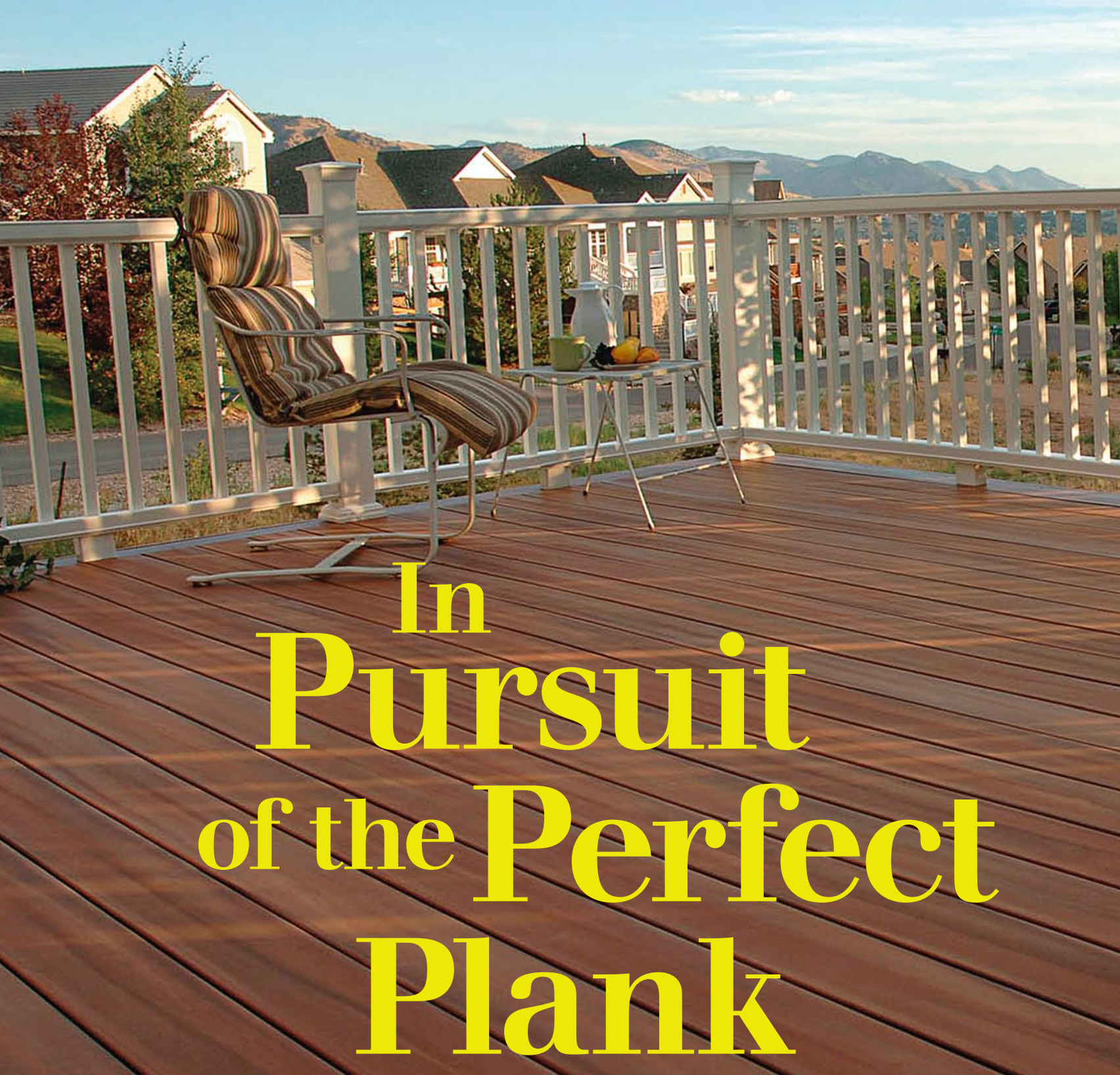


In Pursuit of the Perfect Plank

As makers of synthetic and wood decking battle for public favor, consumers benefit from newer, and better, choices

