

There's more to it than meets the eye.

By David Sloan

INT

CHOOSING A WOOD-FLO

The samples below show the different appearances of nine different wood-floor finishes, with one sample of bare wood for comparison.

- 1 Moisture-cured urethane
- 2 Conventional varnish
- 3 Lacquer
- 4 Epoxy finish
- 5 Unfinished red oak

A FLOOR FINISH HAS TO DO MORE than just look good. The finish must also protect your beautiful wood floor from muddy shoes, Rover's toenails, spilled drinks, and dancing feet.

Properly applied, any floor finish looks great when it's new, but how will it look two or three years down the road? Are some finishes tougher than others?

To find out, the Practical Homeowner Institute tested 19 different floor-finishing products in its Product Testing Lab. We ran each finish through a battery of tests to see how well it stands up to dirt, abrasion, stains, and exposure to sunlight—the principle enemies of all wood floors (see page 83). Our tests showed that some finishes *are* more durable than others, but we also learned that toughness shouldn't be the only criterion for choosing a floor finish. Just as important are appearance, ease of application, and repairability.

Two Types Of Finish

Almost any floor-finishing product can be classified as either a *surface finish* or a *penetrating*

finish. Surface finishes form a thin, hard film on top of the wood, while penetrating finishes soak into the pores of the wood and harden beneath the surface.

Polyurethane, shellac, varnish, and lacquer are all surface finishes. Penetrating finishes include proprietary formulations such as Dura Seal 210 and Watco Wood Floor Finish.

Should you choose a surface finish or a penetrating finish for your floors? That depends mostly on whether you prefer the glossier sheen of most surface finishes or the more natural look of a penetrating finish. But you also need to think about *where* the finish will be applied and what special properties are required there. Polyurethane, for example, is a tough surface finish good for high-traffic areas or where water and other spills are likely, but it isn't easy to repair. Lacquer and shellac don't wear as well as polyurethane, which makes them better suited for low-traffic areas such as bedrooms.

Penetrating Finishes

Penetrating finishes produce a nonglossy, low-



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luster finish. They're the easiest type of finish to apply—just flow on the finish with a brush or a rag, allow it to soak in, then wipe off the excess with a rag. That's all there is to it. Best of all, penetrating finishes are just as easy to repair and recoat. There's no need to sand off the old finish. When the finish looks worn, just clean off wax and dirt and recoat.

As our tests confirmed, floors finished with a penetrating finish don't show wear as quickly as do most surface finishes because there's no surface film to scratch or wear off. However, the wood itself is not protected from abrasion as much as with a surface (film-forming) finish. A penetrating finish wears off *with* the wood, not *from* the wood.

Most penetrating floor finishes are based on a vegetable oil such as tung oil or linseed oil, to which resins and metallic driers have been added to increase toughness and speed drying time. Penetrating finishes are chemically similar to varnish, but thinner. In fact, you can thin varnish or polyurethane with mineral spirits to make them behave like a penetrating finish.

Surface Finishes

When it comes to surface finishes, most do-it-yourselfers think of polyurethane. It's widely available, durable, and relatively easy to apply. Polyurethane's great stuff, but it's by no means your only choice. Shellac, lacquer, varnish, epoxy finishes, moisture-cured urethanes, and water-based urethanes are all excellent film-forming finishes, although not all are suitable for do-it-yourself application.

Polyurethanes And Varnishes

Polyurethanes contain synthetic urethane resins known for durability. These hard-wearing finishes resist water, alcohol, and most household chemicals.

Oil-modified polyurethane is the most common type. Available in gloss or satin, it's relatively easy for the do-it-yourselfer to apply with a natural-bristle brush or lamb's-wool applicator. Polyurethane doesn't adhere well to itself or to other finishes, however, so it's important to follow surface preparation instructions on the can.

6 Water-based polyurethane

7 Penetrating oil finish

8 Swedish finish

9 Oil-modified polyurethane

10 Shellac



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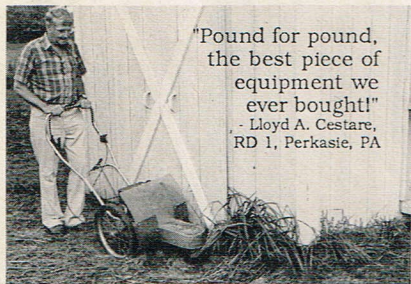
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FLOOR FINISHES

On old floors, this means removing all traces of wax and roughing up or sanding off any existing finish.

Water-based polyurethane is a fairly new floor finish developed to eliminate the health hazards and air pollution caused by the toxic solvents in most finishes. Moisture-cured polyurethane is a solvent-based finish that hardens when exposed to moisture in the air. Both water-based and moisture-cured polyurethanes are somewhat tricky to apply, so they're not recommended for the inexperienced do-it-yourselfer.

