

EXTERIOR TRIM: ALTERNATIVES TO SOLID WOOD



PACIFIC WOOD LAMINATES

For exterior trim, we'd all like to use clear vertical-grain, all-heartwood western red cedar or redwood. These materials have successfully protected homes for centuries. They resist decay, remain stable, hold paint well, and are a pleasure to work with. That's why they and a few other solid wood species account for 90% of the nonvinyl trim that builders install.

Unfortunately, the supply of quality solid wood has been strained in the last few years, driving prices up and making it hard to find the "good stuff." As a result, builders are exploring engineered trim materials, including finger-jointed wood, laminated veneer lumber (LVL), hardboard, and fiber-cement panels. These materials hold great promise, but they have distinct characteristics that must be taken into account if they are to perform well. The products con-

sidered in this article cover a broad range of performance and price. All require a shift in attitude, but not necessarily a drop in quality.

Laminated Veneer Lumber

LVL, once used mainly for structural lumber, is becoming accepted for trim work as well. One of the most popular LVL trim products is Pacific Wood Laminate's Clear Lam, which is made of Douglas fir core veneers and alder face veneers glued together with a phenolic-based exterior glue and sprayed with a preservative (see Figure 1). The exposed face is covered with a phenolic-based medium-density overlay, or MDO — a smooth, attractive water-resistant paper product. Then, the whole 48-inch-wide "board" is gang-ripped to widths usable as fascia,

**Extra care during
installation is
the key to good
performance**

by Paul Fiset

soffit, and other trim components. Finally, after the individual pieces of trim have been cut and sanded, the edges are treated with an elastomeric coating and primer that masks any traces of veneer edge-grain.

Clear Lam's MDO face was added to prevent checking that occurred in the first-generation product. The company says that the MDO facing has eliminated the checking, which, according to sales manager Ron Rutherford, was the only source of contractor complaints.

Clear Lam is stocked by distributors nationwide in both 1-inch and 5/4-inch thicknesses. The material comes in widths from 4 inches to 12 inches (in 2-inch increments) and in lengths of 16 and 20 feet. If you order at least three weeks in advance, the company will manufacture thicknesses anywhere from 5/8 inch to 1 1/4 inches, widths up to 8 inches, and lengths up to 24 feet.

As a trim material, LVL has many strong points. It cuts, nails, and installs easily, and it lasts a long time. LVL also paints well, has no knots or cross-grain, and is dimensionally stable.

Builders I spoke with have used LVL successfully for fascia, corner boards, and window surrounds. Some combine LVL fascia and rake trim with MDO plywood soffits to provide a uniform look (Figure 2). Half-inch-thick MDO plywood is available in most lumber yards for around \$35 for a 4x8-foot sheet. MDO has a long and successful track record for exterior painted surfaces — it's used regularly by highway departments for painted road signs.

About the only serious drawback that LVL trim presents is its price (Figure 3). It costs less than all-clear cedar, but slightly more than clear redwood and significantly more than other engineered alternatives. And some builders wish that the standard sizes included 10- and 12-foot lengths, since the 16-foot lengths leave 4 to 6 feet of waste if you're installing vertical trim such as corner boards on a one-story ranch or a Cape. Other than that, however, LVL trim seems to be the pick of the crop.

Finger-Jointed Wood

Of all the exterior trim options, finger-jointed material is the one most readily accepted by builders, perhaps because it requires no special treatment by the installer. Finger-jointed lumber

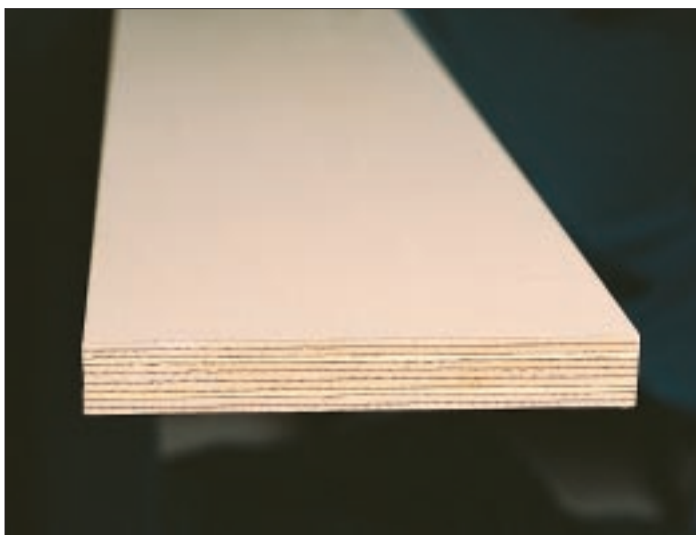


Figure 1. LVL trim products are extremely durable, and behave like plywood. Clear Lam's MDO face is water resistant and takes paint well.

