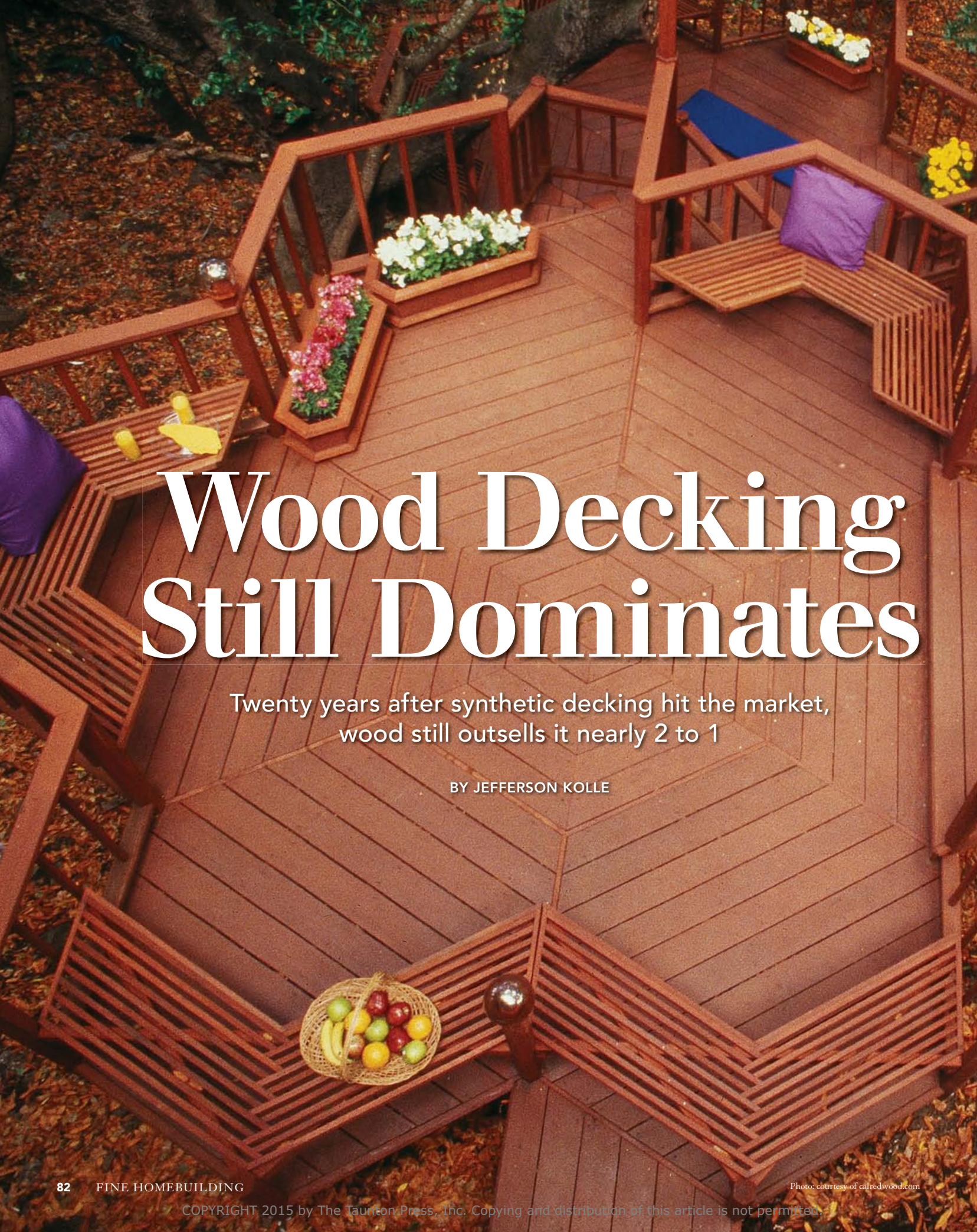


Wood Decking Still Dominates

Twenty years after synthetic decking hit the market, wood still outsells it nearly 2 to 1

