



To avoid callbacks, use the right grade
and protect it against wetting

by Dave Holbrook

Choosing Laminate Flooring

If you haven't yet had to specify a laminate flooring system for one of your jobs, chances are you will. Just 10 years after it was first introduced to the U.S. by way of Europe, this material has managed to capture 17 percent of the residential flooring market, according to the North American Laminate Flooring Association (NALFA). Annual growth in recent years has been in the double digits.

That growth isn't surprising, considering what the product has going for it.

Consisting of tongue-and-groove planks or tiles installed as a "floating" floor system — that is, a floor in which the pieces are joined to one another but not to the subfloor — a laminate floor system can closely mimic ceramic tile and wood, but costs less and is easier to install and maintain (see Figure 1, next page). Its stain-resistant surface is easy to clean and resists dents and scratches better than solid wood does. As a floating floor, it can be installed over various substrates — whether a concrete slab or

an old wood or vinyl floor — and is well suited for use over radiant heat.

While early laminate flooring products had to be glued at the edges, most of today's products require no gluing or clamping to install, so the floor can be walked on immediately after installation. When the time comes to remodel, removal of a floating floor is easier than that of any other flooring type, including stretched carpet. And the material's high fade-resistance means that you can replace a damaged section



Figure 1. Laminate flooring can be made to mimic wood or ceramic and stone tile, but it's more resilient, easier to clean, and less expensive.

of flooring years after it was installed, and still have the patch blend in with the surrounding floor.

Choosing the Right Product

Laminate flooring was originally developed to provide another market for the high-pressure melamine used on countertop surfaces. Because flooring takes a far greater beating than most countertops, however, manufacturers fortify their flooring to be 10 to 20 times harder than countertop laminate. But that doesn't mean that all laminate flooring is created equal. Understanding the types and grades of flooring, as well as the various installation methods, will help keep you out of trouble and within budget.

Commercial or residential? There are two basic types of laminate flooring: direct-pressure laminate (DPL) and high-pressure laminate (HPL). Both consist of layers, or laminations, that are bonded together under heat and pressure. The laminations include a transparent wear surface, typically melamine resin; a decorative layer, usually resin-saturated photographic paper; and an impact-resistant core,

typically high-density fiberboard (HDF).

HPL is a commercial-grade product that's more wear-resistant and more expensive than DPL. While some installers have found DPL more prone to edge-chipping, impact damage,

and scratching than HPL, it still performs better than wood or vinyl (see "Standard Wear and Use Ratings," page 5).

One advantage DPL has, besides price, is that its manufacturing process



Figure 2. Basic embossing, imprinted in the clear wear layer, imparts a wood texture to the product's surface, but nonaligned patterns that don't follow the wood grain still look fake close up (left). In-register embossing exactly follows the photographic wood grain and achieves a more convincing appearance (right).



Figure 3. One problem with cheap laminate flooring products is fragile joints that can chip easily during installation.

allows surface embossing, which can be used to give the product a realistic wood, ceramic, or stone texture. Embossing is done in the clear, topmost wear layer and can be as simple as a linear grain pattern that breaks up reflected light to give the surface a more “natural” appearance. More expensive products might use a technique called in-register technology, in which the embossing in the clear layer follows the wood grain in the decorative layer to give a convincing, real-wood appearance (Figure 2, previous page).

Good, better, or best? As with most things, you get what you pay for with laminate flooring. The higher the price, the thicker and more durable the product. DPL comes in three informal grades — actually thicknesses — which we will call standard, midrange, and best:

- Standard laminate is 7 millimeters ($9/32$ inch) thick and costs in the range of \$1.79 to \$2.79 per square foot.
- Middle-quality products are 8 millimeters ($5/16$ inch) thick and cost between \$1.99 and \$3.59 per square foot.
- The best quality, which is really a

commercial-grade product, is 10 millimeters ($13/32$ inch) thick and costs anywhere from \$5.60 to \$9 per square foot.

The middle price range makes for safe shopping. NALFA states that retail prices of \$3 to \$4 per foot are typical, but expect to pay more for thicker core material. Longer warranties will also add to cost. Basic warranties run for 10 years, but for a price you can extend that up to 30 years.

Some manufacturers put aluminum oxide in the clear wear layer of their better and best products. It’s a bragging point that you should have no trouble locating on the packaging and promotional literature. Aluminum oxide is an extremely hard substance, also found in other factory-applied clear flooring finishes, that significantly improves wear resistance.

Location, location, location. But grade doesn’t tell the whole story. You also need to pay attention to the manufacturers’ installation guidelines for each particular product. The basic question concerns where you plan to install the product. Will it be in a bedroom,

a kitchen, or a bath? Over a concrete slab or a wood-framed subfloor?

Specific wear ratings and information regarding bathroom or basement suitability can usually be found in each product’s literature. For bedrooms, which usually have the lowest wear exposure, you can use a product with a lower wear rating. But for bathrooms and basements, you need a product specifically treated for moisture resistance. Since you may or may not find an icon or other obvious statement on product packaging that sanctions water-exposure installation, this is an important question to ask before buying.