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Figure 2. Combined with MDO plywood at wide soffits and deep rakes, LVL trim makes for a durable, seamless look.

Retail Prices for Selected Trim Material

Species/Product	Size	Grade	Price per lin. ft.
<i>raw:</i>			
Western red cedar	1x6	A & Better	\$1.75
Eastern white pine	1x6	select clear	\$1.25
Eastern white pine	1x6	#2 common	\$.55
<i>factory primed:</i>			
Hardboard	1x6	assorted hardwood	\$.75
LVL	1x6	Douglas fir	\$1.35
Fiber-cement	7/16x6		\$.45
Finger-jointed	1x6	western red cedar	\$1.15

Figure 3. Prices for engineered trim compare favorably with solid wood. However, the limited number of stock lengths for some materials, such as LVL, can create more waste and higher costs.



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Figure 4. Differing grain orientation in the glued-up pieces can cause telegraphing at finger joints in brick molding (left) and at edge-glued joints in wide finger-jointed trim (right). To reduce problems, specify vertical-grain material and exterior glue, and keep the trim well painted.

is manufactured by cutting short, high-grade lengths of lumber from otherwise low-grade logs and gluing them end-to-end with a weather-durable melamine-urea or phenolic resin into long, straight, clear pieces of trim. Finger-jointed trim comes in virtually all species and profiles. The most popular sizes are 1 inch or 5/4 inches thick and 4 to 12 inches wide; wider boards are typically made by edge-gluing several narrower widths together. Sixteen-foot lengths are standard, but you can find finger-jointed trim in lengths up to 24 feet.

Finger-jointed material comes in several grades: clear vertical-grain all-heart; clear vertical-grain with some sapwood; clear flat-grain all-heart; or clear flat-grain with sapwood. The characteristics of these different grades resemble those of similar grades of solid wood. And as with solid wood, it is getting harder and harder to find all-vertical-grain finger-jointed lumber because the available trees are smaller. Nevertheless, for best performance (particularly regarding paint adhesion) you should specify vertical-grain material whenever you can.

Some builders hesitate to use finger-jointed wood because of fears that the butt joints will show through. There are also horror stories about finger-jointed brick molding falling apart after a few years of exposure, or of joints telegraphing through the paint (Figure 4).

These problems do occur, because adjacent pieces of wood in a length of finger-jointed lumber almost always

expand and contract at different rates in response to changes in temperature and moisture. Even if the two adjacent pieces of wood are harvested from the same tree and exposed to precisely the same moisture conditions during manufacturing, they are unlikely to have the exact same grain orientation when glued up. Consequently, they will shrink and swell differently if exposed to significant moisture variation.

While there's no guarantee you won't have some joints show, you can reduce the incidence of these kinds of problems if you specify and install finger-jointed trim correctly. You should always follow these guidelines:

- Specify vertical-grain material (heartwood of a durable species is best).
- Specify exterior-exposure adhesive in the joints.
- Use factory-primed lumber or field-apply an oil-base prime coat on all surfaces (including the backs of the boards).
- Use two coats of 100% acrylic latex paint for top coats (do not use stains), and keep the paint well maintained.
- Carefully detail overhangs to protect the trim from moisture.

Hardboard Trim

Hardboard is one of the oldest alternatives to solid wood, and it's still the least expensive. There are currently four companies making hardboard trim in the United States (see "Alternative Trim Suppliers"), and all refer to their trim lines as "engineered wood." In each case the manufacturing process is

essentially the same. Fingernail-sized hardwood chips are first heated with steam and hot water, then passed through two rotating disks to create a homogeneous fibrous material. As these sheared wood fibers are hot-pressed into boards, the lignin contained in the wood cells liquefies, coating the fibers with a natural adhesive that also discourages rot. Many scientists believe that it is this lignin that causes hardboard to resist decay better than some untreated wood species, such as spruce, pine, and fir.