BY JEFFERSON KOLLE

Photo: courtesy of calredwood.com

You've seen ads in magazines such as this one that trumpet the advantages of deck boards made from synthetics. They tout the low maintenance, the vibrant colors, and the resemblance of this decking to real wood. It's an interesting approach: Sell one product by saying how it's almost as handsome as another. But why not just use wood decking? Evidently, a lot of deck builders can't come up with a compelling reason to go synthetic. The Principia Group, a research company serving the building industry, reports that although synthetics are gaining market share, wood still accounts for more than 60% of the decking sold in the United States.

One huge reason why wood decking remains so popular is that #2 western red cedar and pressure-treated southern pine are the cheapest options on the market. Plus, wood is familiar to builders and has the appearance that synthetic-decking makers strive for. Of course, a wood deck requires cleaning and periodic sealing to keep its just-milled look. Alternatively, you can let it weather naturally to a soft gray color, although that also may result in splits and checks.

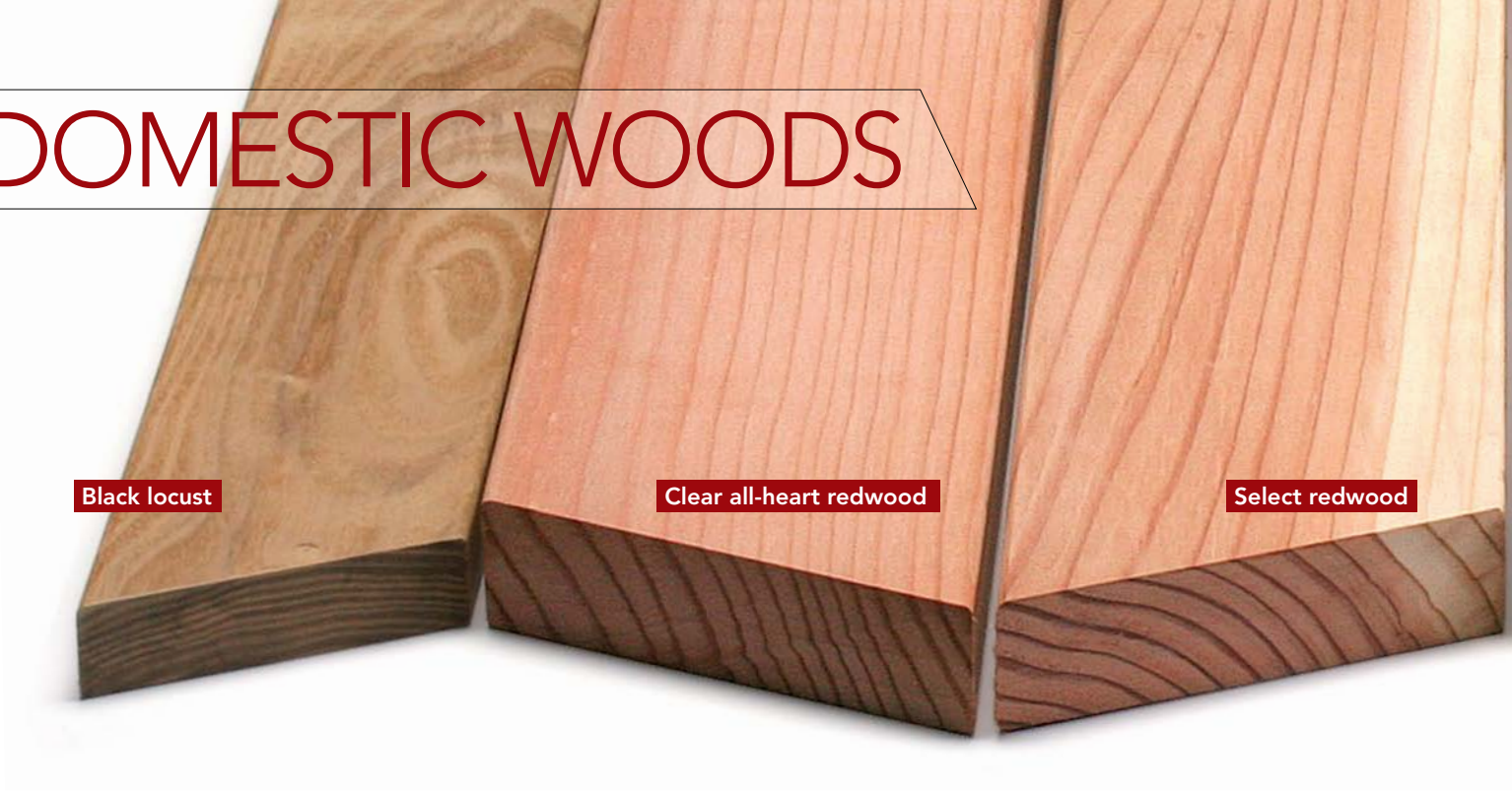
Although synthetic decking is promoted as low maintenance, its manufacturers recommend regular cleaning for their products. Like wood decking, synthetic decking can scratch, and it's not immune to staining. (Suntan lotion and insect repellant can cause permanent stains on some synthetics.) And although synthetic decking itself won't support the growth of mold or algae, it's not uncommon to find these organisms growing on dirt and tree sap on the deck's surface.