BY JEFFERSON KOLLE

Photo: courtesy of Fiberon

You might think deck boards have it easy: endless relaxation, center stage at parties and barbecues, hours spent doing nothing but soaking up the sun. But that would be forgetting the high heels, the scraping lawn chairs, and the energetic retriever dragging his Frisbee. It also would be forgetting how destructive the sun gets hour after hour, its relentless heat and light making even the toughest deck boards fade, twist, cup, check, and try to pull themselves free of the fasteners that hold them to the joists. Never mind the rain and the snow, and the days and the months when everyone goes inside except the deck boards. Or the worst kind of deck party, where the guests include mold and mildew and really, really hungry insects.

Considering the abuse heaped on the average deck, it's worth the time to choose the most durable and long-lasting planks out there. As recently as 2008, almost 85% of all deck boards sold were made from real wood, but that number is expected to drop to 77% by 2011 as man-made decking gains market share. But the battle is far from over. Wood-treatment processes continue to evolve, improving the durability of decking made from trees while addressing concerns about toxicity and hardware corrosion. At the same time, synthetic-decking manufacturers have fine-tuned the look of their products while correcting early problems with fading and decomposition.

Wood loses its edge, then makes some gains

In California, where the deck craze started more than a half-century ago, redwood was the top choice for decking because it was beautiful, plentiful, and insect- and rot-resistant. As other areas of the country realized how cool it was to hang around outside, green-tinted, pressure-treated yellow pine deck boards were nailed down everywhere. Both woods proved problematic.

Old-growth redwood was in short supply, and conservationists started asking loudly whether it was right to harvest some of the oldest living things on earth just to keep homeowners' feet out of the crabgrass while they grilled their veggie burgers. Second-growth redwood, though, proved not as durable as the old lumber, mainly due to the amount of sapwood and knots, and an inner heartwood that wasn't nearly as insect- and weather-resistant. Other naturally durable wood decking, such as cedar and Douglas fir, had similar deficiencies, which required lots of maintenance.

The early wood and plastic composite products looked as much like real wood as a milk jug looks like a cow.

Pressure-treating wood wasn't the perfect answer, either. Early formulas were infused with a carcinogenic cocktail of copper and arsenic that was outlawed in 2004. And while pressure-treating does prevent decay, wetting and drying cycles affect pressure-treated decking just like any wood, causing the boards to cup, check, and splinter. Assorted solutions of liquid deck preservatives—oils, varnishes, and soaps—can slow the effects of insects and weather, but most people want a deck to relax on, not work on.


Silicate-infused

Synthetics have their shortcomings

Man-made decking planks for residential use hit the market in the early 1990s. Using recycled plastics and waste-wood fiber ground into wood "flour," these products appeared to be the answer for homeowners who had an increasing environmental awareness and an anathema for maintenance. But the early wood and plastic composite products (known as WPCs) looked as much like real wood as a milk jug looks like a cow. Plus, the rot, mold, and mildew that lunched on solid wood also liked to eat the wood flour in the wood-plastic composites (the other ingredient in WPCs are thermoplastics—polyethylene, polypropylene, and polyvinyl chloride—meaning they can be heated and molded or extruded to retain a shape).

Other manufacturers made planking products from a variety of solid plastics with no added organic material. Some used recycled materials, but others didn't, claiming that utilizing virgin plastics solved some of the flaws associated with the mixture of materials from postconsumer plastics.

Lots of homeowners were happy with their early synthetic decks, but there were also reports of planks fading, expanding excessively, and sagging between joists. Barbecue sauce, suntan lotion, and red wine also left permanent stains on many of the synthetic products. Unexplained disintegration beset some synthetics. One contractor I spoke with told me that an early product failure resulted in decking that "resembled a crumbling graham cracker."

