

Durable Wood-Floor Finishes

Q: Is there a wood-floor finish that will hold up to all the sand that inevitably seems to be a part of life at the shore? It's really taking a toll on the polyurethane finished strip flooring we installed less than a year ago.

A: Flooring contractor Michael Purser, owner of The Rosebud Co. based in Atlanta, Ga., responds: Abrasion is an issue with any finish on any wood floor. But abrasion from beach sand is especially acute: Sand is essentially silica carbide, which is the same compound that's on sandpaper — the very stuff we use to remove an old finish. So there's only so much you can do with the finish itself when refinishing an existing wood floor. Yes, there are some finishes that will be stronger than others, but the ultimate solution is best solved with design solutions and material choices.

DESIGN CONTROLS

The very best way to deal with this problem is at the design phase, either for a new property or an existing property, by trying to keep as much sand out of the house as possible. Use exterior walkways and create entrance hallways that

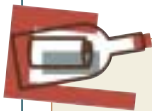
force people coming inside to "run the gauntlet" before they get to the wood floor surface. The goal is to get people to knock the sand off their feet before they enter the house by treading over decking, stone, unglazed tile, or other surfaces that aren't as vulnerable to the abrasive effects of sand. This will work only so well to keep beach sand at bay, however. At the beach, sand comes in anyway — on feet, shoes, clothes, pets, towels, and so forth. It's a given that sand will eventually get on the wood floor.



Engineered "floating" floors come prefinished with either an aluminum oxide or a UV-cured coating — both finishes that provide the hardest surface available on a wood flooring material.

ENGINEERED SOLUTIONS

Some help can come from the type of flooring you select. Prefinished or engineered flooring typically relies on a composite core like plywood, covered by a solid-wood veneer, making it inherently more stable. These floors are available with either an aluminum oxide or a UV-cured coating. Either choice will be the hardest surface you can get on a wood flooring material, and it will have the best chance of resisting abrasion. Because the finish is applied



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in a highly controllable setting, temperature and humidity at the site will not become limiting factors.

However, having the best clear coat possible is a double-edged sword. Homeowners tend to drop their guard and think, "Why should I worry? I have the hardest finish possible." They not only don't take precautions to control sand, but they also feel it's unnecessary to put felt pads beneath furniture legs or to rely on throw rugs to protect high-traffic areas. No matter where I install or finish a floor, I find it's critical to educate the owner. Every wood surface is vulnerable, and clients must be informed about how to care for their investment.

Prefinished engineered floorings typically are not meant to be refinished. To begin with, the wear layer is usually thin and can't sustain much sanding. In addition, an aluminum oxide or UV-cured coating cannot be reapplied on site. However, Basic Coatings (800-441-1934; www.basiccoatings.com) does have a system now that uses a bonding agent that gets applied over the existing finish, which allows a new top coat to adhere. This TyKote system can be used over any existing finish without sanding.

A prefinished floor makes a logical choice for a beach property that will be rented or leased at least part of the time, if only because it will be much easier to replace. Renters rarely take care of a home as if it were their own, so relying on the occupants to take care of a glossy finish is setting yourself up for heartbreak. In this case, you might consider treating the wood flooring as an expendable surface, recoat it using the TyKote system every few rental seasons, and plan to replace the floor when it becomes too worn.

URETHANES

There are several different urethanes that can be used for refinishing strip wood flooring, some of which are more suitable for high-abrasion situations than others. In the end, however, it's the degree to which a homeowner is willing to maintain the finish that will depend on how well it survives.

- **Moisture-cured finishes** are supposed to be the hardest but have not been popular, primarily because they contain xylene or toluene solvents, which are extremely volatile. There has been more than one case of a house being blown off its foundations when the vapors settle to the basement and ignite as they reach the water heater's pilot light. I would never apply this type of finish when a homeowner is occupying the house.



Waterborne finishes have a good track record of performance and, if properly applied, will outperform oil-modified urethanes. However, the learning curve for installing them correctly is steep.

- **Oil-modified urethanes** are by far the most commonly used urethanes, mainly because they are the easiest to apply. They are as susceptible to wear as any other finish, but they may be suitable if well maintained.
- **Waterborne urethanes** are gaining in popularity. They've been around long enough that they have a good track record of performance, and if properly applied they will outperform oil-modified urethanes. However, flooring contractors are often very reluctant to use them because the learning curve for being able to apply them successfully is so steep. While strong and durable, they will show wear like any other urethane and must be protected from abrasion.