One caution: While you can find products that cost less per square foot than “standard” grades, professional installers advise against them. “Once you get down around a dollar per foot, you’re going to have more problems with installation,” warns Rick Jones, director of technical services at Columbia Flooring in Danville, Va., and a longtime professional installer. These products are likely to be thinner than standard laminate (6 millimeters is typical) and have a softer core material



Figure 4. Strong, easily assembled mechanical “click” joints (left) have all but eliminated gluing. But not all manufacturers use them. For instance, Alloc has a unique integral aluminum locking strip that it claims will allow nearly unlimited reassembly (right).

— medium-density fiberboard (MDF) rather than HDF — making them vulnerable to both impact damage and indentation from heavy furniture. They’re also more fragile than standard laminate, with edges that are more likely to crumble when you try to force them together (Figure 3, previous page). Unless you’ve stumbled on a great closeout deal for a discontinued quality line, flooring in this price range

isn’t going to do anyone proud.

Click or glue? Ten years ago, all laminate flooring products had to be glued together and clamped in place during installation. Today, most products are glueless: The tongues and grooves on individual planks are formed so that adjacent pieces “click” together (Figure 4). While there’s nothing unprofessional about mechanical locking systems — the better ones can beat a

1,000-pound pull test for joint separation — they’re still not as strong as a glued joint, which is three times stronger, according to Oliver Stansfield, head of technical installation services at Pergo (Figure 5).

“All floors move with seasonal changes in temperature and humidity,” Stansfield says. “When you have heavy furniture arrangements, there is a chance that a glueless floor will develop gaps. A heavy bookcase at one end of the room, for example, could prevent the floor from moving as a unit, resulting in plank separation.”

Certain flooring lines offer the option of gluing in addition to click assembly. These tend to be the thicker, higher-quality products, because with glue — or, specifically, too much glue — comes a risk of swelling and joint distortion as the material absorbs its moisture. Careful, sparing glue use might lessen the risk on thinner material, but thicker flooring is denser and less absorbent.

What To Watch Out For

Floating floors don’t appeal to everyone. The fact that the flooring isn’t nailed or glued to the substrate troubles some tradition-bound consumers — unless, of course, you don’t tell them. Some complain that the unified, floating surface of a laminate floor creates a signature “drum sound” when walked



Figure 5. Glued joints are three times stronger than mechanical joints and can’t be forced open by flooring movement. Some glued products come with a preapplied adhesive that is activated when moistened. This prevents messy squeeze-out and ensures a continuous seal with just the right amount of adhesive.

Standard Wear and Use Ratings



AC2 (21 Moderate Residential). Suitable for moderate use, such as in a bedroom.



AC2 (22 General Residential). Suitable for general living spaces.



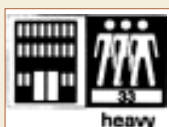
AC3 (23 Heavy Residential). Suitable for all residential applications.



AC3 (31 Moderate Commercial). Suitable for light commercial use.



AC4 (32 General Commercial). Suitable for general commercial applications, including offices and small shops.



AC5 (33 Heavy Commercial). Suitable for heavy commercial applications, including department stores and restaurants.

upon in shoes. Proponents argue that the sound is no more apparent than that made walking on any other type of flooring. Although the truth in this case seems to be relative, nearly every manufacturer offers some kind of sound-deadening underlayment foam or attached backing material (Figure 6, next page).

Substrate irregularities. Laminate flooring's HDF core material isn't meant to span large voids, so you will need to lay it over a flat subfloor. To prevent cracking by deflection, most products specify a maximum subfloor deviance — or variance in plane — of 1/4 inch in 4 feet, and a maximum depth of 3/16 inch for low spots in the subfloor.

Voids can also lead to cracked edges. Although "extreme tensile strength" may be listed on product packaging, this refers only to the ability of the mechanical locking edge to resist separation; it does not refer to the material's structural, gap-spanning quality. As with ceramic tile, laminate flooring requires full, uncompromised support from the subfloor. Most subfloor irregularities can be corrected with a feather-edged filling compound.

Moisture concerns. Because laminate flooring is a wood-based product, it will absorb water. If allowed to stay wet, it can swell or delaminate. Manufacturers



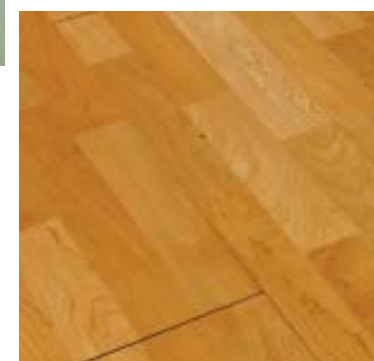
Most laminate flooring products have an AC (abrasion class) rating listed on the packaging. The rating is based on standardized tests that measure impact resistance, stain resistance, burn resistance, the effects of furniture legs or casters, and moisture-induced edge swelling.



Figure 6. Rubberized foam underlayment puts a cushion beneath the floor and helps absorb minor bumps and deviations in the subfloor (below). It may be laid in sheet form or it may already be attached to the back of the flooring (inset).