Class-action suits popped up like mushrooms. Synthetic-decking manufacturers backpedaled, altering promises of no maintenance to ones of low maintenance. Sealers and cleaners for synthetic products came on the market, and the companies that made these products offered advice about maintenance. One anonymous company rep asked me this rhetorical question: "You don't have to wash your car, but aren't you going to if you want it to last longer and look nice? Same thing with your deck, right?"

Wrong, said many consumers.

Synthetics offer solutions

Synthetic-deck manufacturers didn't take consumer complaints lying down, and they steadily improved their products as more and more players entered the market.

Companies introduced matching deck-railing systems to complement their boards, along with proprietary hidden-fastener systems and grooved boards that allow the planks to be held in place invisibly. Wood-grain embossing and richer, fade-resistant colors with variegated striations made the composites look more like real wood.

But more important than accessories and aesthetics is the attention put on improving the boards' performance. WPC makers fussed with the chemistry of their boards to make them more resistant to stains and to the sun's UV-rays. New ways of encapsulating the organic materials (including not only wood waste but also rice hulls) improved rot-resistance and discouraged microbe growth.

Meanwhile, decking made from cellular polyvinyl chlorides (PVC) gained a foothold in the market. Lightweight as well as scratch- and stain-resistant, the PVC boards clean up with soap and water and contain no organic material to support mold growth. Similar to vinyl siding in composition and characteristics, PVC decking was initially available only in lighter, almost pastel colors. It could fade and had high expansion and contraction rates due to temperature swings—enough, even, to shear the screws that held it in place.

Many manufacturers now make several types of decking. For instance, Trex—the Kleenex of synthetic decking thanks to its early entry in the business and its huge marketing and advertising budgets—sells six different lines of decking. Some are WPC, and some are PVC. Fiberon, a synthetic-decking company started by one-time lumber pressure-treater Doug Mancosh, also makes both composite and PVC decking. Asked why the company makes so many products, Edie Kello, director of marketing at Fiberon, says, "This young industry is evolving and creating products that outperform their predecessors. Each line provides different solutions."

Bobby Parks is the owner of Peachtree Decks and Porches in Atlanta, and since

One contractor I spoke with told me that an early product failure resulted in decking that "resembled a crumbling graham cracker."

Photo this page: courtesy of TimberSIL. Photo facing page: John Ross.

The manufacturer-contractor connection

If you're planning to contribute to the estimated $3.1 billion that will be spent on decking materials in 2010, you'll probably spend some time deciding what type of decking to buy. You'll do your research, and after making your decision, you'll probably call a contractor.

There's a chance that when he pulls up in his truck, you'll see emblazoned on the side a big logo for TimberLook (or some other decking brand). During your conversation, you'll tell him you'd like to use Fauxwood GrainRight decking because you've read up on all the choices and that seems to be the best for your deck.

"I use TimberLook," he says, pulling out full-color brochures of amazing-looking decks. His company name, incidentally, is printed at the top of the brochure, and just then you notice that his business card also has the TimberLook logo.

"Why TimberLook?" you ask.

"It's all we ever use," he says. "It's the best."

For him, definitely. For you, probably definitely.

Most of the large synthetic-decking manufacturers have contractor-rewards programs, aka loyalty programs. Before this makes you cry foul, know that these programs can benefit you, too.

Manufacturers offer a variety of perks to contractors who use their products. Along with personalized product literature, deck builders can qualify for discounts, signage, sponsorships at local home shows, even the chance for discount tools or NASCAR tickets. And many manufacturers' Web sites will list preferred deck builders on a searchable, find-a-contractor menu tab.