Controlling heat and humidity. Regardless of the finish you choose, it's critical to control the job-site environment. The ideal range for drying and curing coatings is between 45% and 75% relative humidity at 65° to 85°F. Be sure to monitor the indoor temperature and humidity levels, using a hygrometer to measure the relative humidity. Also check the moisture level of

the flooring *and* the subfloor periodically throughout the job — when the flooring is received, as it acclimates to indoor conditions, as it is installed, and prior to finishing. It's critical that the moisture content be below 12% before installing and finishing. A good moisture meter is worth every penny. If the cost seems high (\$200 to \$300), just think how much you'll lose going back to correct mistakes.

The best way to control the temperature and humidity conditions is to have all HVAC systems operational and running three to four weeks before any finishing work begins.

In summer, when outside temperatures and humidity are high, crank up the A/C to dry the air and keep the temperature cool and even. High temperatures (above 85°F) cause the finish to dry so quickly that it doesn't flow and level as well. If there's no air conditioner, apply the finish early in the morning when the temperature is lower.

In winter, keep the heat on. If a forced-air heating system is being used, the general contractor or homeowner may object to using the heating system while construction is underway because they want to keep dust out of the ductwork. I use a paper-towel prefilter over the air return vents and change the furnace filters regularly during sanding and screening operations; I have never stressed a heating system yet.

By now, most contractors have gotten the message that torpedo heaters are not a good source of heat, because they dump so much moisture into the air from combustion. Much better to use if the HVAC system is not active is an oil-filled electric radiator. This won't provide the gratifying blast of heat for the crew on a cold morning, but it can maintain the air temperature at a higher level to keep indoor conditions stable. A simple dehumidifier on the job will also help remove the moisture that a combustion heater introduces. This dehumidifier should be in place when the flooring is brought to the job and installed. Unfinished wood flooring acts like a sponge; it will absorb any excess moisture when humidity levels are high.

Curing time. The curing of a floor finish is like the curing of concrete: It's a chemical process that continues for days after the finish is dry to the touch. Until it reaches maximum hardness, the finish is especially susceptible to scratching, abrasion, and chemical damage. All activity on the floor during this time should be minimized. Depending on the product, the drying time can vary from two to eight hours. However, curing can take from five to thirty days. Read the instructions and keep in mind the times given are

when indoor conditions are ideal. As the conditions become less than ideal, the curing times will be extended.

Recoating. All three of types of urethanes can be recoated as they wear, but you don't want to get to the point of having to sand down the floor completely. When a coating gets thin, it is much more likely to let moisture penetrate the wood, which then rapidly accelerates the deterioration of the coating. It's far better to recoat frequently, screening lightly first and reapplying the top coat. For most beachfront properties where keeping a glossy floor finish looking impeccable is desired, frequent refinishing may be the best option of all.

PENETRATING PRODUCTS

Any glossy clear coat will get scratched, so one option is to avoid the glossy surface and opt for a penetrating oil instead. Most of these are tung-oil products. These soak into the wood without much buildup and can be refurbished easily. They will produce a matte finish that simply won't show fine scratches. They are also very easy to reapply. The existing oil dissolves with the freshly applied coat, bonding the old and new finishes without sanding.

But just because you don't see the scratches doesn't mean the wood is not getting chewed up. In restoration work, this leads to what's often referred to a "loss of original material" — it's not a goal you want to strive for if you really care about the long-term durability of the flooring itself.

An exception that is only now becoming available in the U.S. market is a European-style oil finish from Trip Trap of Denmark (available from Special Hardwood Products, 800-242-8160; www.specialhardwood.com). This finish contains cold-pressed vegetable oils and aromatic hardening oils that both penetrate and harden, creating a reasonably wear-resistant finish that can still be easily applied and maintained.

The primary drawback to any penetrating oil is that it provides limited protection from food, beverages, and grease, which can pass through the finish and permanently stain the wood. I would not recommend such a finish in a food-preparation area.

Another potential drawback, which all penetrating oils share, is the disappointment that may arise from a nonglossy surface. In my experience with ocean properties, there is frequently a design emphasis on using large windows to bring in light and views, and a trend toward enhancing reflective surfaces with glossy finishes. The look of a matte finish is often a letdown. The owners must be made aware of what they are getting.