ROT-RESISTANT Decking Options

Pau Lope decking/photo courtesy of General Woodcraft

Tropical hardwoods, plastic, and wood-plastic composites are gaining favor over pressure-treated decking

by *JLC* Staff

Pressure-treated lumber, long the material of choice for exterior decks, has lost some of its appeal in the last ten years. Concerns about the toxicity of CCA-treated lumber, coupled with the demands of homeowners for a better-looking, more maintenance-free decking material, have led to the development of a variety of safe, durable, more attractive alternatives. In this article, we'll look at representative products in three categories: wood pressure-treated with non-toxic preservatives; naturally rot-resistant domestic and imported hardwoods; and a growing list of synthetic materials made with recycled plastic.

PRESSURE-TREATED OPTIONS

Several new developments in pressure-treated lumber processing are aimed at answering objections to the material's color and to the need to paint or stain it to prevent unsightly checking and splitting.

ACQ Ultrawood. The preservative ACQ was first developed in response to concern over the toxic hazard of CCA-treated lumber (*Eight-Penny News*, 10/94). Like all treated lumber, however, ACQ decking develops small checks and splits, which can lead to decay in the center of some boards and detracts from the finished appearance of the deck.

To eliminate the need for brush-on coatings, a product called *ACQ Ultrawood* (Quality Forest Products, Route 1, Box 406QF Enfield, NC 27823; 800/617-5461) includes a water repellant that is applied along with the non-toxic preservative during pressure treatment. The water repellant penetrates deep into the interior of the decking, so cut ends, notches, and drilled holes are protected. The manufacturer of Ultrawood claims there is never any need to apply additional coatings, although the material will accept paint and stain to match exterior color schemes. (Like most treated lumber, Ultrawood weathers naturally to gray.) Accessories such as posts, balusters, and rails are also available. The 5/4x6 Ultrawood deck boards cost about 80¢ per linear foot.

Deck Cap

Kodiak

Deck Cap. Another way to keep the water out and hide unsightly cracks is to use a two-part decking system called *Deck Cap* (Walker Williams Lumber Company, 945 Broadway, Suite 330, Columbus, GA 31901; 800/727-9007). The pressure-treated boards are specially milled with four kerfs along the top surface that accept the fins on the underside of an extruded vinyl cap. Once glued in place with a proprietary adhesive, the plastic cap hides all fasteners and directs surface water into the airspace between boards. The cap's edges are left unglued to allow the vinyl to expand and contract without buckling.

The exposed surface of the cap is embossed with a cross-hatched pattern, which the manufacturer claims is slip-resistant even when wet, and the light, UV-resistant colors reflect sunlight so the cap stays relatively cool to the touch, even on the hottest days.

To avoid butt seams that open and close with changes in temperature, deck boards should not exceed the 20-foot maximum length of the plastic caps. The material can be worked with ordinary carpentry tools, but because the cap is flexible, it's easiest to do all trimming and make all cutouts after the cap has been glued to the boards and allowed to dry for 24 hours. The Deck Cap system sells for about $1.65 per linear foot, and can be fitted with matching vinyl railings.

Kodiak. For clients who don't like the green color of pressure-treated wood, there's *Kodiak* lumber (ISK Biosciences Corp., P.O. Box 9158, Memphis, TN 38109; 800/556-3425). The preservative used in the pressure-treating process (copper dimethyldithiocarbamate or CDDC) imparts both resistance to decay and a natural honey-brown color that looks a lot like natural cedar. The last step in the process involves "redrying" the treated material, which allows the surface to be sealed immediately after installation to prevent checking. Preservative should also be applied to all cut ends, notches, and drilled holes, and on any areas where water is expected to pool.

Kodiak lumber turns gray as it weathers, but the surface can be power-washed or lightly sanded to restore the color; this is true of heavily worn and scratched areas as well. The restored surface should be resealed immediately with a water repellant.