Wood decking also has environmental cachet. It's sustainable, which on the simplest level means that another tree will grow when you cut one down. Depending on your location, you may be able to purchase locally grown wood decking, which reduces fossil-fuel use. Also, wood is recyclable. In fact, some synthetic decking uses wood fibers or wood flour in its manufacture. While one of synthetic decking's early claims to fame was that it used recycled plastic, recycled material represents only a portion of most manufacturers' products, and some deck boards are made entirely from virgin oil-based materials.

There are many long-lasting wood-decking choices, each with a different price and appearance. Along with domestic and imported untreated woods, there are now treatment processes from Europe that make wood resistant to insect and microbe attack. Dense rainforest hardwoods, which arrived in the United States in the 1990s, remain a popular choice, although they carry some environmental baggage. And improvements in pressure treatment make the wood safer, less corrosive, and available in more colors.

Jefferson Kolle is a freelance writer from Bethel, Conn., and a former editor at *Fine Homebuilding*.
Photos by Rodney Diaz, except where noted.

DOMESTIC WOODS



Black locust

Abraham Lincoln is rumored to have split black locust by hand for fence posts. An almost forgotten Appalachian hardwood but a current darling of environmentalists, the wood is naturally resistant to insects and rot. It's also high in silicates, and unlike some of the waxy, oil-laden tropical hardwoods, it does not get slippery when wet. The trees are truly sustainable, sending out underground shoots from which new trees grow. Because it is domestically grown and harvested, the boards don't travel as far as imported lumber.

PROS Black locust is extremely hard and resistant to insects and rot. It is harvested domestically.

CONS Black locusts are not large trees; therefore, 8-ft. to 10-ft. decking lengths are standard.

COST $$ (see "What does decking cost?" facing page)

CONCERNS Your local lumberyard is not going to stock black-locust decking, and it will require special ordering from one of several sawyers in the United States.

SOURCES blacklocustlumber.com • midwestblacklocust.com

Redwood

Although redwood is naturally resistant to insects and rot, its quality varies appreciably depending on its grade. According to the California Redwood Association (calredwood.org), less expensive grades with more knots and less heartwood (which gives redwood its durability) may only be suitable for low-humidity locations where rot, wood-eating insects, and microbes aren't present. Damper, harsher environments require the use of better-grade decking with fewer knots and more heartwood.

