

**PVC** The only alternative trim choice made entirely without wood, extruded PVC trim is rotproof and waterproof. It can be milled like wood, and some is made to mimic the exact density of pine.

**COMPOSITES** Combining wood fibers with a plastic or resin binder, composite trim can be routed and painted. But as with PVC, expansion and contraction are major installation issues.

**COMPRESSED FIBER** Considered by many to be a form of engineered-wood trim, compressed fiber is mostly wood fibers bound with resin in a mat, then heated and compressed into boards. The resin makes the boards moisture resistant for exterior use.

**ENGINEERED WOOD** Plywood and oriented strand board (OSB) have been on job sites for years, and they're now being used to make exterior trim for folks who insist on the feel of real wood. Other engineered-wood trim is made from edge-glued finger-jointed wood boards.

# The New Forest of Man-Made Trim

BY GARY M. KATZ

I spent all of last year installing exterior trim on one house, a 10,000-sq.-ft. Victorian reproduction (photo right). As with most Victorian houses, the exterior-trim details were demanding. Because of the sheer scale of the house, the owners wanted me to use low-maintenance, long-lasting materials, but also materials that wouldn't double the cost of the house. Before I started, I researched nearly every type of exterior trim available.

Any carpenter out there can tell you that today's wood trim cracks, checks, warps, twists, and generally doesn't hold paint the way wood used to. In my research, I found many alternative trim products, including plastics, composites, and engineered wood, that are available in most areas of the country. Manufacturers will help you find the closest distributor.

**Winning the upkeep war.** All the exterior trim on this Victorian house—from the corner boards and fascia to the ornamental elements—is made from alternative products that should stay maintenance-free for years.

### Some plastic trim works like wood

Trim made entirely of plastic is actually cellular polyvinyl chloride (PVC), which differs from solid plastic because of additives that cause the plastic to foam slightly. That technology allows some cellular-PVC trim to mimic both the weight and the density of wood.

All PVC trim is extruded through dies, but products can vary depending on the cooling process. One process called celuka results in a PVC trim with a dense outer layer that's more brittle than its inner core. Another process, called free-form cooling, produces a type of PVC trim that is more uniform throughout.

The first difference between these two products is that fasteners driven into the dense outer layer of celuka-processed trim cause the material to mushroom. This hard outer layer also has a tendency to chip similar to melamine when cut with a sawblade. In addition, the celuka cooling process creates a less homogeneous core with small voids that leave the edges rough when the trim is routed. This material is



Alternative trim may not be cost-effective when you buy it, but it becomes cost-effective after you've saved money on maintenance or replacement



pvc

PLASTIC NEVER WARPS,  
CHECKS, CRACKS,  
OR ROT



**Plastic won't rot.** Plastic trim such as this water table (photo left) can be installed close to the ground without fear of rot or insect damage, and it routs like wood (photo above).

**Workability:** PVC trim is paintable and can be glued and fastened with standard fasteners. It can be routed as well, but Royal Mouldings and Duraboard have an outer layer that's more dense and brittle than the core, which can leave rough edges and small voids when routed. Azek is more uniform and easier to shape.

**Sizes and cost:** PVC molding comes in all the standard board widths in 3/4-in. and 1-in. thicknesses. Sheet goods and molding profiles also are available. A 1x4 PVC board costs about \$1.10 a ft. compared to 70¢ a ft. for primed pine.

**Warranty:** 25-year limit is the standard.

Azek  
877-275-2935  
www.azek.com

Duraboard  
800-759-8746  
www.plytrim.com

Royal Mouldings  
800-368-3117  
www.royalmouldings.com

well suited for flat trim, though. Products manufactured using the celuka process include Royal Mouldings and Duraboard.

On the other hand, free-form PVC trim has a density almost identical to pine. Fasteners create dimples rather than mushrooms, and milled edges can be glass smooth. As with wood, the key to smooth cut edges is sharp carbide blades and bits.