TROPICAL HARDWOODS

Although pressure-treated softwoods are still the most commonly used decking materials, naturally rot-resistant tropical hardwoods are making headway as a substitute. The variety of species is bewildering. Mixed hardwoods that used to be grouped together under the single name "Philippine mahogany" are now separately labeled with less familiar names like Meranti, Cambara, Batu, and Pelawan. Subspecies add to the confusion: For example, the increasingly common Dark Red Meranti is also available in the less common Light Red, White, and Yellow varieties. Trade names add another layer of complexity. For instance, Pau Lope (see photo, first

page) is a brand name for Ipe, which is also known by more than 40 other names, including African Pencil Cedar, Juniper, and Red Juniper.

If you plan to use tropical hardwood decking, the first step is to find out what you're dealing with. One excellent source of information is a series of CD-ROMs called Woods of the World. Available in three versions (Pro, Standard, and Compact), the CDs cover more than 910 wood species, including common and scientific names, geographic origin, environmental status, physical properties, and working characteristics. For more information, contact Tree Talk (P.O.Box 426, Burlington, VT 05402; 802/863-6789) or visit the Forestworld Web site (www.forestworld.com).

High-end alternative. The characteristics that make tropical hardwoods desirable as a decking material are their rich color, varied grain, high density, and natural decay resistance. Unfortunately, these same characteristics also make them an expensive, high-maintenance option. First, initial cost for the material is higher than average, ranging between $2 and $4 per square foot. And like any hardwood, these deck boards require more labor to install because they can't be nailed by hand without predrilling. On top of that, clients intent on preserving the natural beauty of the hardwood often expect their exterior deck to be treated more like a piece of furniture. This typically means you'll have to spend time concealing fasteners and detailing posts and railings.

Finally, hardwood decks are not easy to maintain. The surface must be coated regularly with water repellant to prevent the boards from turning gray, checking, and splitting.

Environmental issues. While the hardwood alternatives eliminate the health and disposal concerns that surround pressure-treated lumber, the use of imported lumber has some environmentalists worried about depletion of the world's tropical forests. The Good Wood Alliance publishes a "Good Wood List," which contains the names of sources, manufacturers, and distributors selling tropical woods that have been harvested from forests or plantations independently certified as "well-managed." The list is updated annually, and can be viewed at the organization's Web site (www.goodwood.org/goodwood/index.html).

SYNTHETIC DECKING

Environmental issues, health concerns, and a demand for maintenance-free materials have boosted interest in man-made decking materials. Vinyl extrusions made from recycled HDPE (high-density polyethylene), as well as some aluminum products are available in a wide variety of decking systems aimed primarily at the commercial and DIY markets (see "Snap-Together Decking Systems," previous page).

But most residential builders and remodelers are turning to deck boards and accessories made from recycled plastic or wood-plastic composites that look and feel like real wood. While these materials are often twice the price of pressure-treated decking, they have the advantage of being completely impervious to moisture and will not check, split, crack, or warp. The synthetic boards can also be worked with ordinary carpentry tools and incorporated into standard deck framing systems. While most plastic decking has reduced structural strength and must be laid over a pressure-treated frame, structural grade plastic lumber in standard dimensional sizes is beginning to appear on the market (see "Structural Plastic Lumber," below).


Perma-Poly

Most solid plastic decking is available in a variety of colors and is UV-resistant to reduce fading. Wood-plastic composites weather to a gray color when exposed to sunlight, although most can be painted or stained just like solid wood. Several products are supplied as complete decking systems, including deck boards, posts, balusters, railings, and stair treads.

Perma-Poly. A solid plastic deck board called Perma-Poly (Renew Plastics, P.O. Box 220, Luxemburg, WI 54217; 800/666-5207) has been in production since 1973, making it one of the oldest synthetic decking materials still on the market. Made from recycled HDPE in a variety of profiles, including square edge and tongue-and-groove, the material can be cut and routed like wood and installed with conventional fasteners. Standard 5 1/2-inch-wide boards come in thicknesses of 3/4, 1, and 1 1/2 inches, and in lengths up to 16 feet (longer lengths can be special ordered). The material is available in a variety of standard colors and costs about $1.75 per linear foot.