Contrary to some reports, the California Redwood Association claims that the quality of redwood hasn't diminished since the days when western lumberyards were filled with racks of old-growth decking. Today's redwood lumber is cut from sustainable second- and third-growth forests, and a wider variety of grades is available. Unlike other decking woods that are cut in 3/4 and 5/4 thicknesses, redwood decking is traditionally cut as 2x6 planks, up to 20 ft. long. Unsealed, the wood will darken, then turn a silver-gray color.

PROS This is an untreated, sustainable wood that's widely available in western states.

CONS Has to be special ordered in eastern states; soft, it will show dents and dings more easily than other species.

COST $ to $$$, depending on grade, plus shipping from California

CONCERNS Sapwood is prone to rot.

SOURCES Widely available in the western United States

Western red cedar

Another West Coast softwood conifer, western red cedar is naturally resistant to rot, decay, and insect attack due to the tannins in the wood. Depending on its grade, cedar can be less expensive than redwood. Its color is typically not as rich, although deep, dark shades are available. The wood is sold nationwide in 3/4, 5/4, and 2x thicknesses.

While the boards take on a silvery patina if left untreated, the Western Red Cedar Lumber Association (realcedar.com) recommends periodic coatings of solvent-borne penetrating finishes with a mildewcide to help repel water and slow the growth of mildew, especially in damp locations.

PROS Western red cedar is an untreated, sustainable wood.

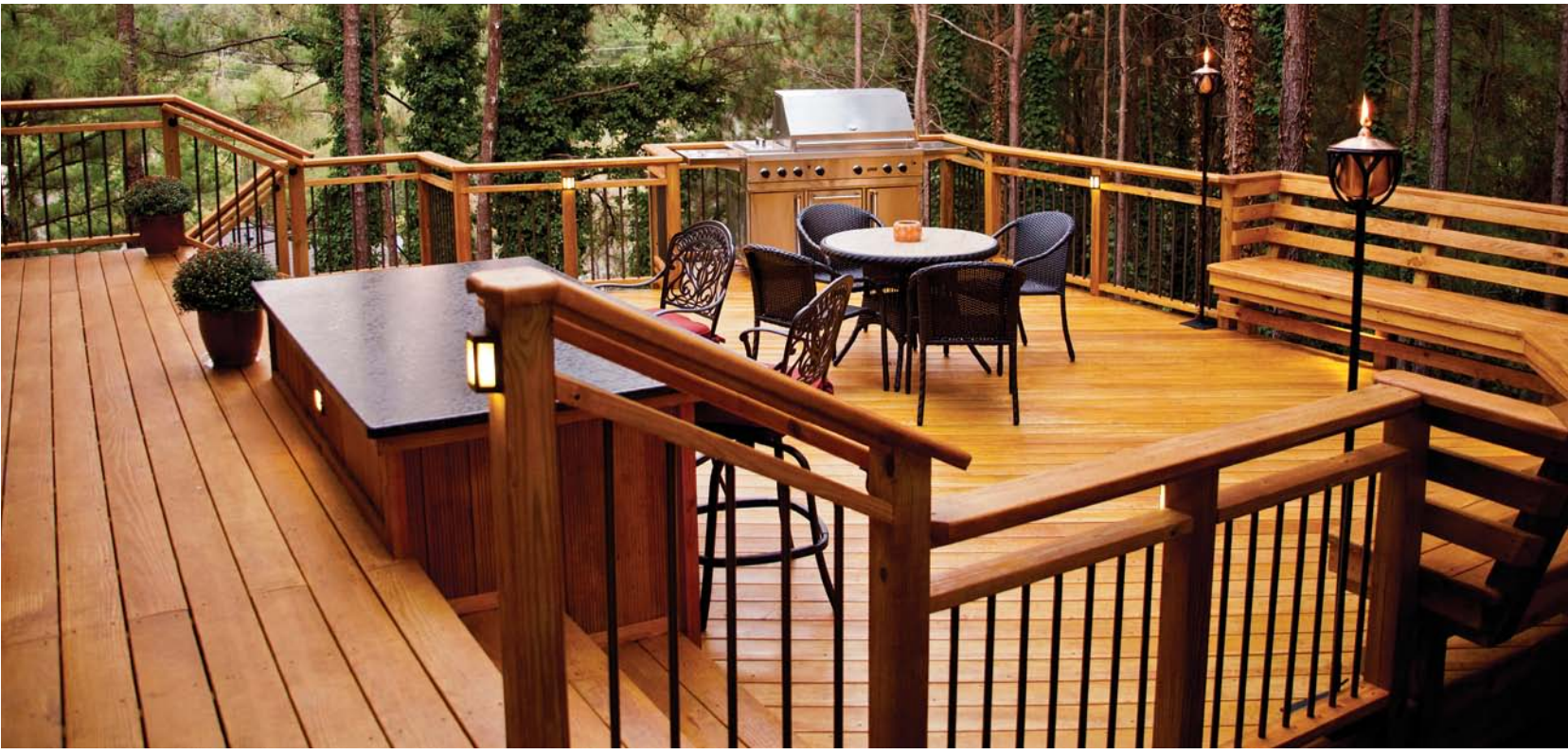
CONS A softwood, it will show dents and dings more easily than most other species.

