

Factory-Finished Siding

Factory finishes for wood and fiber cement offer countless color choices and a paint job guaranteed for up to 25 years

BY JOHN ROSS



It sounds too good to be true. Choose any color for the cedar or fiber-cement siding you want to install. Eliminate the hassle and expense of a site-applied finish, and get a 25-year warranty against paint failure.

When I first heard this pitch, I thought there had to be a catch; otherwise factory-finishing would be the industry standard. Sure, it's true that western red cedar and fiber cement are both premium siding materials because of their dimensional stability and paint-holding ability. But isn't 10 years about the best you're going to get before you have to repaint?

It turns out that a maintenance-free 25-year warranty for factory-painted siding

is something that you can believe in. For the past 30 years, the Forest Products Lab has been assessing paint durability by watching siding weather. According to a study that was published in 1994, the lab found that western red-cedar boards that were not exposed to weather prior to being painted were in almost-perfect condition after 20 years of exposure.

Painted fiber-cement siding hasn't been tested for as long as painted-wood siding, but its excellent dimensional stability suggests a similar longevity for the finish. However, the finish for both products has to be applied under ideal conditions. Unpainted siding cannot be exposed to the sun prior to finish application. The painting has to be done at

the right temperature, in the right humidity, and in a dust-free environment.

A factory provides the perfect environment for finishing

Just about all the variables that can affect the quality of a site-applied siding finish are eliminated in a finishing plant. Indoor temperature and humidity are easily controlled. Unfinished siding is kept clean, dry, and out of direct sunlight.

Found across the country, independently owned finishing plants, known as machine finishers, typically gain certification to apply finish from one or more siding and/or paint manufacturers. Thanks to their durability, dimensional stability, and favorable paint-

THE FACTORY IS A BETTER PLACE TO PAINT A HOUSE

The weather, the chaos, and the plain old dirt of the job site can't compete with the conditions inside a machine-finishing plant. In a plant, siding is never exposed to the elements, paint application is measured to the millimeter, and temperature and humidity are kept at optimal levels. Located throughout the country, machine finishers typically are certified to apply top-quality finishes from major manufacturers like Cabot, Sherwin-Williams, and PPG, and are set up to coat a wide range of materials, including siding and panel products.

ing qualities, western red cedar and fiber cement are the most-popular siding options for factory finishes.

"Honestly, I can't think of a good reason not to prefinish," says Brent Stewart, vice president of purchasing for Russin Lumber Corp., a factory finisher in Montgomery, N.Y. "But most homeowners don't know that this process is available."

Stewart says that factory-finishing, also called machine-finishing, is becoming more popular because quality and availability are improving. "For the customer, better quality control means there's not a big mystery about what they are going to get," Stewart says. Also, better quality control makes it more likely that the lumber retailer will rec-



Acclimation.

Finish isn't applied until the raw material has had time to reach the plant's controlled temperature and humidity.



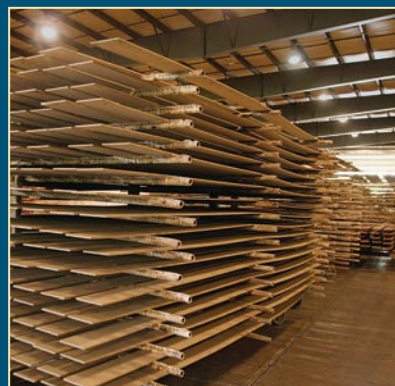
Application.

High-speed rollers, canted to match the beveled siding's profile, force the paint into crevices to ensure complete coverage.



Inspection.

The ends and edges are touched up by hand during a visual inspection.



Air circulation.

Giant racks ensure even, complete drying.

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Look for the Magazine Extras section on our home page to see a video tour of a machine-finishing plant.



WESTERN RED CEDAR AND FIBER CEMENT BECOME

RAW MATERIALS

Natural or man-made

WESTERN RED CEDAR

Western red cedar is the more-expensive option (sidebar p. 46) but has the traditional look and feel. Clear vertical-grain lumber is harvested mainly in British Columbia. Large, mature trees have uniform growth rings that, when quartersawn into siding, resist cupping, bowing, and splitting. The trees produce their own insecticides and fungicides that protect the wood in the forest as well as on a house.

