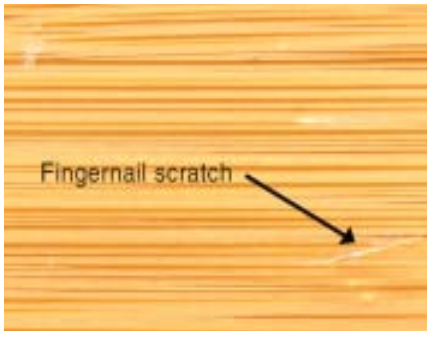
Q&A

Bamboo Floor Not as Hard as Claimed?

by Paul Fisette

Q. *Everything I've read about bamboo flooring repeats the "fact" that its hardness exceeds that of oak or maple. I installed 1,200 square feet on a remodel recently and found that it dents quite easily. In fact, I just replaced several pieces for the customer — some in the kitchen and some where the attic pull-down stair lands (which now has padded feet). Maybe there are different varieties and hardnesses? If so, how can you tell the various products apart?*

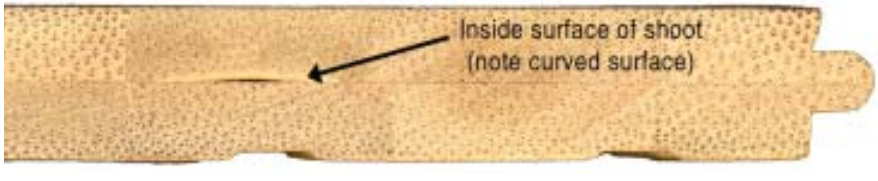
A. My personal experience with bamboo flooring has been mixed. Granted, bamboo is one of the most important plants in the world, having a wide range of uses. It grows fast, regenerates without replanting, and requires no fertilizer. It reaches a mature height of 100 feet in just five years, making it an appealing renewable resource. Most commonly used in Asia, it has lately become fashionable in the West as a flooring material. But while many manufacturers promise superior hardness, the reality is that the hardness of bamboo flooring is highly variable. Some bamboo floors I've seen dent and scratch fairly easily, with as little as a fingernail, for example (see photo). Red oak doesn't do that. On the other hand, the superior hardness that is routinely promised can also be found.



There are several reasons for this inconsistent performance. The properties of bamboo depend on the season when it's harvested, the environment in which it was grown, the amount of rain and sun it has received, and its age when harvested. Immature two-year-old bamboo is weak and typically sold at a discount in the open market. Bamboo harvested at five years is better and more expensive. So, as a starting point, it's not a good idea to buy the cheapest product. Also, there are more than 700 species of bamboo, so the potential for variability among flooring products is great.

Another cause of inconsistency is the way that bamboo lays down cells as it grows. It's denser toward the outside of the shoot and softer toward the inside. So the density of the flooring depends on where the actual fiber comes from. A good manufacturer understands this and arranges the fiber accordingly.

In the cross section (bottom photo, below), you can see that small strips are cut from a bamboo stem, then laminated together to manufacture the flooring. You can even see where one of the laminated pieces was taken from the softer, inside surface of the bamboo stem. This is the strip located directly under the scratch in the top photo.



My best advice is find a reputable manufacturer and distributor who have a solid track record and will stand behind the product. Ask how they test for and assure hardness values for the product. Request technical literature that explains how the product was made from harvesting through lamination and finishing. The literature should be convincing. If hardness is critical, choose a natural color: Natural colors are significantly harder than the "carbonized" darker colors, which are produced by pressure-steaming the wood, resulting in a significant drop (~25%) in hardness.

Unfortunately, the introduction of bamboo flooring is recent, so to date there is no governing association like the National Oak Flooring Manufacturers Association providing oversight and quality control.