COST $$, depending on grade

CONCERNS Some lower grades of second- and third-growth woods may contain lots of sapwood, which isn't as durable or resistant as heartwood.

SOURCES Widely available nationwide at lumberyards and some home centers

Bottom photo, facing page: courtesy of Tailor Decks



What does decking cost?

You'd think that would be an easy question to answer, and it is for a particular region. However, the cost of decking hinges on transportation and distribution chains, and trying to be specific about costs in a national magazine is an editorial rabbit hole. One example is clear western-red-cedar decking. It can be purchased in Connecticut for $3.60 per lin. ft. On the West Coast where the stuff grows, the price is more like $2.00 per lin. ft. A range is provided here rather than specific prices, referencing the cost (in Connecticut) of common 5/4x6 pressure-treated decking and 5/4x6 ipé decking for context, but in the end, you're going to have to ask suppliers in order to get accurate cost information.

Price per lin. ft. of 5/4x6 decking

$ Treated southern pine	$1.55
$$ Clear cedar	$3.60
$$$ Ipé	$6.45

Prices in Connecticut at time of publication

IMPORTED WOODS

Tropical hardwoods

Hard, beautiful, and resistant to insects and rot, tropical hardwoods started landing on North American decks about 20 years ago. Species of wood with exotic names such as ipé, cambara, cumaru, and garapa are cut from deep in tropical rainforests, mainly in the South American Amazon. Philippine mahogany is an Asian tropical hardwood, which may be sold as meranti. Confusion about the names of some of these woods is common. For instance, ipé might be called ironwood or Brazilian walnut by different retailers.

Tropical hardwoods seem almost bulletproof. Their rich, dark colors and variegated grain patterns make some of them almost shimmer in natural light, and they will remain that way if sealed periodically. Ipé is the most well known, and it has become the standard against which other wood decking is compared. In fact, some wood dealers promote their products with statements such as "75% as dense as ipé" or "costs slightly less than ipé." Aside from builders who may get tired of lugging around the heavy decking or of dulling drill bits and sawblades while installing it, the big concerns about these woods are their sources and their harvesting.

PROS Tropical hardwoods have beautiful, deep colors and grain patterns, and they are extremely durable, hard, and heavy.

CONS These woods may be slippery when wet, and their extreme hardness is tough on tools.

COST $$$, plus shipping if you order online

CONCERNS Debates over the environmental impact of rainforest logging continue to rage.