Fiber cement is less than half the cost of cedar but three times the weight. Sand, cellulose fiber (wood or paper pulp), and portland cement are mixed together and pressed into sheets. Large machines cut the sheets into lap and shingle siding as well as a variety of other products. Fiber cement is impervious to damage from rot and insects, and it won't burn. It won't expand or contract with temperature and moisture fluctuations. Once installed, it looks nearly identical to cedar siding.

FIBER CEMENT

CLAPBOARD

Choose smooth or rough-sawn texture

Cedar sets the standard for the wood-grain look. Smooth and rough-sawn (photos right) are the traditional texture choices. A beveled clapboard is the most-popular profile, but other styles like tongue and groove, shiplap, and channel are also used. Common beveled-clapboard sizes are ½ in. thick by 6 in. and 8 in. wide and up to 20 ft. long. Larger sizes up to 12 in. wide are also available but can be prohibitively expensive at over \$7 per lin. ft. for ¾-in. by 12-in. lap siding. Choosing finger-jointed and edge-glued substrates (photo left) can cut the material cost by 40% or more.

Quartersawn edge-glued

Fiber cement looks nearly identical to cedar. Only the repetition of the wood-grain texture indicates that the grain was pressed into the surface during the manufacturing process. Fiber-cement lap siding comes in both smooth and wood-grain texture. It is not beveled and generally is available only in ⅝-in. thickness. The thinner profile creates a slightly less-robust shadowline. Widths for lap siding range from the most-popular 6¼ in. up to 12¼ in. While any color is possible with machine-finishing, fiber-cement manufacturers have programs, like CertainTeed's ColorMax and Hardie's ColorPlus, that offer the most-popular colors as stock items.

Quartersawn

Pressed board

ommend a factory-finished product. This represents a major change for the industry compared to five years ago. Now you can find factory finishers by contacting paint manufacturers or your local lumber retailer.

To see how the factory-finishing process works, I visited a plant that specializes in finishing western red-cedar and fiber-cement siding. Both materials are shipped to the finisher direct from the manufacturer. Once at

the plant, the siding is allowed to acclimate to the plant's temperature and humidity for several days.

Before it is primed, cedar is sanded on the back side to improve the primer's adhesion. During priming, cedar gets an alkyl oil primer to help prevent tannins or extractives from bleeding through. Fiber cement gets a special latex primer. Both materials are finished with an acrylic-latex finish coat.

The application methods vary depending on the finisher. But essentially, the siding is fed into a machine that floods the top and bottom surfaces with finish. The machine then uses rollers and high-speed brushes to force the paint into the siding's crevices. Close monitoring ensures that an even 6-mm layer of paint is applied to the siding. After the application of the finish, the siding is placed on racks to dry. To speed up the drying pro-

SHINGLES

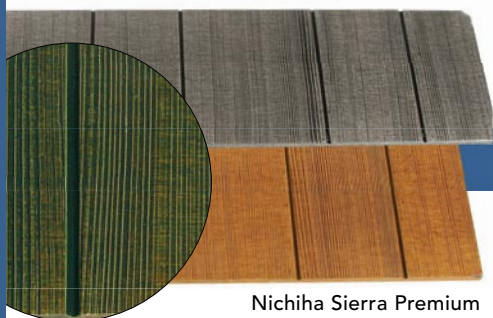
A variety of shapes and styles

Cedar sidewall shingles can make a house look rustic or refined. Typically quarter-sawn from premium-grade lumber, they vary in width from 4 in. to 12 in. and can be applied in a nearly endless combination of patterns. Decorative ends such as ovals, octagons, and circles allow skilled installers to weave elaborate patterns. Shingles can be purchased individually or collated on a plywood substrate. More options include smooth, grooved, or rough-sawn textures (photo right). At least once company, Stave Lake Cedar (www.stavelake.com), offers an 18-year no-tannin-bleed warranty for its machine-finished coatings.