One water-based finish we tested, Aqua Fabulon, is an acrylic product that contains no polyurethane. It's designed for easy application and is a good choice for chemically-sensitive people.

Before polyurethane came on the scene, conventional varnish was a widely-used floor finish. Varnishes are oil-based coatings with phenolic or alkyd resins instead of specialty resins such as polyurethane or epoxy. The chief advantage to varnish is that it sticks to existing finishes better than polyurethane. Be sure to apply varnish with a natural-bristle brush.

Shellac And Lacquer

Shellac is the original high-gloss finish, widely used in days gone by. Some old house aficionados say that nothing

compares to the formal beauty of a shellacked floor. Shellac is a fast-drying finish that's easy to touch up when damaged. Because alcohol is the solvent, shellac is more vulnerable to a spilled drink than other floor finishes. Water, too, can cause discoloration. For this reason, shellac is best reserved for rooms where spills aren't likely to occur. One shellac product called Target (made by Wm. Zinnser & Co.), is chemically modified with a resin that makes it more durable than pure shellac.

Lacquer is a cellulose derivative dissolved in lacquer thinner. It produces a pleasant glossy sheen without the "plastic" look of polyurethane. It's also water clear—a claim that no other floor finish can make. Lacquer is the best choice to apply over the bleached or "pickled" floors that are popular these days. Lacquer dries very quickly, so you can apply several coats in one day. Because it dries so quickly, it takes some skill to avoid brush marks.

Swedish And Epoxy Finishes

Swedish finishes are gaining widespread popularity among professional floor finishers and homeowners alike. These synthetic resin-based finishes combine the easy maintenance and durability of a surface finish with the more natural appearance of a penetrating fin-

TWO SPECIAL PRODUCTS

Two of the floor-finishing products we tested are different enough to deserve special attention.

Meldos Hard Sealer, from Livos PlantChemistry (614 Aqua Fria St., Santa Fe, NM 87501), is a penetrating oil finish that's as harmless as a Pat Boone ballad. It's made entirely from nontoxic ingredients—polymerized linseed oil and other plant oils, tree resins, and natural citrus thinner. It has a pleasant, lemony smell and goes on like any other penetrating oil finish. Meldos Oil is the floor finish of choice for people who are sensitive to conventional finishes or just want to avoid toxic chemicals. Because it contains no toxic driers, it takes longer to dry than other oil finishes—especially when humidity is high.

Restore Your Wood Floor Kit, from Gillespie Floor Products (P.O. Box 1879, Memphis, TN 38101), is

designed to improve the looks of an old, worn finish without the bother of sanding. The kit includes ½ gallon of "cleaner" and one quart of "restorer," a blend of resins, wax, and stain. Steel wool, cloths, gloves, and instructions are also included. The kit comes in three different color tones—light, medium, and dark. One kit sells for \$14.95 and will treat up to 500 square feet of floor. To use, you apply the cleaner, scrub with steel wool, and wipe up the dirt and gunk with a cloth. When the floor is dry, you pour on the restorer, work it in with a cloth, and buff when it dries. It sounds easy but it takes a lot of rubbing and a lot of rags. The results? My old floor doesn't look as good as if I'd sanded and refinished, but it does look better than it did.

—Dave Sellers

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WOOD FLOOR FINISHES

FINISH TYPE	TYPICAL INGREDIENTS	TYPICAL SOLVENT
PENETRATING OIL	linseed and tung oil, phenolic resin	mineral spirits
VARNISH	tung, linseed, and soya oil, alkyd resin	mineral spirits
OIL-MODIFIED POLYURETHANE	urethane and tung oil, phenolic resin soya alkyd	mineral spirits
SHELLAC	shellac, may be modified with other resins	denatured alcohol
LACQUER	nitro-cellulose	lacquer thinner
SWEDISH FINISH	alkyd urea formaldehyde, polyvinyl resin	denatured alcohol
EPOXY FINISH	epoxy ester	mineral spirits
MOISTURE-CURED URETHANE	urethane	mineral spirits
WATER-BASED POLYURETHANE /ACRYLIC	urethane and/or acrylic resins	water
UNFINISHED RED OAK (control)		

*Meldos Hard Sealer cost \$38.40 per gallon.

continued from page 81

ish. They don't hide the grain as much as polyurethane or varnish, and they wear very well. They're especially well suited for softwood floors. Swedish finishes require special surface preparation and application techniques (urea formaldehyde is used as a binding agent, so toxic fume protection is a must), and they are not designed for do-it-yourself application.

Epoxy finishes are designed for high-traffic, commercial applications such as gym floors and are highly resistant to stains, chemicals, and wear. But, epoxy finishes aren't really appropriate for home use. You don't need gym-floor durability in your living room.