I've found that the free-form type of PVC trim, such as Azek, is easier to work than wood. Because of its even consistency, it machines more like medium-density fiberboard (MDF): no knots, no grain, no warping or cupping. Each piece is exactly the same. Fastening PVC trim is also easier than fastening wood. Nails or screws can be driven extremely close to the edge or even into the ends without splitting (with PVC, there is no end grain). Filling holes is also easy. In fact, common toluene-base or acetone-base fillers work better with plastic than with wood because they create a chemical bond with the trim material.

Speaking of bonds, Azek says that when joints in its products are glued with its PVC cement, the bond is chemical or molecular, rather than mechanical, like glued wood-to-wood joints. The PVC glue actually dissolves the surface of the plastic, so the two PVC boards being glued together literally become one. Try to break a joint apart, and

the material around the glue joint fails instead. Azek also offers a more user-friendly water-base PVC cement that increases working time and behaves the same with PVC as yellow carpenters' glue does with wood. Excess glue can be wiped off with water before it sets, whether it's on your skin or on the material. The water-base PVC cement I used on the Victorian house also contained a UV-inhibitor, so the glue doesn't yellow when exposed to sunlight. With many types of PVC trim, priming isn't necessary; in fact, painting isn't required at all as long as the trim material includes a UV-inhibitor to keep it from yellowing over time. PVC trim also can be heated and bent for curved applications.

One word of caution while working with PVC trim. Plastic expands and contracts a lot more than wood, so if you're installing it on a warm day, cut the pieces a little long and pressure-fit the joints. The material is sure to shrink when the temperature drops.

PVC products also come as 1/2-in., 5/8-in., 3/4-in., and 1-in.-thick sheets in a variety of sizes from 4x8 to 4x20 for exterior elements such as

panels or soffits. (Not all thicknesses are available in every size.) Besides boards and sheets, many companies offer PVC trim in several molding shapes, such as brick mold, stucco, and a variety of casing.

### Composites mix PVC or resin with wood fibers

Composites first made their presence known in the building world as alternative materials for deck surfaces, but they're also a viable trim material. Composite trim is made from wood fibers with either phenolic resins (a plastic that inhibits the absorption of water) or PVC as a binder. Each type of trim has different properties.

CertainTeed mixes PVC and wood fibers for its composite exterior trim. This product has a fairly homogeneous color and consistency throughout the thickness of the material, and I've found that it cuts and routs the same as wood, with the occasional small void that has to be filled and sanded.

On the other hand, a coextrusion process creates Royal Wood's boards and trim moldings. The core is a composite of wood fibers and resin, but it's capped with an acrylic shell that makes it weather-resistant and easier to paint than solid-PVC trim. Royal Wood also can be cut and machined like wood, but when the core is exposed in the milling process, it must be primed and painted.

The same expansion and contraction issues that apply to PVC trim also apply to composites. If you don't leave the right gap, the trim can

expand and buckle, and only the recommended caulk should be used to fill the gaps. Manufacturers recommend using only butt joints instead of mitered joints.

### Rethinking wood

Despite the rising popularity of plastics, most alternative trim products on the market today are made from wood, which is still the material of choice for most builders in this country. These products overcome the drawbacks of ordinary wood by combining either pieces of solid wood, wood chips, or wood fibers in an engineered process. Although priced about the same as the better grades of standard wood trim, engineered-wood trim is superior because it's knot-free, it's perfectly straight, and it's factory-primed.

Although all trim in this category is made from wood and wood by-products, no two are exactly alike. Even among similar-looking products, there are important differences in the manufacturing process.

### Hardboard is much better than it used to be

Because of its occasional but notorious failure as a siding product, hardboard is a word that exterior-trim manufacturers try to avoid. While technically

CertainTeed  
800-782-8777  
www.certainteeted.com  
Royal Wood  
866-899-3320  
www.royalwood.com

# composites

## A BLEND OF PLASTIC AND WOOD



### Workability:

CertainTeed's composite trim is fairly consistent throughout, so it cuts and routs much like wood, except for small voids. The co-extrusion process that creates Royal Wood trim wraps the composite core with an acrylic shell. If the core is exposed through milling, it has to be primed and painted.

