this type of covering over a wood floor that you plan to refinish, you should have it tested prior to disturbing it. Asbestos patching and filling compounds were banned in 1977. For information on testing, contact your local health department.

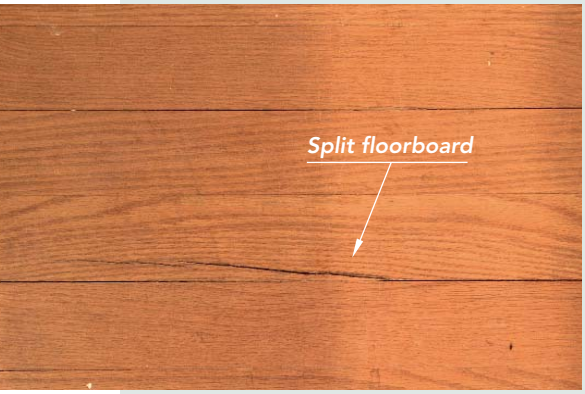
CONTAINED SAWDUST CAN SPONTANEOUSLY COMBUST

A fire needs three things to sustain combustion: a heat source (natural decomposition of sawdust), fuel (sawdust) and an always-abundant supply of oxygen.

Moisture in the wood or the air can trigger decomposition. In a closed container such as a trash bag or covered can, the heat can't dissipate, so the sawdust can ignite.

Similarly, solvents can catalyze an explosion with airborne sawdust providing the fuel and an electrical arc (from static electricity or unplugging a sander) the ignition. If using solvent-based finishes, clear the air of dust before opening the container of finish.

—C. P.

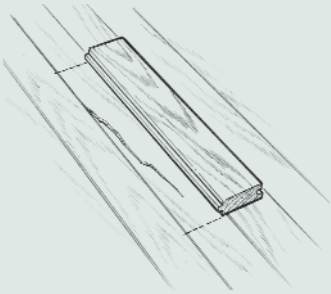


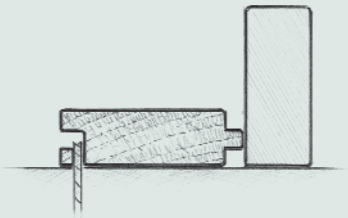
REPLACING A DAMAGED FLOORBOARD

A damaged board can be removed and replaced to blend in perfectly with the rest of the floor. The damage to the board above became apparent during sanding. When a board is removed from the middle of a floor, the surrounding boards will press in toward the empty area, making it difficult to install the replacement. The longer the place is open, the more time the surrounding boards have to move. For this reason, the author prepares the replacement board before removing the damaged one. Replacements should be of the same species and grain pattern and limited to around 2 ft. in length. To ensure consistency, the author used a board from the closet—hence the darker color in the photo. Replacing a floorboard in the closet with a new piece of wood is less noticeable than using new wood in the center of a room.

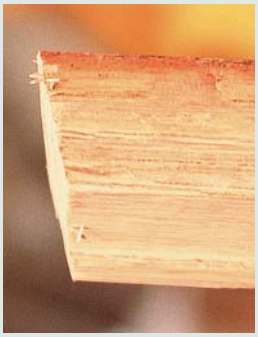
1 Prepare the new board

Measure and mark the new board by lining it up with the old board and marking it carefully with a knife blade.





Remove the bottom of the groove from the new board on a tablesaw. This removal allows the new board to slip over the tongue of the adjacent floorboard.



Bevel the ends so that they'll slip in tightly.

2 Out with the old



Drill holes near the edge of the damaged board and use a jigsaw to crosscut it.



With a circular saw, make two cuts down the length of the board.



Use a chisel to remove the pieces of the old board. Always remove the pieces working away from the good floorboards.

the coarsest paper can't remove more than a foot of finish per disk. It's hard to justify the price of all those disks and the time spent swapping them out, so in these cases, I scrape the edges by hand. For hard-to-reach places such as under radiators, I use a right-angle orbital sander (bottom photo, p. 97), a scraper or a combination of the two. Grit size is stepped down until I reach the finish manufacturer's recommendation. Also, between each sanding sequence, I sweep the floor clean so that the sawdust doesn't hinder the sandpaper's effectiveness.