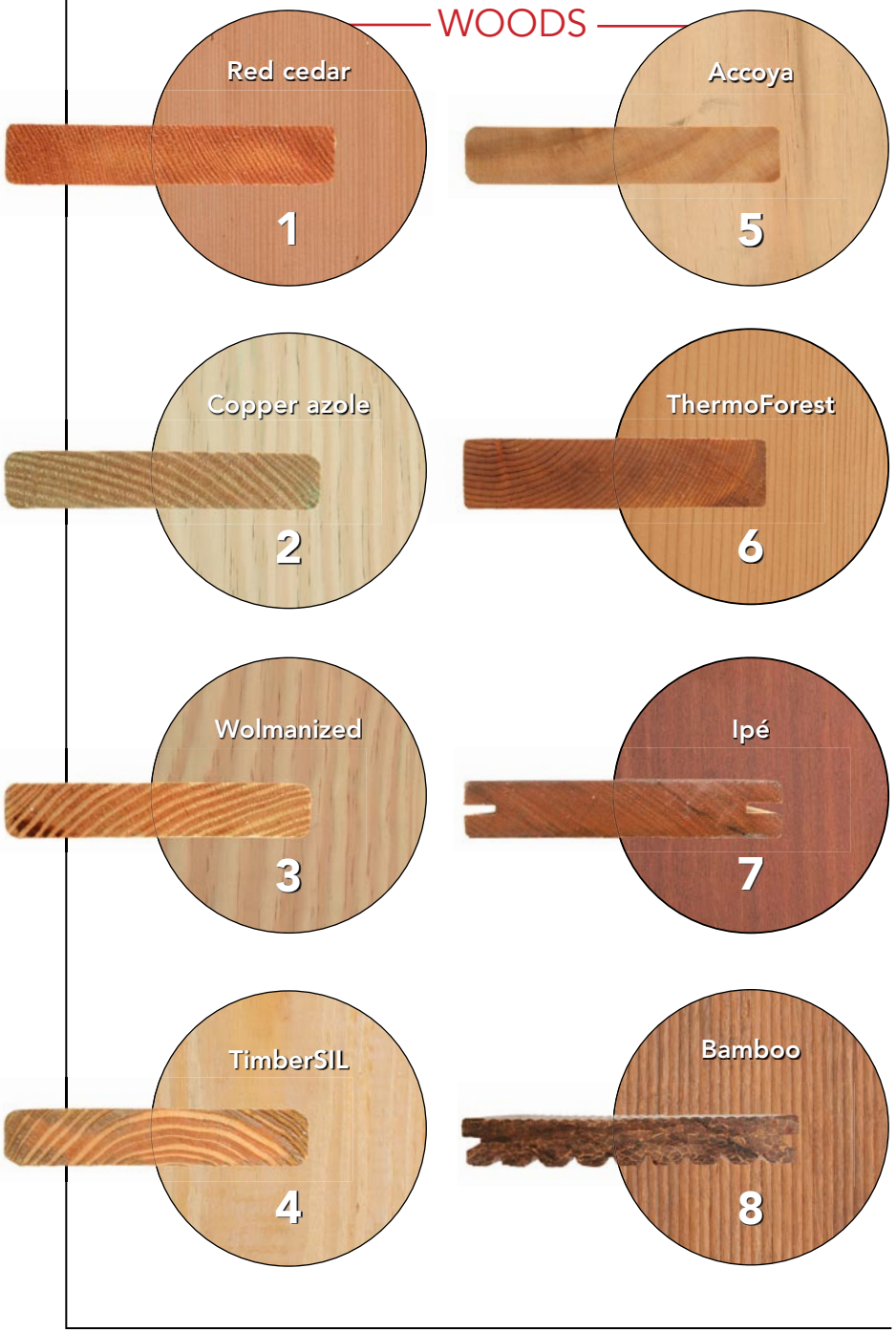
So how does it benefit the consumer if his deck board disintegrates while his contractor is sitting in the VIP seats at the Daytona 500? First, any good contractor wants to avoid callbacks more than anything. That means regardless of the swag he's getting from the manufacturer, he isn't going to install a fail-prone product.