Trex. Trex is probably the best known wood-plastic composite (see "Working With Trex Lumber," 8/94). The composite material, made of waste wood fiber and recycled polyethylene, is dimensionally stable, provides good traction when wet, is impervious to moisture, and is pest and chemical resistant. Available in two colors, Natural and Winchester Gray, Trex is

Snap-Together Decking Systems

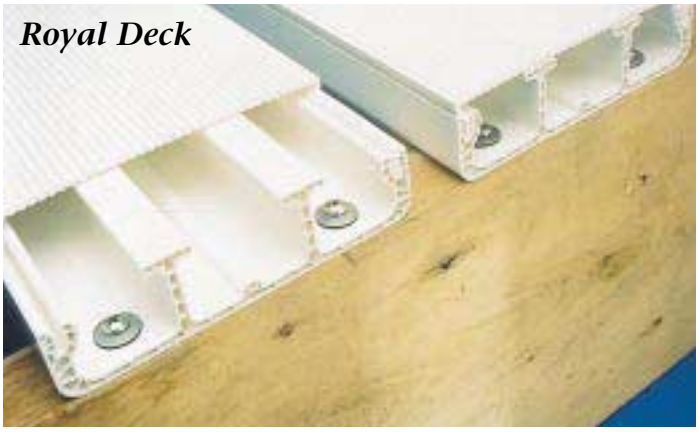
Those who are less interested in simulating the look of real wood decking have an increasing variety of extruded vinyl decking to choose from. These materials are generally made from recycled HDPE, although some products are made of virgin vinyl or include a percentage of virgin resin. Most products have integral or concealed fastening systems that speed installation and appeal to the DIY market. Space does not allow for a comprehensive review of available products, but the systems described below are representative of the overall market.

Royal Deck. Made by Premier Materials Technology (P.O. Box 120756, St. Paul, MN 55112; 800/262-2275), this two-part system consists of a ribbed cap that snaps or slides over a channeled vinyl base fastened directly to the framing.

Dream Deck. These plastic deck boards from Thermal Industries Inc. (301 Bruston Ave., Pittsburgh, PA 15221-2168; 800/245-1540) are hollow in cross-section and snap into place on a regular layout of metal rails attached to the deck framing. Accessories, like railing components and post covers, are also available.

Sheerline Uni-Deck. The honeycombed profile of this PVC deck board combines the benefits of self-alignment and concealed fasteners into a one-piece interlocking system. Each piece of decking is secured on one side with screws driven through an extended bottom flange; the opposite edge snaps into the next course, creating an interlocked surface that is 50% stiffer than two-part systems, according to manufacturer L.B. Plastics (P.O. Box 907, Mooresville, NC 28115; 800/752-7739). The decking system includes all trim and closure pieces, as well as several railing options.

Dry Lock. This screw-down aluminum decking material from Flotation Systems Inc. (2700 Alabama Highway 69 South, Cullman, AL 35057; 800/711-1785) provides a watertight surface. The interlocking decking pieces form integral gutters that shunt rainwater to the edges of the finished deck. Maintenance is reportedly minimal, and although the factory-applied finish may wear off in time, the decking can be recoated.