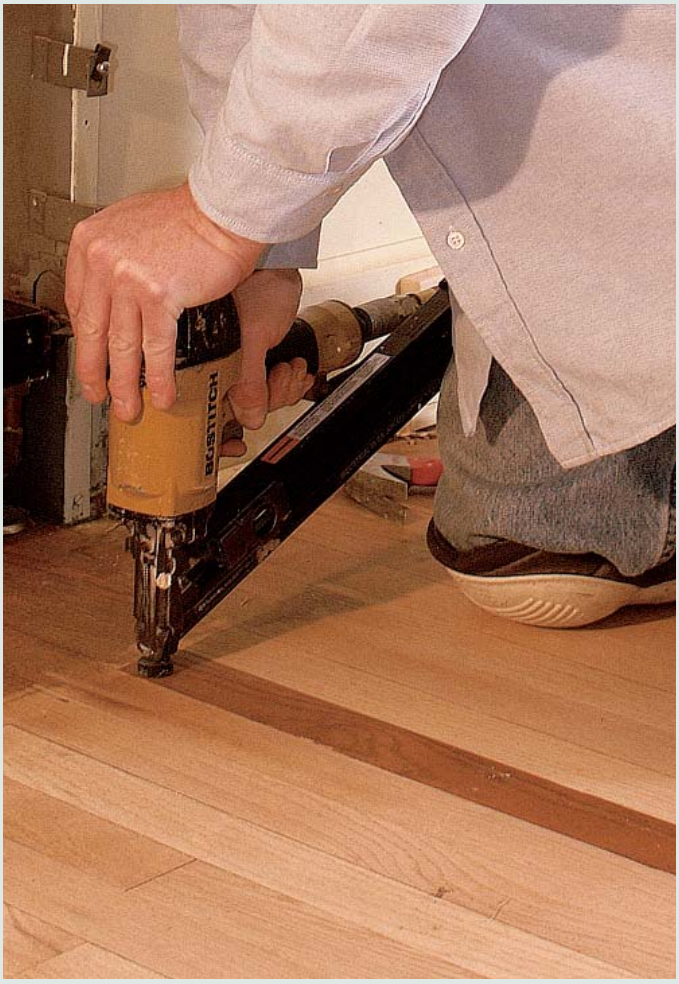
The next step is the fun part: applying a finish coat. With a freshly sanded floor, you can apply any finish you'd like, but if the floor previously had a wax finish, reapply wax. Although the top is clear of the old finish, there may still be some residual wax between the floorboards. A finish other than wax won't bond to a wax residue. See the sidebar on the facing page for my other finish recommendations.

For a more detailed discussion of sanding and finishing wood floors, see "Finishing Hardwood Floors" (*FHB* #145, pp. 58-62), or visit www.finehomebuilding.com. □

Charles Peterson, owner of Connecticut Premier Hardwood Floors in Gales Ferry, CT, has earned a craftsman degree from the National Wood Flooring Association. Photos by Charles Bickford, except where noted.

Drawings: Dan Thornton

3 In with the new



Hammer the old nails into the subfloor. Make sure the subfloor is absolutely clean with no high spots. Glue in the replacement with construction adhesive or a quick-drying epoxy. Because construction adhesive takes longer to cure, you'll need to weight down the replacement board overnight while the adhesive sets up.



After the replacement is glued and nailed, nail holes and board edges are patched, then sanded. The replacement blends perfectly.

Two favorite floor finishes, one for hardwoods, one for softwoods

There are many types of floor finishes, each with advantages and disadvantages. Hardness, durability, maintenance and ease of application play a role in choosing the appropriate finish. I generally stick to one of two finishes: water-based polyurethane for hardwoods and Waterlox tung oil (www.waterlox.com) for softwoods.

I prefer water-based polyurethanes to oil-based because they contain lower levels of volatile organic compounds (VOCs). Oil-based polyurethanes have high VOCs and leave heavy, chemical fumes that are explosive (see sidebar on hazards, p. 96).

Also, water-based finishes cure faster than oil-based, allowing the floors to be used sooner with less chance of damage while curing, a huge advantage in remodeling work.

My favorite finish overall is Waterlox tung oil because it's the easiest to apply. Anyone can use it and achieve professional results. Unlike other finishes, Waterlox tung oil can be used to recoat the floor only in worn areas, and it blends in perfectly. Its drawbacks are that it takes longer to cure and harden fully, and like oil-based polyurethane, tung oil yellows with age.

—*C. P.*



Polyurethane is durable, but repairability may make tung oil a better choice for easily damaged softwoods.



Photos right this page: Scott Phillips