Second, along with the fishing gear he's gotten from TimberLook, it's likely he's also gotten installation training and technical updates, either at the manufacturer's facility or in the field from a factory rep. You also can be assured that if a contractor is standing behind a product, the manufacturer is standing behind the contractor.

Of course, you'll also want to ask to visit a contractor's recent job, because all decks look great on a Web site or on the back of a digital camera. Finally, don't make a color choice based on a 3x5 board sample; find a real deck or a large sample flooring section you can look at in person.

Wonder woods and

Domestic woods and common composites make



WOODS

1. Naturally weather-resistant domestic woods
Redwood
White cedar
Red cedar

2. Metallic pressure-treated wood
ACQ (alkaline copper quaternary)
CA (copper azole)
MCQ (micronized copper quaternary)

3. Nonmetallic pressure-treated wood
Wolmanized L3 www.wolmanized.com
EcoLife www.treatedwood.com/ecolife

4. Silicate-infused wood
TimberSIL www.timbersilwood.com

5. Acetylated wood
Accoya www.accoya.com

6. Thermally modified wood
Bay Tree Technologies www.purewoodproducts.com
Cambia www.cambiawood.com
EcoVantage www.ecoprem.com
ThermoForest Products www.superiorthermowood.com

7. Tropical hardwoods
Ipé
Tigerwood
Cumara
Garapa

8. Bamboo
Cali Bamboo www.calibamboo.com
Pacific Western Wood Products www.pacificwesternwoodproducts.com
Sundeck www.sundeckamericas.com

SYNTHETICS

9. Wood-plastic composites (WPCs)
MoistureShield www.moistureshield.com
TimberTech www.timbertech.com
GeoDeck www.geodeck.com
Trex www.trex.com
Fiberon www.fiberondecking.com
Rhino Deck www.rhinodeck.com
Latitudes Intrepid www.latitudesdecking.com

10. PVC
Azek www.azek.com
Fiberon Outdoor Flooring www.fiberondecking.com
VEKAdeck www.vekadeck.com
Trex Escapes www.trex.com
Gossen www.gossencorp.com

11. Capstock
Trex Transcend www.trex.com
Fiberon Horizon www.fiberondecking.com
Latitudes Capricorn www.latitudesdecking.com
TimberTech XLM www.timbertech.com

working on his first deck in 1989, he has been involved in the design and building of more than $30 million worth of decks. "Synthetic decking has really evolved since I started," he said. "Composites have always had a better look but were marginal performers. And PVC decking had great performance with marginal looks." But he concludes, "This is all changing with the new products."

Synthetic's latest advance

The latest solution for Trex, Fiberon, Azek, TimberTech, and some other manufacturers is to cover their boards—both WPC and PVC—with a protective layer of plastic polymer. In the industry, these coated planks are referred to as capstock.

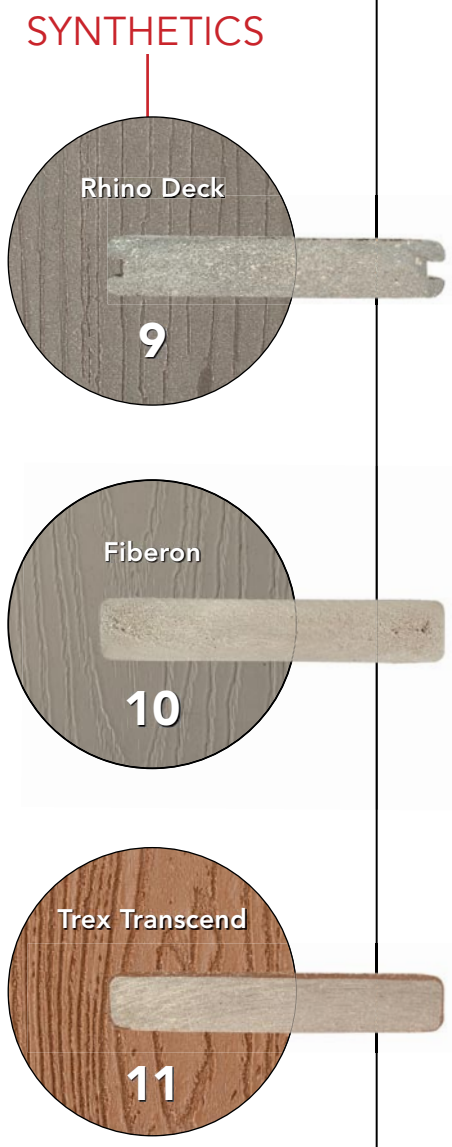
The coatings, most available with slip-resistant, wood-grain embossing and in very dark colors, are harder than the material they cover and are stain-, scratch-, and fade-resistant. None of the manufacturers I spoke with would reveal what was in their proprietary polymer. Fiberon says its capstock covering is similar to "the covering on a golf ball." Trex says, cryptically, that its includes "nine elements," and Azek describes its as an "alloy blend."