Royal Deck

Dream Deck

Sheerline Uni-Dek

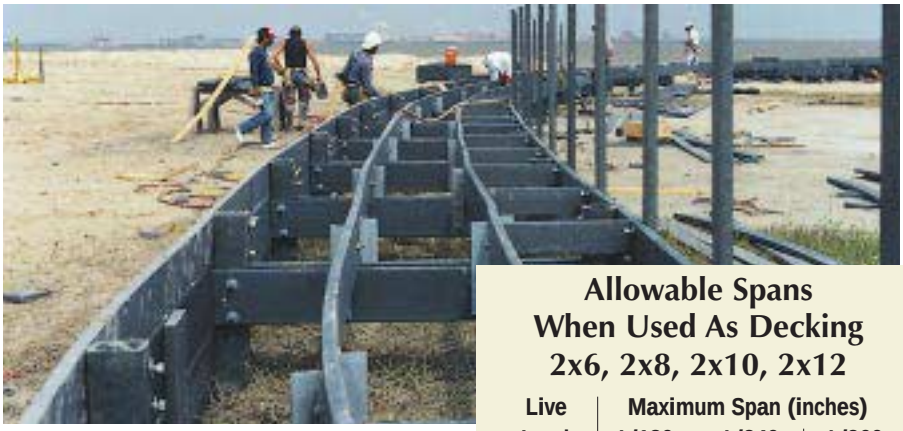
Dry Lock

Structural Plastic Lumber

It used to be that a pressure-treated deck frame would easily outlast the decking fastened to it. With the increasing use of synthetic decking, however, the frame is rapidly becoming the weak link in the search for a low-maintenance, durable exterior deck system. While several plastic and wood-plastic composites are manufactured in dimensional sizes, few are rated to perform as anything other than deck boards or railings.

One exception is TriMax Lumber, a structural grade lumber made from recycled plastic and fiberglass in a variety of standard sizes. Structurally, the properties of TriMax plastic lumber compare favorably with those of Southern Pine, and in some respects — compression and horizontal shear, for example — it is superior. The exception is a lower modulus of elasticity, which means the material's increased flexibility must be taken into account when selecting sizes and planning on-center spacing (see span chart). Like other plastic lumber, TriMax is insect resistant, does not rot or decompose, and will not check, split, or splinter. It won't degrade when exposed to salt water, resists discoloration, never needs painting, and does not leach contaminants. Like wood, it can be sawn, drilled, routed, planed, notched, and nailed or screwed with ordinary carpentry tools; also, like wood, it floats.

What's the catch? It's difficult to find a down side, but some of TriMax's characteristics require extra planning. For starters, TriMax lumber is heavy. At 2.9 pounds per board foot, an 8-foot 2x6 weighs in at about 23 pounds, and an 8-foot 2x12 weighs almost 46 pounds. Also, the plastic lumber isn't always straight. Cupping is more pronounced on larger widths — dimensional tolerance specs published by the manufacturer show that 12-inch-wide material may leave the plant cupped as much as 3/8 inch. Bowing is more noticeable on narrower pieces — for instance, a 10-inch-wide by 16-foot-long piece of TriMax may be bowed 1 inch; a 4-inch-wide piece the same length may bow 1 1/2 inches. Fortunately, the homogenous makeup of plastic lumber makes it much easier to straighten than wood.



The flexibility of plastic lumber may also result in a bouncy surface. The solution is to use deeper joists or closer on-center spacings, both of which will increase costs slightly. The flexible boards are also more difficult to keep aligned, a problem many builders will recognize from early experiences with long lengths of wood I-joists. It may take some extra time to temporarily brace joists and to chalk guidelines to help keep courses of decking in line.

Allowable Spans When Used As Decking 2x6, 2x8, 2x10, 2x12

Live Load	Maximum Span (inches) L/180	L/240	L/360
40 psf	19.85	18.28	16.52
80 psf	16.52	15.38	13.89
120 psf	14.93	13.89	12.55
160 psf	13.69	12.93	11.65

The presence of fiberglass on the surface may cause skin irritation to people who are sensitive to fiberglass. The company provides a remedy, however: After buffing the exposed surface with a fine (green) Scotch-Brite flap brush, wash the surface with soap and water using an ordinary sponge, then rinse with clean water.