Stave Lake textured shingles

Fiber-cement shingles come in a wide variety of shapes, widths, and textures. However, fiber-cement shingles are not typically individual pieces but rather larger panels with a shingle pattern cut into them. The panels can be installed faster than individual pieces yet are overlaid to create a traditional shingled look. As fiber-cement manufacturing improves, companies are experimenting with more stylized looks. One example is from the Japanese company Nichiha. Its Sierra Premium Shake is a 1/2-in.-thick panel product. Deep grooves and repeated channels create the shingle look. During the finishing process, oxidizing stains collect in the grooves for a rich, variegated look (inset photo above right).



Nichiha Sierra Premium



CertainTeed shingle panels

cess, some factory finishers bake on the paint in ovens.

Factory-finished siding saves you money

It's not hard to find out how much factory-finishing costs. In about 10 minutes, my local lumberyard worked up quotes for me on several different finish options for 5760 lin. ft. of beveled cedar clapboards and fiber-

cement lap siding: about enough material for a 3000-sq.-ft. house. I was interested in comparing the cost of unfinished cedar clapboards and primed fiber-cement siding with machine-finished versions of the same siding. The lumberyard sales rep told me that a factory finish could be applied for about \$1152 per coat on either substrate. For primer and two finish coats, my factory-applied paint job would cost \$3456.

By Alex Wilson

When comparing the relative greenness of western red-cedar and fiber-cement siding, the key issues are the raw materials going into the products, impacts of manufacturing, durability, and maintenance. At the most-basic level, wood is the greenest building material available because its production absorbs carbon dioxide and produces oxygen, while well-managed forests provide habitats for wildlife, cleanse water, and offer a range of other ecosystem benefits. If western red cedar carried certification based on standards from the Forest Stewardship Council (FSC), we would have third-party verification of well-managed forestry, but to date, British Columbian western red cedar has not been FSC-certified.

By comparison, the raw materials for fiber-cement include portland cement (a highly energy-intensive material) and wood fiber (often sourced from as far away as New Zealand). The energy used to produce fiber cement generates significant air pollution as well as carbon-dioxide emissions.

If we delve more deeply into the life cycle of siding, the picture grows murkier. Some western red cedar, for example, is sawn into large billets in British Columbia, then is shipped to China for milling into siding.

The other significant issue is durability and the need for regular painting. This is where fiber cement often outshines cedar. Conventional wisdom is that fiber cement is more stable than cedar and needs less frequent repainting, especially if installed over a rain screen. With factory finishing, though, these differences are minimized. By finishing wood before exposed surfaces have been damaged by UV light, the paint lasts a lot longer, so the environmental impacts (and costs) of frequent painting are reduced, further improving the environmental advantages of cedar over fiber cement.

Note that in fire-prone regions, there's another reason to choose fiber cement over cedar: fire protection.

—Alex Wilson, executive editor of Environmental Building News

Getting a reliable estimate for site-painting a house is more difficult. The cost of paint is easy enough to figure (about \$1500 following the manufacturer's recommendation for coverage), but the cost of getting it on the house depends a lot on site conditions, such as whether the house is one story or two, or if it is on a slope. A painter in Fairfield County, Connecticut, figuring for scaffolding, equipment, and paint, roughly estimated such a

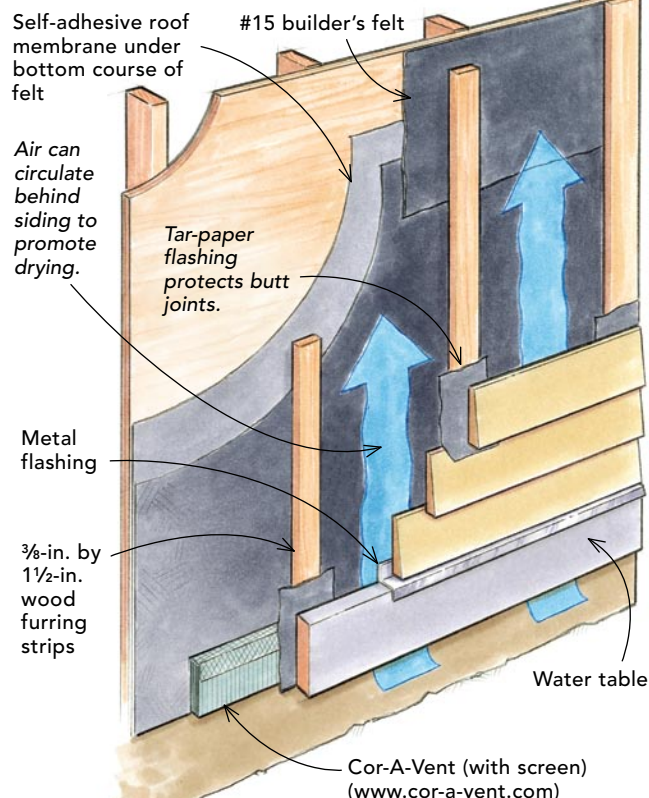
PROPER INSTALLATION TECHNIQUES ENSURE LONGEVITY AND KEEP