super synthetics

way for better-looking, more durable options

COST	WARRANTY	PROS/CONS	MAINTENANCE
$1.25 to $3 per lineal ft.	None stated	**Pros:** Real-wood look; low cost; widely available **Cons:** Soft, subject to scratches and scrapes; more expensive heartwoods are more resistant to insects and rot than second-growth sapwoods; some species may be more popular in certain areas of the country	Requires diligent cleaning to prevent microbe growth and sealing to prevent checking and to maintain color
75¢ to $1 per lineal ft.	Limited lifetime	**Pros:** Inexpensive and long lasting; insect- and microbe-resistant; can be stained to change color; widely available **Cons:** May require expensive coated or stainless-steel hardware; weathers quickly, rough looking; dimensionally unstable—has a tendency to split, crack, and warp	Requires annual cleaning and periodic resealing to prevent checking, cracking, and warping
$1 to $2 per lineal ft.	Varies, depending on product	**Pros:** Noncorrosive to fasteners; contains no copper that can leach into groundwater and soil; more stable than metallic pressure-treated wood; can be painted and stained; widely available **Cons:** Plain looking; may need to be stained	Soap and water cleanup to remove dirt
$1.75 to $2.25 per lineal ft.	40 years against rot and decay	**Pros:** Nontoxic; noncorrosive to fasteners; more stable than untreated wood; fire resistant; indigestible to insects and microbes **Cons:** Limited availability	Periodic cleaning and sealing
$3 to $3.50 per lineal ft.	50 years above ground	**Pros:** Indigestible to insects and microbes; stable, paintable, stainable **Cons:** Limited availability; expensive	Periodic cleaning and sealing
$2 to $3.75 per lineal ft.	Limited for 20 to 25 years, depending on manufacturer	**Pros:** Wood is 70% more stable after treating; domestic, sustainable, and available as FSC-certified; pleasant, toasted color; insect- and microbe-resistant **Cons:** Limited availability	Periodic cleaning and sealing
$2.50 to $3.50 per lineal ft.	Depends on importer or distributor; 35 years for some	**Pros:** Real wood appearance with stunning grain patterns; insect-, microbe-, and fire-resistant; widely available **Cons:** Sealing required to retain color; environmental concerns over jungle deforestation; FSC certification adds to cost	Requires periodic cleaning
$3 to $4 per lineal ft.	Up to 25 years, depending on manufacturer	**Pros:** Insect- and microbe-resistant; qualifies for LEED credit (rapidly renewal material) **Cons:** Factory-applied finish cannot be sanded; limited availability, but online ordering possible; expensive	Cleaning and sealing recommended