Finally, at about $2.60 per board foot, TriMax is more expensive than pressure-treated lumber. Installation costs are the same, however, so the overall increase in cost for a typical deck is reasonable considering the durability of the final product. The manufacturer guarantees its product for 50 years, but it's more likely to last 500.

For more information, contact TriMax of Long Island (2076 Fifth Ave., Ronkonkoma, NY 11779; 516/471-7777).

Allowable Spans for Joists (40-pound live load)

Nominal Size	Maximum Span L/180* 12" o.c.	16" o.c.	20" o.c.	Nominal Size	Maximum Span L/240* 12" o.c.	16" o.c.	20" o.c.	Nominal Size	Maximum Span L/360* 12" o.c.	16" o.c.	20" o.c.
2x8	11-1	10-0	9-3	2x8	10-0	9-1	8-5	2x8	8-9	7-11	7-2
2x10	13-11	12-8	11-9	2x10	12-8	11-6	10-8	2x10	11-1	10-1	9-4
2x12	16-11	15-4	14-3	2x12	15-4	13-11	12-11	2x12	13-5	12-2	11-4
3x10	16-6	15-0	13-11	3x10	15-0	13-8	12-8	3x10	13-2	11-11	11-1

* rounded to nearest inch Source: Black Rhino Recycling www.nauticom.net/www/arhino


Trex


ChoiceDek


TimberTech


Durawood EX

paintable, but fades from brown to gray when left unfinished. Trex is available as 5/4x6-inch decking and in common dimensional sizes; there is no upcharge for extra-long lengths. Trex retails for around $1.45 per board foot, and can be used for surface boards, trim, and railings, but not for posts or structural framing. For more information, contact Trex (20 S. Cameron Street, Winchester, VA 22601; 800/289-8739).

ChoiceDek. These 5/4x6 and 2x6 boards are a made of recycled plastic and cedar fibers. Since the wood fibers are completely encapsulated by plastic, there's minimal moisture absorption or related warping and checking. Like natural cedar, ChoiceDek weathers to silver-gray after a few weeks of exposure; to change the natural wood color, use an oil-based paint or stain. For more information, contact Weyerhauser (3601 Minnesota Drive, Suite 530, Bloomington, MN 55435; 612/893-1717).

TimberTech. This composite decking material, made of recycled wood fiber and plastic resin, is produced in hollow tongue-and-groove extrusions that are dimensionally stable, lightweight, and fit together snugly with hand pressure. The tongue-and-groove design allows all fasteners to be hidden and reduces the number of fasteners required roughly by half. An end cap is available to cover exposed ends.

TimberTech fades from brown to light gray over time. While the decking needs no finishing, it will accept oil-based stains or paints. Care must be taken, however, to ensure that the weep holes in the groove are not plugged. TimberTech costs about $5 per square foot, and is available from Crane Plastics (P.O. Box 1047, Columbus, OH 43216; 800/307-7780).

Durawood. This synthetic decking system from SmartDeck (2600 Roosevelt Rd., Chicago, IL 60608; 888/733-2546) is available in two blends. *Durawood PE* components are made of solid recycled HDPE, and include nominal 1x6 tongue-and-groove decking, plus solid plastic posts, caps, rails, and 2-by material. The color is continuous throughout and is UV-resistant to reduce fading.

Durawood EX is a combination of HDPE and sawdust. The deck boards, posts, and rails are extruded into a lightweight honeycomb profile and comprise a complete deck system. The self-spacing deck boards are fastened with finish nails or screws through the tongue, and the rails and pickets go together using a combination of proprietary brackets and snap-together channels. The surface of the decking, which is textured to provide slip resistance and to simulate the natural look of wood, can be painted or stained immediately; left unfinished, it will weather to gray. The smooth surface on other components can be stained or painted after a light sanding or after being left exposed to the weather for several months. Durawood EX deck boards cost about $3.50 per square foot; the company estimates the complete EX system costs about 10% more than an all-cedar deck, depending on how the components are configured.