If water becomes trapped behind siding, it can cause bubbling paint and siding that warps, rots, or delaminates. It's also likely to void siding and paint warranties. To help prevent moisture damage, a space created behind the siding (called a rain screen) allows water to drain down or evaporate. The traditional method of ensuring healthy siding involves installing vertical furring strips over builder's felt (drawing right). Alternatively, a housewrap with a rain screen incorporated into it can be used. Several manufacturers make drainable housewraps, one of which is shown below.

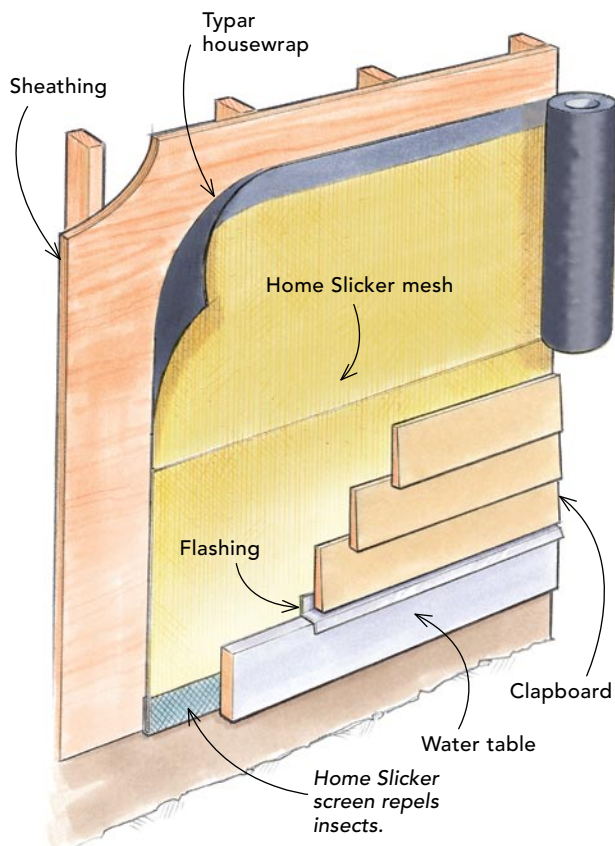


Job-site handling requires special care. For storage, keep siding stacks flat, well covered, and away from direct contact with the ground. During installation, avoid overdriving fasteners, scuffing surfaces, or leaving anything that a painter might have to fix.

Site-manufactured rain screen



Rain-screen housewrap



Ready-made rain screen. For an all-in-one rain screen (photo above), plastic mesh (www.homeslicker.com) is bonded to the synthetic housewrap Typar (www.typar.com). This combination rolls on just like builder's felt (drawing left) for 65¢ per sq. ft. Home Slicker mesh is also available bonded to #15 felt or on its own (no backing). For more on housewrap options, see FHB #177, and online at FineHomebuilding.com.

WARRANTIES VALID



Hide your handiwork

Siding nails can be ordered with any paint color on the head. Maze Nails (www.mazenails.com) keeps stocks of nails to match all CertainTeed and Hardie standard colors.

Typically, hand-driven nails with a blunt tip and thin shank are used on cedar, while pneumatic fasteners with a steeply cut tip and thick shank secure fiber cement. When hand-nailing, use a polyurethane cap on



the hammer (available from the nail manufacturer) to avoid damaging the finish. An aluminum nose



on a pneumatic nailer (photo facing page) protects factory-finished fiber-cement siding.