All hardboard trim weighs about the same — around 50 pounds per cubic foot, or about twice as much as solid redwood. Hardboard trim products come in 1-inch and 5/4-inch thicknesses, 4-inch to 12-inch widths, and 16-foot lengths. Manufacturers offer 7/16-inch-thick soffit material, too. The trim usually comes in both smooth and wood-textured surfaces.

A typical offering is TrimCraft, made by Temple-Inland. Two thicknesses of hardboard are laminated together to create this 1-inch or 5/4-inch-thick trim product that is sold for use as fascia, rake, and corner boards (Figure 5). TrimCraft comes factory primed on all surfaces, and is reversible — smooth on one side and textured to look like cedar on the other.

Another hardboard trim product, ProTrim, is manufactured by ABTco Inc. (formerly Abitibi-Price). ProTrim is similar to TrimCraft, except that it is faced with a paper overlay the company calls a "fusion finish." The overlay is a



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Figure 5. Hardboard trim, such as TrimCraft (left) and PrimeTrim (right), can be used for fascia, rake, and corner boards in combination with a variety of wood sidings.

newspaper-quality paper that is bonded with the addition of linseed oil. Michael Donaldson, ABTco's manager of product design, claims that ProTrim paints better because of this overlay, and even the competition agrees: Gib Landis, sales manager for Georgia-Pacific, says, "They have perhaps the best surface in the business. It paints like a piece of glass."

Landis argues, however, that there is more than paint to performance. He asserts that Georgia-Pacific's unfaced PrimeTrim is a superior product because it is "unusually resistant to rot." PrimeTrim comes primed on its face and two edges; the back is left bare. Yet despite its lack of backpriming, PrimeTrim was found by the Wood Products Laboratory at Mississippi State University (using ASTM D-2017, a standardized test) to be slightly more rot-resistant than redwood lumber siding.

Forestrim, another unfaced hardboard trim product, was introduced by Forestex in 1994. So far it comes only in a 5/8-inch thickness, but the company expects to have a 1-inch-thick product on the market soon. Trim boards that are 3 1/2 inches wide are readily available, and other widths can be special ordered.

All the manufacturers I talked with expressed concern over the reputation of hardboard siding. Many builders, myself included, have had problems using hardboard siding. Swelling, particularly around nail heads and at the ends of some boards, is the most common problem (Figure 6). These problems are worst where unprotected fibers

are exposed to weather, such as through cracks or penetrations (like over-driven nails) in the paint surface. Buckling can be a problem, too. Because the arrangement of wood fibers is randomized by the hardboard manufacturing process, the directional expansion properties are averaged throughout each piece; as a result, hardboard shrinks and swells much more along its length than solid wood does.

Some argue that these problems make hardboard an inherently failure-prone product (see "Lawyers Press More Suits on Siding Makers," *Eight Penny News*, 3/96). But manufacturers say that hardboard's potential problems can be averted through proper application, detailing, and maintenance. Specifically, manufacturers point out the following precautions:

- Always flush-nail with corrosion-resistant nails, and seal any overdriven nails with a paintable caulk.
- Leave a 1/8-inch space at butt joints and fill it with flexible caulk.
- Butt corner joints, such as those where corner boards meet (avoid miters).
- Reprime hardboard before finishing if it is left unpainted for longer than 60 days.
- Paint all surfaces (face, nail heads, and cut edges) with two coats of acrylic latex paint.
- Never install hardboard in direct contact with concrete.

In addition, manufacturers warn against nailing from both ends of a board toward the middle: The heavy

board may sag a bit, forming a "bubble" that you'll have trouble nailing flat.

These precautions take some getting used to, but they have produced good results for builders who follow them closely. One builder I talked with, for instance, has pushed his carpenters to be fussy about these details. His crew sometimes has trouble setting their nail guns to drive the nails exactly flush, so they often have to set some nails flush by hand. They also often patch and sand quite a few nail holes to make their jobs top-shelf. But this fussiness, even though it requires extra time, produces good performance for low total cost — the jobs I visited looked perfect after four years of service.