Figure 7. Two years after this floor was installed, obvious heaving appeared in the middle of the room. The problem was a pinhole leak in the hydronic baseboard heat that seeped underneath the floating floor to the lowest point. The flooring shrank after drying, leaving obvious gaps (inset). It had to be replaced (above).



address the issue on a number of fronts.

To help stabilize the product under fluctuations in relative humidity, the core is commonly sealed top and bottom with a melamine coating (called “balanced construction” in laminate parlance). Melamine is slippery stuff and therefore reduces friction over the underlayment, allowing the flooring membrane to freely expand and contract with changes in moisture content. Because of this, manufacturers are comfortable extending warranties for most products to bathroom and below-grade installations over concrete, provided they’re installed correctly. Says Pergo spokesman Brad Ries: “Most of our installations go into kitchens and baths.”

Part of proper installation is protecting the flooring from water vapor rising from below, especially on installations over concrete slabs (Figure 7). That makes a moisture-barrier membrane a must. The membrane may be as simple and inexpensive as 6-mil poly sheeting, or it may be a costlier foam cushion underlayment with an attached or integral vapor barrier (Figure 8, facing page).

Manufacturers also offer proprietary sheeting for this purpose. If you supply your own vapor barrier, note that low-



Figure 8. Concrete slab installations always require a moisture barrier, typically 6-mil virgin poly sheeting, beneath the foam underlayment. Some manufacturers offer underlayment with an integral moisture barrier. Joints should be sealed with polyethylene tape or integral adhesive strips.

grade poly sheeting with re-grind (recycled plastic content) won't satisfy warranty requirements; use only virgin 6-mil poly film.

Surface moisture can also cause problems, especially on bathroom and entry-area floors where water may puddle. Joints between glueless planks are impressively tight — tolerances of $\frac{1}{1,000}$ inch are normal — and resist water infiltration quite well (Figure 9). Flooring approved for installation in bathrooms and below-grade (basement) floor levels typically features high melamine resin saturation of the HDF core and topical moisture-blocking edge treatments, including paraffin wax and oil (Figure 10, next page). Expect to pay more for materials thus protected, and remember that doing so will always be cheaper than a callback for material failure and a voided warranty.

Once the job is done, you should call your clients' attention to the specific maintenance instructions, which typically discourage wet-mopping, or "submersion cleaning," of all laminate flooring, regardless of its location or special properties. After all, ease of maintenance is one of the major selling points: Sweep or vacuum and damp-mop only. You can distinguish your



Figure 9. Mechanical locking joints draw the precisely manufactured edges together so tightly that water can't penetrate.

North American Laminate Flooring Manufacturers

Alloc

877/362-5562
www.alloc.com

Armstrong

800/233-3823
www.armstrong.com

BHK of America

800/663-4176
www.bhkuniclic.com

Columbia Flooring

800/654-8796
www.columbiaflooring.com

Kronotex

678/513-5699
www.kronotexusa.com

Mannington Mills

800/356-6787
www.mannington.com

Mohawk Laminate Flooring

800/266-4295
www.mohawklaminateflooring.com

Pergo

800/337-3746
www.pergo.com

Quickstyle

800/387-8953
www.quickstyle.net

Quick-Step

866/220-5933
www.quick-step.com

Shaw Laminates

800/441-7429
www.shawfloors.com

Uniboard Surfaces

800/978-9448
www.uniboardsurfaces.com

Wilsonart

800/710-8846
www.wilsonartflooring.com

Witex Flooring

800/948-3987
www.witexusa.com

Laminate Flooring Standards

North American Laminate Flooring Association (NALFA)

202/785-9500
www.nalfa.com



Figure 10. Armstrong is among the few manufacturers that place no usage restrictions on any of their laminate flooring lines for bath and below-grade slab installations (above). In many product lines, the HDF core is impregnated with melamine to make it more moisture-resistant. BHK distinguishes its moisture-resistant core with a green dye, shown here next to an untreated sample (right). The resulting material provides good resistance to wicking and swelling. This type of flooring should be used in kitchens and bathrooms, over concrete slabs, and for all below-grade applications.



service, emphasize the point, and say thank you by leaving your customers with a waterless Swiffer mop.

Ask Around

Like a scuba diver heading into unknown waters, your safest bet with laminate flooring is to talk to someone who's been there and knows the terrain. Experienced installers will have worthwhile installation tips and cautions that might never occur to a salesperson.

You should also make sure the manufacturer offers good technical support. Robert Gaston, a sales and installation technician in Harwich,

Mass., notes, "If I find that manufacturer support isn't readily available, I throw away the samples and avoid the product. It's not worth the hassle dealing with potential issues without good follow-up in the field."

Local flooring dealers should be ready to talk about their favorite lines, what sells, who's buying, and why. Name-brand recognition also tends to be significant, as the older, established companies have been around the block and resolved early quality issues. Newbie producers and importers tend to offer lower prices, but they're also more likely to compromise on quality. 