**Sizes and cost:** CertainTeed comes in 7/8-in. by 4-in. and 6-in. widths. In addition to standard board sizes, Royal Wood adds a variety of molding profiles. Costs run from \$1.10 a ft. (Royal Wood) to \$1.20 a ft. (CertainTeed) for a 1x4 board.

**Warranty:** Lifetime limited.

**Different binders for different trim.** Royal Wood's resin binder and acrylic shell create composite trim with even texture that's easy to mill and to paint (photo left). CertainTeed's PVC binder routs easily but leaves small voids (inset photo).

a type of engineered wood, the phrase that manufacturers prefer is compressed-fiber trim, and though the ingredients are different, the manufacturing process is similar to that of hardboard.

Primarily, compressed-fiber trim is made from a mixture of phenolic resins and wood fibers. If you think this sounds like the composites discussed earlier, you're right. Composite trim is made with a high concentration of plastic, and some products even look like plastic. But compressed-fiber trim is mostly wood. The wood-fiber/resin mixture is laid in a thick mat, then compressed and cooked so that the resins melt and bind the fibers together. As with PVC trim, two different manufacturing processes create compressed-fiber products with different qualities.

MiraTEC's primed boards and Extira's unprimed sheet goods are made in a sealed-press process with steam injection, so the entire thickness of the mat mixture is heated evenly, resulting in a board that has a consistent density throughout, similar to MDF. Zinc borate is added to the mixture to inhibit rot and termites.

PrimeTrim and TruWood are made in a continuous-press process during which the mat is heated more on the surface than the interior. The result is a higher-density outer skin more like hardboard, while the interior often has voids; it doesn't rout as well as sealed-press trim.

TrimCraft makes its trim with a slightly different manufacturing process. Instead of plastic resins, linseed oil binds wood fibers through a chemical reaction. Because

TrimCraft is free of plastic or resins, it is considered a more natural and environmentally friendly product.

Makers of compressed-fiber trim discourage the use of miter joints, instead recommending butt joints that tend to open up less. They also recommend caulking compressed-fiber trim with a polyurethane-base sealant, as well as sealing all cuts and joints with primer.

As with all exterior trim, only noncorrosive fasteners should be used. Some companies are particular about fastener spacing. For example, PrimeTrim specifies that two fasteners should be used on 16-in. centers no closer than 1/2 in. from the edge and that the fastener head should not penetrate more than 3/8 in.

### Plywood and OSB: the next generation

Plywood and oriented strand board (OSB) have been sheathing standards on job sites for decades. But for exterior trim? SmartSide (with an OSB substrate) and Ply-Trim (with a marine-plywood substrate) are both excellent alternative trim products, although I think their use is somewhat limited.

Each of these products is covered with an outer layer of resin-impregnated waterproof paper, similar to medium-

Extira  
866-382-8701  
www.craftmaster  
door designs.com

MiraTEC  
800-255-0785  
www.craftmaster  
door designs.com

PrimeTrim  
800-284-5347  
www.gp.com

TrimCraft  
800-231-6060  
www.temple.com

TruWood  
800-417-3674  
www.collinswood.com

# compressed fiber

## A NEW GENERATION OF LONG-LASTING HARDBOARD

**Workability:** MiraTEC's manufacturing process gives their boards a consistent density so that they rout like MDF. PrimeTrim and TruWood have a harder outer shell, and routing their boards often leaves voids that have to be filled. As with all exterior trim, noncorrosive fasteners are recommended, and many companies specify fastener spacing.

**Sizes and cost:** All manufacturers make standard-width boards in both 4/4 and 5/4 thickness. Extira and TruWood also come as sheet goods in a variety of sizes. PrimeTrim offers some molding profiles. Costs run from 75¢ a ft. to \$1 a ft. for most 1x4 compressed-fiber boards.

**Warranty:** 10-year limited for most; 25-year limited for MiraTEC; 30-year limited for PrimeTrim.



**Not your daddy's hardboard.** Unlike hardboard of the past, this trim can withstand the rigors of exterior use. MiraTEC trim routs more smoothly than others. All cuts and milling must be primed.