Color-matching paint kits (photo below) coat cut ends on site. Several bottles should come with your siding order, but if you've chosen a custom color, it's smart to order extra touch-up paint.



project as costing from \$7000 to \$10,000 for one primer coat and two finish coats. These bottom-line price comparisons make factory-finished siding look attractive.

Fiber-cement siding can come with a transferable warranty

All three fiber-cement manufacturers mentioned here (Nichiha, CertainTeed, James Hardie) offer warranties that cover the siding itself as well as the factory finish, as long as you use the proprietary finish applied by the manufacturer. Although 25-year warranties are available with a special-order extra finish coat of paint, the typical single-coat warranty is 15 years. The substrate warranty, which can be up to 50 years and which primarily covers delamination, and the proprietary-finish warranty are transferable to a new homeowner, which factors positively in a home's resale value.

If you want to go beyond the limited selection of proprietary finish colors available from fiber-cement manufacturers, your lumberyard can arrange to have an independent machine finisher apply a much-broader selection of color choices. In this case, the fiber-cement manufacturer still warrants the substrate, but the paint warranty comes from the paint manufacturer. Choose this finish option, and you can get up to a 25-year warranty against finish failure (sidebar p. 46).

For cedar siding, the warranty for a factory finish comes from the paint manufacturer and is typically for 15 to 25 years, depending on how many coats are applied. These warranties aren't transferable, and if there's a problem with the siding itself, you'll have to contact the siding manufacturer or installer to address these issues.

Some site-painting required

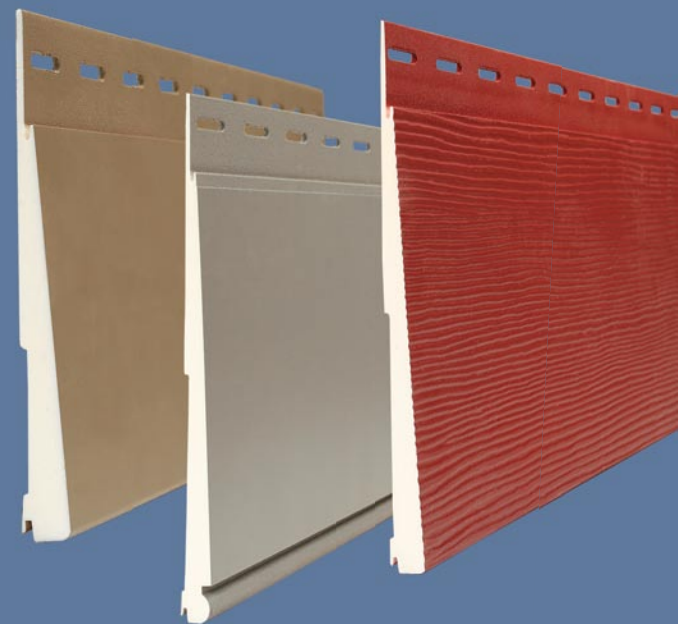
For cedar siding, factory finishers recommend that a final whole-house coat be applied on site to seal the end grain and the face nails. Even if all the siding is factory-finished, the fresh end cuts need to be painted as the siding is installed.

Hugh Schreiber, a remodeling contractor in Berkeley, Calif., has done his share of painting (*FHB* #181, and online at FineHomebuilding.com), but he has also installed Hardie's ColorPlus fiber-cement lap siding.

Schreiber says a more-streamlined installation is the biggest advantage of using factory-finished siding. "Brushing carefully to cut in the trim where it meets the siding is a huge

Plastic clapboards sport an auto-body finish and a lifetime warranty

The widespread use of cellular PVC trim (such as Azek, Versatex, Kleer, and KOMA) has prompted one manufacturer to create solid PVC clapboards. NuCedar (www.nucedar.com) mills square-edged PVC boards into beveled siding with exposures of 4 in., 6 in., and 8 in.



Two surface textures are offered: smooth and CedarGrain. Finish is applied with automotive spray equipment; 22 standard colors and more than 1400 custom colors are available. Installed over housewrap, each NuCedar board has a nailing flange and is designed to interlock with the previous course. Compatible trim boards are part of the siding system, and the limited lifetime warranty can be downloaded from NuCedar's Web site. Expect to pay \$4 to \$5 per sq. ft. of wall for the material.