SOURCES Specialty lumberyards • advantagelumber.com • bwdepot.com

Siberian larch

Long used for railroad ties on Russia's Trans-Siberian Railway, this slow-growing, old-growth, insect-resistant, untreated conifer is now available as kiln-dried deck boards through a single U.S. importer, Stein Wood Products. A spokesman at Stein reports that the trees grow extremely slowly and that many are 400 to 500 years old. He says that decking is "nearly 100% heartwood," which is the most stable, rot-resistant part of the tree. The Forest Stewardship Council (FSC), an international governing body established by the lumber industry, classifies the wood as a sustainable product, citing the almost 1 billion acres of old-growth Siberian-larch forests in Russia.

PROS Siberian larch is naturally resistant to insects and rot. It can be sealed or stained, but this is not required.

CONS Because it's imported from Russia, milled in Austria or the Czech Republic, and then shipped to the United States, it has a large carbon footprint. It also has limited distribution through dealers in 19 states.

COST $$, plus shipping from Tennessee

CONCERNS While the wood has been used successfully in exterior applications throughout Europe for centuries, it is relatively unproven in the North American environment.

SOURCES steinwoodproducts.com

Bottom photo, facing page: courtesy of advantagelumber.com

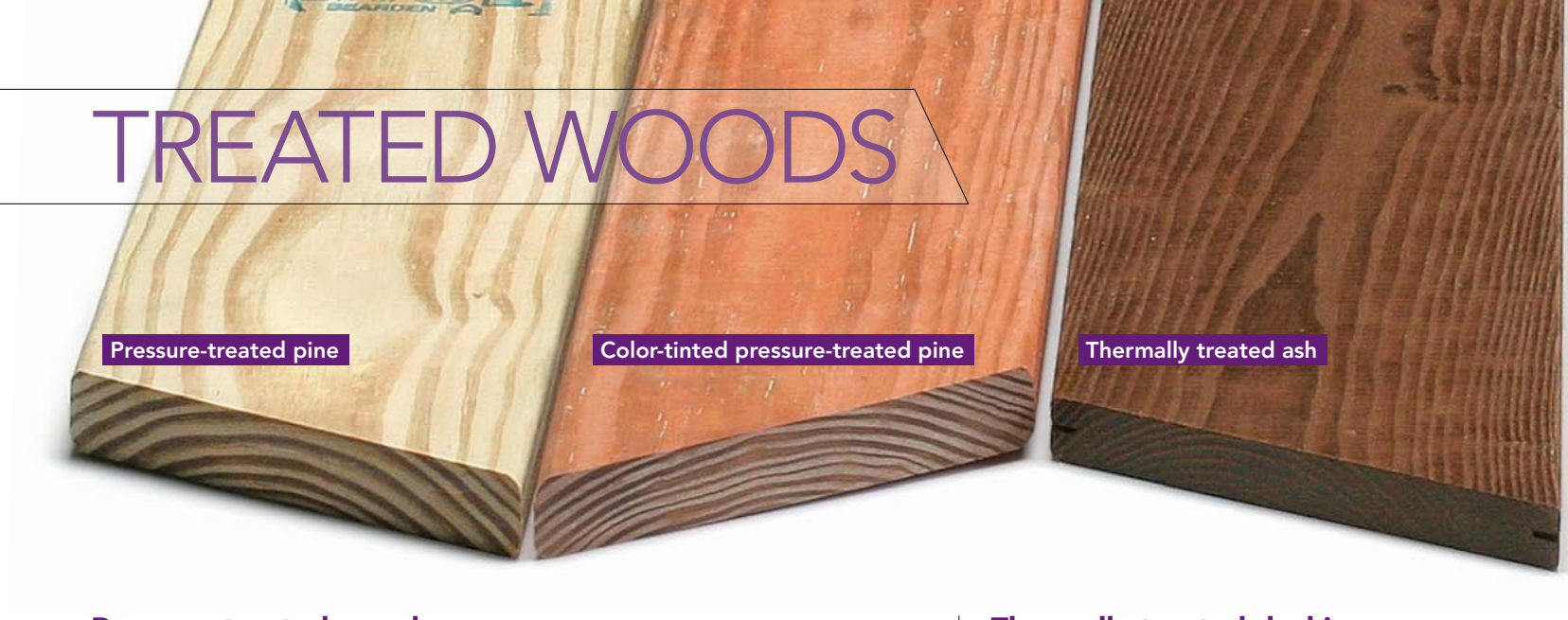
Environmental impact

The manufacture of all building products has an environmental impact. Choosing real wood decking over a synthetic product may be an earth-friendly decision, but there are other considerations. Obvious questions include whether or not the trees are harvested in a sustainable manner, how much energy is embodied in the decking through transportation and processing, and what the impact is of any treatment chemicals. Another consideration is the life cycle of the material: How long will it last before it needs to be replaced, and what happens to the scrapped boards? Will they decompose, or can they be recycled? Also consider the economic, cultural, and environmental impact on the people who live in the areas where the lumber is harvested, milled, or treated.

There are different points of view on these questions. One thing that's clear is that each factor is part of a continuum, and how you measure the sustainability of a decking product depends as much on your own values as it does on the facts you uncover. Below are links to several sites that may help you make a decision.

fsc.org
fsc-watch.com
greenspec.com
msu.edu/user/urquhart/tour/tropical_woods.html
nrdc.org/land/forests/woodguide.asp
rainforest-alliance.org/certification-verification

TREATED WOODS



Pressure-treated wood