# engineered wood

TODAY'S WOOD RE-CREATED  
TO OUTPERFORM YESTERDAY'S



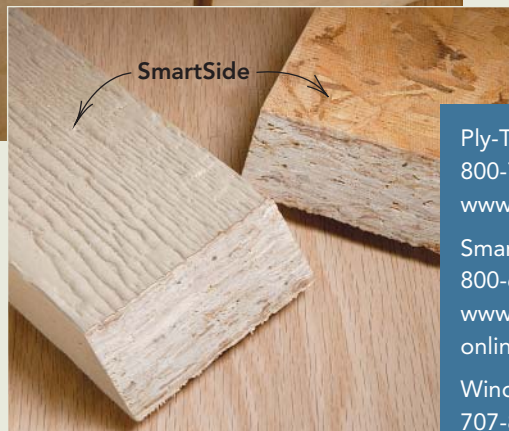
**Workability:** Engineered wood comes in many forms. SmartSide uses an exterior OSB substrate, and Ply-Trim uses marine-grade plywood. Routing these boards requires extensive filling and sanding. WindsorOne is made from solid-wood boards that are edge-glued and finger-jointed. The boards mill easily, and like all wood-product exterior trim, cuts need to be primed.

**Sizes and cost:** All manufacturers make standard-width boards in both 4/4 and 5/4 thickness. The cost of a 1x4 board runs from \$1.10 a ft. for WindsorOne to \$1.30 a ft. for Ply-Trim.

**Warranty:** 10-year limited for WindsorOne to 20-year limited for Ply-Trim.



**Better fingers.** New machine technology makes precise finger joints that are milled to allow just the right amount of glue. Narrow boards are edge-glued and factory-primed for straight, flat, stable trim boards.



**Sheathing becomes trim.** SmartSide wraps exterior-grade OSB with impregnated paper for its exterior trim.

Ply-Trim  
800-759-8746  
www.plytrim.com  
SmartSide  
800-648-6893  
www.smartsideonline.com  
WindsorOne  
707-838-7101  
www.windsorone.com

density-overlay plywood (MDO). The paper covering prevents the grain from rising and allows paint to adhere more readily. SmartSide is treated with borates for resistance to rot and insects, making it an excellent choice for trim near grade such as corner boards or water tables. Although these products work well for board applications, I wouldn't use them if routing or machining because the exposed substrate requires extensive filling or sanding.

## Finger joints aren't what they used to be

Finger-jointed lumber has come a long way due to new machine technology as well as new glues and better wood. Several companies now manufacture finger-jointed trim, including WindsorOne and a number of regional companies. In addition to improved technologies, much of the finger-jointed trim is made with radiata pine, which is harder than other pine species and is considered a renewable resource.

WindsorOne precision-machines its finger joints. The joints, or fingers, are much longer and finer than conventional finger joints, and precise milling allows space for the proper amount of waterproof glue to make a perfect bond in the joint.

WindsorOne trim is edge-laminated as well. First, short pieces of wood are finger-jointed into long lengths, and those boards are glued edge to edge, creating sheets that are consistently straight and flat. Trim boards are ripped from those sheets and are planed in a two-cutter operation to eliminate grain popping. Finally, the boards are topped off with two coats of baked-on primer.

Finger-jointed trim offers an all-wood alternative for carpenters who aren't quite ready for other types of exterior trim. It comes in a wide variety of sizes, and milling it into custom shapes is as easy as ordinary wood. I take care to prime any cuts, and because it is an all-wood product, I'm careful to install it with a proper drainage plane and adequate ventilation. □

## FOAM MOLDINGS

One challenge I faced when trimming out that big Victorian was sheer scale. A house that big needed molding to match—molding too costly if made from wood, both because of purchase price and maintenance cost. The alternative material we turned to in this case was high-density polyethylene (HDPE).

While cellular PVC foams only slightly and is extruded to form a rigid, dense trim material, HDPE foams dramatically and is used in a mold process that allows the production of large, intricate moldings. Because HDPE moldings are foam, they weigh only a fraction of PVC or wood moldings.



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