Housewrap & Building Code

Q. *I have read conflicting reports about the use of housewrap. Does the building code actually require the use of housewrap under siding?*

A. There are hundreds, if not thousands, of individual code interpretations in this country. A community adopts a code or some version of a model code and enforces it locally. Until recently there were three model codes that were used to develop local codes. However, in 2002, the three code-writing bodies, BOCA, ICBO, and SBCCI, consolidated all operations under one organization called the *International Code Council*. The ICC's *International Residential Code for One- and Two-Family Dwellings (IRC)* is catching hold and has currently been adopted by Washington, D.C. and

18 states as a statewide code. This is nice, but if you live in one of the other 32 states, your local code may still use and enforce some other code, like the 1999 BOCA *National Building Code*, for example. So you'll need to check your local code for a definitive answer.

From a technical standpoint, you should absolutely use felt or housewrap. But from a legal standpoint, you probably don't have to in most cases. The 2003 *IRC* deals with this in section R703.2, "Weather Resistant Sheathing Paper." It states that asphalt-saturated felt or other approved weather-resistant material shall be applied over sheathing of all exterior walls as required by Table R703.4. In general, you must use wrap behind masonry, wood shakes and shingles, hardboard, and fiber cement siding. You do not have to use it behind aluminum, steel, vinyl, wood, and panel products. But stayed tuned: The 2004 Supplement to the *IRC* will change this section, and jurisdictions that adopt the 2004 *IRC* will thus require weather-resistant sheathing paper under all types of siding.

Keep in mind, too, that the 2003 *International Energy Conservation Code* (Section 502.1.4.2) requires that you control air leakage through exterior penetrations, and one of the allowed ways to do this is by using a "moisture vapor-permeable housewrap." While this is not a strict requirement to use housewrap, it gives you another reason to do so.

Radon Resources

Q. *Where can I obtain information about radon gas, its effects, and what products will prevent emissions from coming up through slab foundations?*

A. The best place to start is the Environmental Protection Agency's Radon Mitigation Standards website at www.epa.gov/radon/pubs/mitstds.html. There you'll find links to a wide range of useful information, including a searchable index, radon publications, radon hotlines, radon myths and facts, and a good collection of other radon links. The EPA also provides you with directions for finding a qualified radon service professional in your area (www.epa.gov/radon/proficiency.html). Since the EPA shut down its National Radon Proficiency Program (RPP) in 1998, it also provides contacts for every state at www.epa.gov/iaq/whereyoulive.html.

Ice Dams in Valleys

Q. *I need to fix a problem with ice dams in a new house. The ice dams form in two valleys over a cathedral ceiling and are causing leaks. The roof is standing-seam metal, and there is not enough venting in the valley area. Is there a solution short of tearing off the existing roof and installing a raised roof over the top of it to provide for a better vented valley?*

A. Ice dams can be controlled in two ways: Ensure that the entire roof surface remains cold so that continual melting and refreezing do not occur, or build a roof that can't leak if an ice dam forms.

To prevent warm indoor air from reaching the roof sheathing, make sure you have a continuous air barrier separating the living space from the underside of the roof. Sealing all pathways like recessed lighting, wires, pipes, and seams may be difficult in an existing house, however. So have plenty of ceiling insulation as well. In cold climates, you should have a minimum of R-40 in a cathedral roof. The insulation must be installed uniformly with no voids or compression gaps.

A less important but usually helpful measure is to incorporate roof ventilation, though in your case, I don't think that providing a vented valley is the answer. Adding roof venting to a cathedral valley is at best extremely difficult and usually not very effective. There is simply no good way to provide an unimpeded air stream under the roof sheathing short of building a raised roof, as you suggest. Some builders drill holes through adjacent rafters, but air doesn't move sideways through a series of holes well, and this method can also compromise the roof structure. Others drop the valley rafter below the roof surface to provide a connected pathway between the valley jacks and ridge vent. But the resulting convoluted air stream is not dynamic or effective.

Unfortunately, there are no easy solutions. Perhaps the most sensible approach is to remove the existing ceiling finish and insulation in the valley area; fill the rafter bays with foam-in-place or dense-pack cellulose to achieve the desired R-value and develop an airtight roof structure; then refinish the ceiling. It would also be a good idea to remove the roofing in the valley area and provide complete coverage with a peel-and-stick membrane as a backup to prevent leakage.

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Got a question?
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