The most common form of decking is southern pine treated with micronized copper azole (MCA). Generally a commodity product, pressure-treated decking is common in the eastern United States. Growing abundantly, but exclusively east of the Rockies, southern pine has a cell structure that allows it to suck up preservatives. Because western lumber species don't accept treatment as readily, the surface must first be incised with a series of shallow slices. Pressure-treated Douglas fir is commonly used for framing lumber in the western United States, but incised decking would be both ugly and unfriendly to bare feet. Naturally rot-resistant cedar and redwood are the more common wood-decking choices in the West.

PROS MCA-treated wood is gentle on common deck hardware and fasteners, and the preservative is less likely to leach from the wood than its predecessors. Some manufacturers offer color-tinted wood.

CONS Even with formulas that are more benign, pressure treating is an energy-intensive process.

COST $

CONCERNS MCA-treated wood is a relatively new product, and while it has been thoroughly tested, it doesn't have a long track record.

SOURCES Lumberyards and home centers nationwide

Pressure treatment

The treated-wood industry has changed in the last decade. First was the EPA's ban on sales for residential use of CCA, a once-common preservative made of arsenic, chromium, and copper. Most replacement preservatives contain copper and some non-heavy-metal biocide. One early replacement, ACQ, was found to be brutally corrosive to common hardware and fasteners. ACQ has been largely supplanted by less corrosive micronized copper azole (MCA), which manufacturers claim is just as effective at preventing rot. According to Chris Fox, a product manager at Universal Forest Products, a huge manufacturer of building materials, 80% of the company's treated-lumber output now relies on MCA.

Industry standards dictate how much preservative must be put into wood for a given end-use application. Posts and timbers that will be buried need more preservative than deck boards. All pressure-treated decking has a label stapled to the end grain that indicates the chemical used, the mill's brand name, and the approving organization's logo. For decking, the label also includes the words "above ground," meaning that although there is enough preservative in the board to withstand the wetting and drying cycles typical decking is subjected to, it shouldn't be used in direct ground contact.

Thermally treated decking

Long used in Europe as a way to increase the stability and rot resistance of wood, heat treatment has gained a small foothold in the United States. Thermally treated decking is currently available from several sources, with more to follow soon. Cooking wood at a high temperature—up to 500°F depending on the process and wood species used—bakes away the sugars that micro-organisms feed on. At such a temperature, chemical and structural changes also occur that increase the wood's dimensional stability, although at some sacrifice in strength.