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Figure 6. The most common problem with hardboard is swelling around nail heads and at the ends of boards. To reduce problems, paint all cut edges, caulk breaks in the surface at nail heads, and leave room at butt joints for expansion.

Fiber Cement

Fiber-cement trim has a unique appeal: Once you install it, it's there forever. Fiber-cement is a mixture of wood-fiber reinforcement (under 10%), Portland cement, and sand. It's durable, dimensionally stable, fire resistant, and immune to the effects of insects, water, and sunlight. As one builder told me, "It's not what it does on the wall; it's what it doesn't do" — which is to say, fiber-cement doesn't move the way wood does.

There are two main players in the fiber-cement market — James Hardie Building Products of Fontana, Calif., and Eternit of Blandon, Pa. Eternit makes several products, all of which are sold in 4x8-foot (or larger) panels. But it is Hardie that is wooing the light-frame construction market.

Hardie's newest product, HardiTrim, is 7/16 inch thick and comes in 4-, 6-, 8-, and 12-inch widths and in 12-foot lengths. Hardie also manufactures 1/4-inch-thick Hardisoffit in 16-, 24-, 36-, and 48-inch widths and 8-, 9-, and 10-foot lengths.

Because it's so new, not all sizes of HardiTrim are yet available in all mar-

kets. Furman Lumber's Houston branch is Hardie's largest distributor and offers all sizes to the Southwestern market. The product should reach northern markets sometime this year. With a 50-year transferable warranty and at 60% of the cost of solid wood, Furman Lumber expects HardiTrim to become popular.

Working with fiber-cement panels requires some adjustments. Fiber-cement is dense (80 psf) and hard, so cutting requires a circular saw equipped with a carbide-tip blade; the blade is usually thrown away at the job's end. (A diamond tip blade lasts longer, but is slower and its cuts are not as clean.) And because factory ends are not reliable, you need to square up all the boards before using them.

Fiber-cement is hard to nail, though it doesn't require predrilling, and you can use regular galvanized nails. However, because fiber-cement does not have nail-holding power of its own, you always need to install solid nail-backing. Many carpenters like to use full 2x4s to back soffits; corner boards usually require 1/2-inch-thick backing to build out the thin trim board. Finally, fiber-cement is a dusty material

to cut or sand. Health concerns laid out in the fiber-cement Material Safety Data Sheet should be respected; in particular, dust masks should be worn while cutting or drilling the material.

For these troubles, however, you gain many pluses. To begin with, fiber-cement trim is comparable in price to #2 common pine, but infinitely more durable and stable. Also, paint lasts a very long time on this stuff (Hardie recommends a regular acrylic-latex), which is why PPG and Olympic offer 15-year warranties for their factory-applied finish on Hardie products.

Last Word

Working with new materials requires patience and an open mind, primarily because we are so familiar with wood. I love working with wood, and it is always my first choice. But good substitutes are available — if they are treated with the understanding that will make them work. ■

Paul Fiset is a wood technologist and director of the Building Materials Technology and Management program at the University of Massachusetts in Amherst.

Alternative Trim Suppliers

LVL Trim:

Pacific Wood Laminates
P.O. Box 820
Brookings, OR 97415
541/469-4177

Finger-Jointed Wood:

Pacific Lumber Company (PALCO)
P.O. Box 37
Scotia, CA 95565
707/764-2222

Hardboard:

ABTco Building Products Corp.
P.O. Box 98
Roaring River, NC 28669
800/334-3551

American Hardboard Assoc.
1210 W. Northwest Hwy.
Palatine, IL 60067
708/934-8800

Forestex
P.O. Box 68
Forest Grove, OR 97116
503/357-2131

Georgia-Pacific
P.O. Box 105605
Atlanta, GA 30348
800/447-2882

Snavelly Forest Products
600 Delwar Rd.
Pittsburgh, PA 15236
412/885-4000

Temple-Inland Forest Products Corp.
P.O. Drawer N
Diboll, TX 75941
800/231-6060

Fiber-Cement:

Eternit
P.O. Box 679
Blandon, PA 19510
610/926-0100

Furman Lumber Inc.
P.O. Box 130
Nutting Lake, MA 01865
800/843-9663

James Hardie Building Products Inc.
10901 Elm Ave.
Fontana, CA 92337
800/942-7343