No matter what finish you choose for your floors, it's important to follow the manufacturer's preparation and application instructions to the letter. If you're in doubt about what finish to choose, consult with a professional floor refinisher. And if you're doing it yourself, do it *safely*. Most finishing solvents are toxic. Open the windows to create a cross-draft and wear a respirator designed to protect against organic vapors. (See Healthy Home on page 84 for more application tips.) □

DRYING TIME	RETAIL COST PER GALLON	COMMENTS	RESISTANCE TO		RESISTANCE TO STAINS			OVERALL TOUGHNESS RATINGS***	
			UV (SUN)	SCUFFING AND DIRT	WATER	GRAPE JUICE	VODKA		PET URINE
moderate to slow	\$20-25*	Matte to low gloss. Very easy to apply, repair, and recoat. Soaks into wood — no surface film. Scratches don't show easily.	3.2	2.5	4.8	3.9	4.3	2.2	3.4
moderate	\$25-35	Conventional varnish formulations (no polyurethane content). Medium to high gloss. Moderately easy to apply and refinish.	4.8	4.6	5	5	5	4.6	4.8
fast to moderate	\$20-35	Medium to high gloss. Easy to apply. Difficult to repair. Highly resistant to water, detergents, and many chemicals. Must sand old finish before recoating. Good for high-traffic areas.	4.3	3.6	5	4.7	5	4.6	4.5
fast	\$12-20	Medium to high gloss. Moderately easy to apply. Easy to repair and refinish. Alcohol and water can damage finish. Best for low traffic.	2.1	3.5	4.2	3.8	3.5	3.6	3.5
fast	\$25-35	Medium to high gloss. Moderately easy to apply. Easy to repair and refinish. Clearest of all floor finishes. Best in low traffic areas.	1	2.8	5	5	5	4.8	3.9
slow to fast	\$35-75	Medium gloss. Two-part finish difficult to apply — not recommended for DIY. Durability of polyurethane with natural appearance.	2.4	3.8	5	4.3	5	4.4	4.2
moderate	\$30-35	High gloss. Moderately easy to apply. Excellent wear properties exceed requirements for home use.	2.6	2.4	5	4.8	5	4.6	4.1
moderate	\$30-40	Medium gloss. Difficult to apply — not recommended for DIY. Cures by absorbing moisture from the air.	1.8	3.2	5	4.6	5	4.8	4.1
fast	\$30-65	Medium to high gloss. Some brands easy to apply — some not recommended for DIY. Water as solvent. Must mix two-part finish.	3.3	2.9	5	4.5	5	4.8	4.3
			2.9	2.6	4.5	1	5	1	2.8

Ratings based on visual evaluation by a panel of judges. *Based on average of individual tests.

HOW PHI TESTED THE FINISHES

Our test was designed to compare generic *types* of floor finishes rather than specific brand-name products. We identified nine different generic types of floor finish (see chart, above), and we tested one or more brand-name products of each type. We averaged the results to arrive at the ratings shown in the chart. (For a list of the products we tested, see More Info on page 111.)

We applied the finishes to six-inch lengths of 3/4 x 2 1/4-inch red-oak strip flooring, according to the directions on the cans. We allowed the finishes to "cure" for one week before conducting our tests.

We tested each finish for resistance to abrasion and dirt, in our Product Testing Lab. To simulate the dirt and grit tracked across most home floors, samples

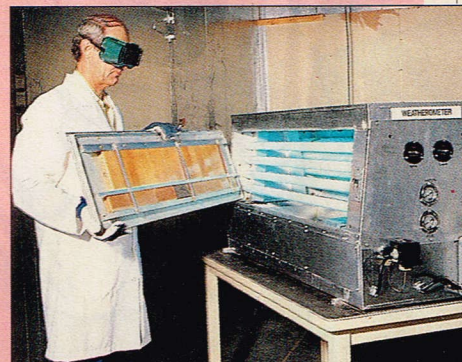
were sprinkled with a 50/50 mixture of sifted garden soil and a fine ceramic grog, then rubbed and rolled with the machine's 50-pound leather-covered roller. After brushing and wiping with a damp cloth, samples were judged for scratches, loss of gloss, and retention of dirt in the pores of the wood. The "Scuffing" ratings in the chart are an average of these three criteria.

Additional sets of samples were tested for stain resistance by applying 20 drops each of water, 100-proof vodka, grape juice, and dog urine. These staining agents were allowed to evaporate, surface residues were wiped off, then samples were judged for color change, loss of gloss, and penetration of finish. Stain ratings in the chart are an average of these criteria.

Because the ultraviolet spectrum of sunlight can discolor a floor, we exposed samples to 90 hours of intense ultraviolet light in the

"weatherometer" shown below. The exposed samples were then visually compared to unexposed control samples and rated according to the amount of color change that occurred.

—Dave Sellers



To simulate long-term exposure to sunlight, finish samples were exposed to 90 hours of high-intensity, ultraviolet light in this weatherometer (above). UV exposure yellowed some finishes more than others.