Most wood species can be heat treated, but because ash responds particularly well to the process, it is commonly used for heat-treated decking. Thermory USA exports domestic ash to Europe for treatment, and the treated wood is brought back to this country. Heat-treated decking doesn't require any finish to maintain its decay resistance, but coating with a UV-blocking sealant is recommended to maintain the wood's toasted-brown color.

PROS The thermal treatments, which result in wood that is inedible to microbes and unable to absorb water, require no chemicals. The treated wood has beautiful, dark, toasted colors.

CONS The process lowers the structural strength of the wood, but that shouldn't be a problem for deck boards supported by a code-compliant deck-frame system.

COST $$$

CONCERNS Production is limited to a few heat-treating facilities in the United States and some overseas producers, but more companies are gearing up to begin production. Transporting the material from the United States to Europe and back adds to its carbon footprint.

SOURCES thermoryusa.com • ecovantagewood.com • thermotreatedwood.com

Acetylated wood

A promising European wood-preserving technology, acetylation is having a difficult time getting a foothold in the U.S. market, but this is due to lack of exposure, not the product's performance. The process involves treating the wood with acetic acid to make its cells hydrophobic, meaning that they won't absorb water. Common vinegar is diluted acetic acid, which is why the wood is sometime referred to as being pickled.

According to the sole U.S. supplier of the product, Accsys Technologies (whose products are sold under the brand name Accoya), acetylated wood is completely nontoxic and cannot absorb moisture, making it harder than before, 80% more stable, and resistant to biological attack. It comes with a 50-year above-ground warranty and is sold through several U.S. distributors. While the treated wood is nontoxic, its production does have environmental impact: Accsys uses European alder or radiata pine from New Zealand, both of which are treated in the Netherlands before being brought to the United States. That's a long distance for a piece of wood to travel before it ends up on your deck.

PROS Acetylated wood is nontoxic and stable, and it won't absorb water, which makes it resistant to insects and microbes.

CONS Limited availability

COST $$$

CONCERNS Shipping lumber from New Zealand to Europe and then to the United States adds to its carbon footprint.

SOURCES accoya.com

TimberSIL

A relatively new, nontoxic, treated-wood product, TimberSIL is made by infusing lumber in a pressure tank with sodium metasilicate, also known as liquid glass. The wood fibers are encapsulated in the material, giving them greater strength and stability and protecting them from insects and microbes. The process also makes the wood so resistant to fire that it has a class-A fire rating, an important attribute in some parts of the country. TimberSIL is manufactured by a single company in the United States. In the last year, the company shipped decking to 26 states.

Media reports of product failures (including coverage in this magazine) have been a setback for the company. According to Danny Bowers, president of TimberSIL, the failures were due to installer error, specifically the failure to coat the wood with a one-time application of a recommended product, Seal-Once (seal-once.com), as per his company's direction. The company's online installation guide says, "It is highly recommended to sand and apply a top quality transparent sealer to all surfaces of decking prior to installation to alleviate checking and splitting due to the intrusion of water that freezes."

PROS Strong, stable, and resistant to insects, microbes, and rot; class-A fire rating

CONS Limited availability through one U.S. manufacturer. Sealing required after installation.

COST $$, plus shipping from Texas

CONCERNS Several reports of product failures

SOURCES timbersilwood.com

Kebony

Touted as a sustainable alternative to tropical hardwoods, Kebony decking is manufactured in Norway and sold through a single U.S. distributor. The process injects softwood with a biowaste—furfuryl alcohol—under heat and pressure, which reacts with the wood's cell walls to make a harder, more stable, decay-resistant, and maintenance-free product.

Kebony is available in either radiata pine, southern pine, or soft maple. It develops a natural silver patina after exposure to sun and rain.

PROS No heavy metals are used in the treatment process. Kebony is very durable.

CONS Single U.S. source

COST $$, plus shipping

CONCERNS Kebony must be shipped from Europe to its distributor in Michigan, enlarging its carbon footprint.

SOURCES pinerivergroup.com