COST	WARRANTY	PROS/CONS	MAINTENANCE
$2 to $3 per lineal ft.	15 to 25 years; may be transferable if you sell your house	**Pros:** Insect-, splinter-, and weather-resistant; durable, but can scratch; many contain recycled materials; low maintenance; wood-grain patterns mimic natural woods **Cons:** May fade	Requires cleaning to remove dirt and debris, which can foster mold and mildew growth on wood fibers
$3 to $3.75 per lineal ft.	20 to 25 years; may be transferable if you sell your house	**Pros:** Lighter weight than wood or composites; insect-, splinter-, stain-, and fade-resistant; low maintenance **Cons:** Mostly limited to pale colors; some look like plastic; environmental concerns; expensive	Soap and water cleanup to remove dirt
$3 to $3.75 per lineal ft.	20 to 25 years; may be transferable if you sell your house	**Pros:** Combines the best features of composites and PVC decking; wood-grain patterns mimic different woods **Cons:** Expensive	Soap and water cleanup to remove dirt



They all have certain characteristics in common: The caps are expensive, which could be the reason why manufacturers use the material to cover only the exterior of the plank, rather than making solid boards out of it. Trex's coated decking line, called Transcend, is covered only on three sides so that "the underside breathes to avoid surface separation."

Capstock decking boards carry the highest price of all synthetic products, and manufacturers are bolstering their hopes for these new products with long-term, materials-only warranties. Fiberon's Kello says that capstock decking solves all the problems previously associated with synthetic-decking products and that in the next few years, "all the lower-end composites will go away."

Tropical options

As synthetic manufacturers have improved their products—including making them look more like real wood—the real-wood folks have been busy making better wood.

Among this new generation of wood for decking are tropical hardwoods, the best known being ipé, which are milled from Central and South American trees. These

Ipé decking

woods are very dense, so much so that some of them won't float, and they resist chemical infusion through pressure-treating. They are extremely weather-, rot-, and insect-resistant, not to mention beautiful. Rich, almost surreal grain patterns and colors make dazzling decks, which, if they are to retain their colors, need periodic sealing. Left unsealed, tropical hardwoods won't rot, but like all woods, they will fade or turn gray over time.

Tropical hardwoods have an excellent track record for longevity and low maintenance—one reason the city of New York has used them on over 12 miles of coastal walkways. This type of widespread use over the past decade, however, has raised lots of concerns about illegal harvesting and deforestation in the jungles of Central and South America.

The Forest Stewardship Council (FSC), a nonprofit organization, certifies wood that has been harvested responsibly. According to Dan Ivancic at Advantage Trim & Lumber, a direct importer of ipé and other tropical hardwoods since 1992, FSC certification adds a premium of about 25% to 50% to the cost of the lumber.

Bamboo flooring for indoor use has been all the rage for several years, and now several companies have introduced bamboo decking for exterior use. One of them, Cali Bamboo, is understandably tight-lipped about how it makes its product, other than to say it's strand-woven in "an incredibly unique process of compressing and intertwining the fibers," which are held together with a glue free of added urea formaldehyde.

Making domestic wood better

While tropical woods flooded the high-end market and the EPA made it illegal to use wood treated with chromated copper arsenate (CCA) for residential use, the pressure-treating industry came up with new formulas, the most common being alkaline copper quaternary (ACQ) and copper azole (CA). While less toxic, these preservatives aren't so kind to galvanized nails, screws, and joist hangers, requiring the use of specially coated or stainless-steel fasteners, which adds to the cost of a decking project.

But the current generation of pressure-treating offers products, both metallic and nonmetallic, that are less corrosive and more environmentally benign. Among them is wood treated in a process that uses sodium

Photo this page: courtesy of www.advantagelumber.com. Bottom photo facing page: courtesy of LockDry.

silicates—aka glass—to make the wood structurally more stable and strong. Wood treated in this way is indigestible to bugs and microbes, is paintable, and won't corrode galvanized fasteners. Marketed as TimberSIL, it's fast building nationwide distribution.

Pickled pine and cooked wood

Meanwhile, other guys in lab coats have come up with some unique processes to make wood better for decking and exterior use.