Is PVC green? Well, it does have some durability and maintenance benefits (especially the fact that it doesn't need to be painted), but it also has some environmental drawbacks. Environmental groups such as Greenpeace and the Healthy Building Network have targeted PVC for phasing out.

IT'S TRUE: YOU CAN GET A 25-YEAR WARRANTY AGAINST PAINT FAILURE

Not having to paint exterior siding for a quarter century is a big deal, and that guarantee is available for factory-finished cedar and fiber-cement siding. For a slightly lower cost, you can go with one finish coat instead of two and get a 15-year warranty (see sample prices below). As with all warranties, conditions apply. For example, the warranty on proprietary coatings offered by manufacturers like CertainTeed and Hardie is transferable, while the warranties backed by paint companies like PPG's Olympic Paints are nontransferable. Also, warranties typically don't cover water damage. This means the siding must be properly installed for the warranty to be effective (see p. 44). While finishes are expected to fade with sunlight, the warranty should cover flaking, cracking, peeling, and chalking. Your first call on a warranty claim will be to the building-supply outlet, which then contacts the warrantor.

PRICING FACTORY-FINISHED SIDING Orders for factory-finished siding are made through lumber dealers and building-supply outlets. Estimating the amount of siding you need begins with the square-foot calculation of the area you need to cover. Then subtract door and window openings from the total sidewall area. Finally, add 10% to the remaining area to account for waste during installation. To convert total square footage to lineal footage (lin. ft.) of siding needed, use this formula: sq. ft. x (12/exposure) = lin. ft.

SAMPLE PRICES

½-in. by 6-in. clear vertical-grain (CVG) cedar beveled siding

Primed with one topcoat (15-year warranty)	\$2.20 per lin. ft.
Primed with two topcoats (25-year warranty)	\$2.40 per lin. ft.

6¼-in. Hardie or CertainTeed fiber-cement lap siding

Primed with one topcoat (15-year warranty)	75¢ per lin. ft.
ColorPlus or ColorMax (15-year warranty)	80¢ per lin. ft.
Primed with two topcoats (25-year warranty)	95¢ per lin. ft.

hassle," he says. "The prefinished siding saved me from having to do that. I painted the trim before the siding went up, and nothing had to be cut in."

That said, a factory-finished product has some disadvantages. Schreiber says he had to be more attentive in handling each board to avoid scratches and to get the siding in place with the proper orientation; he prefers the factory-finished end to abut the trim. For Schreiber, the extra care that he had to take while handling the siding was worth the trouble. "As a guy who has painted a lot, I will use prefinished siding again," he says. "The paint job was cleaner and tighter all the way around."

The biggest deterrent to factory-finishing might simply be the schedule. Jim Florian, an estimator at H.P. Broom Housewright Inc. in Hadlyme, Conn., says that it's difficult to get homeowners to think about siding colors early in the design phase of a building project. While they are still trying to choose

bathroom fixtures, they might not be ready to think about exterior-color choices.

To take advantage of factory-finishing but avoid painting himself into a corner, Florian says there is a middle road. "Whether it's cedar or fiber cement, we'll spec a primer coat and just one finish coat instead of two. This saves time and money over site-painting everything. To get the best seal against the weather, we apply a final coat on site." This also leaves room for flexibility. If the homeowner wants to make a slight change before the final coat, say from buttercup yellow to sunflower, there is no added cost. □

John Ross is an associate editor. Photos by Krysta S. Doerfler, except where noted.

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Look for the Magazine Extras section on our home page to see a slide show of cedar siding being made at a lumber mill.

MORE ON FACTORY-FINISHED SIDING

These three major fiber-cement manufacturers have excellent information on their Web sites.

CertainTeed
www.certainteed.com

James Hardie
www.jameshardie.com

Nichiha
www.nichiha.com

For information on western red cedar, visit the Western Red Cedar Lumber Association.
www.wrcla.org

For research information on paint durability, visit the Forest Products Laboratory.
www.fpl.fs.fed.us



Photos right: Courtesy of CertainTeed