One of the most impressive, considering its 50-year exterior-use warranty, is Accoya, a brand name for radiata pine from New Zealand that goes through a process called acetylation, which alters the cell structure of the wood so that it will no longer absorb water or be digestable by insects, mold, or mildew. According to Chris Fiaccone, marketing manager at Titan Wood, the company that sells Accoya, the wood's stability increases about 70% during acetylation, a process similar to pickling. He said the wood is 10% harder after treatment and totally nontoxic. "When you cut it," says Fiaccone, "what you essentially get is food-grade sawdust." Accoya sells for about the same price as ipé and is available through an increasing number of North American distributors.

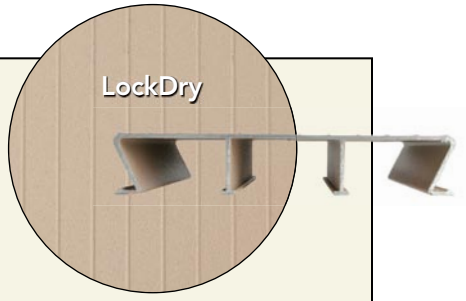
Another wood-altering process, thermal modification, has been used in Europe for a long time and is heating up the decking business on this continent. Thermally modifying wood involves baking it at temperatures up to 500°F. Different wood species require a variety of recipes (some involving steam) and cooking times, but the transformation is similar: The high heat bakes the wood's sugars, making them insoluble in water and indigestible to microbes and to insects. Stability and weather resistance are also increased. Thermal modification gives woods a pleasing baked color, similar to a slice of toast.

Several companies sell thermal wood, and others license the technology to wood processors that want to get cooking.

Here's the ultimate deal: All decking—real wood or wood wannabe—is going to require some attention, sometime. You vacuum your house, so why shouldn't you have to clean your outdoor floor? The new and seemingly impervious high-end capstock deck boards should require only periodic cleaning with soap and water. Real wood decks also need cleaning and will need sealing if they are to remain new-looking (see the chart on pp. 44-45 for care of specific decking types). Rather than expect (and pay dearly for) the perfect plank, it may make more sense to accept that your deck, like every other part of your house, requires some looking after. That may mean getting down on your hands and knees and doing a little work once or twice a year. But then get out the guacamole and the tiki torches—it's party time. □

Jefferson Kolle is a freelance writer and former *Fine Homebuilding* editor. Photos by Dan Thornton, except where noted.

Aluminum decking: Cooler than you think



What if you could find a decking material that had a lifetime warranty; was impervious to insects, mold, mildew, and rot; was fire-resistant, waterproof, and cool underfoot; and didn't pretend to look anything like wood? Would you buy it in a heartbeat? If so, then aluminum decking is for you.

If you can get around the aesthetics, however, it's difficult to argue with the attributes. Aluminum decking has a nonslip surface from powder-coating or an application of polyurea (the same stuff used for spray-on pickup-truck bed liners). Color choices range from white to a flat terra-cotta red to gray and brown. Not the widest palette, true, but I warned you about the aesthetics.

Aluminum deck planks lock together and can be fastened to wood joists with common screws. The cross sections of manufacturers' products differ, but all have a small internal gutter that drains any water that might make its way through the deck surface. The benefit of a waterproof deck surface is that it can be used to protect a room or storage area below. Because water doesn't drain through the deck surface, manufacturers recommend framing an aluminum deck so that it slopes slightly away from the house to allow water to run off. Aluminum decking, available with matching railing systems, is cool underfoot in hot weather. Its ribbed profile is designed to dissipate heat like the fins on an air-cooled lawn-mower engine.

Once you get around the fact that this decking looks a little different from what you're used to, what's not to like? For one thing, at $4 to $5 a lineal ft., it's expensive. And some people don't like the pinging sound aluminum decking makes when you walk across or drop something on it. Maybe they prefer the sound they hear when they knock on wood. Or is that just a superstition to prevent their wood deck from rotting?