

# The Advantages of Cellular PVC Siding

This material is durable, waterproof, and ideal for places where the weather is hard on a home's exterior

BY FERNANDO PAGÉS RUIZ

**C**arpenters have used cellular PVC trims for decades, but as a solid and practical siding, cellular PVC cladding is a recent development. I first saw cellular PVC siding in its early stages when building-product manufacturer Westlake Royal asked me to organize a private meeting with architectural thought leaders Steve Mouzon and Andrés Duany. These two architects are well known for their critique of vinyl siding, and the manufacturer wanted their honest opinion on a new category of PVC cladding. While the architects scrutinized and complimented the clean lines, crisp edges, and rigidity, I was fascinated by the rabbeted, interlocking ends and the notion that any plastic siding could withstand 210-mph winds.

## What is cellular PVC?

In the building world, cellular PVC is a solid plastic material, and it has been used for nearly three decades as a 100% synthetic alternative to traditional wood trim. "PVC" stands for *polyvinyl chloride*, the same material used for DWV pipes as well as vinyl siding (and many other building products). Cellular PVC is a type of polyvinyl chloride that is softer and more flexible than standard PVC. This softness means that cellular PVC can be molded to resemble real wood without feeling like plastic.

While not all vinyl is PVC, all PVC is vinyl, and the majority of vinyl products you encounter in the building world are made from PVC. PVC materials include addi-





**TOP  
OF THE  
WALL**

Install a finish trim that provides a built-in spacer, or use a furring strip and frieze board.

**TRIM  
DETAILS**

Leave a 1-in. expansion gap between the siding and the furring strip to account for thermal movement.

**STARTER  
COURSE**

Fasten the starter strip every 8 in. to 12 in., leaving a 1-in. gap at corners.

# WORKING IN REVERSE



**NAIL EACH COURSE** Once a piece of siding is set in place, secure it with 1<sup>3</sup>/<sub>4</sub>-in. stainless-steel roofing nails driven into the center of the nail slot every 16 in. and left a little loose.

The biggest adjustment to working with cellular PVC siding is the order of installation. Unlike other siding materials, PVC siding is installed before the trim. The first step is to install furring strips or spacers around openings and inside and outside corners using 1x2 PVC or treated wood. Next, install the siding, allowing a 1/2-in. to 1-in. gap between the boards and furring strips—a full inch if the run is 12 ft. or longer, and 1/2 in. if shorter. PVC claddings need room to move as a result of changes in temperature, and this gap enables that to happen.



**SLIDE IN THE JOINT** Each piece connects to the piece to its left via a rabbeted half-lap joint. Tap the siding into place so that the bottom connects to the piece below.



**LOCK IN THE TOP** Cut the top course to fit, and secure each piece with nails placed along the cut edge. The nail heads will hold the siding to the wall, and the shaft of the nails will keep it locked to the siding below it.

tives that make them stronger, more durable, and more resistant to UV exposure and weather than other plastics. This is why PVC performs well as siding.

Cellular PVC siding as we know it has been around for about fifteen years. It's primarily used along the eastern seaboard because of properties that make it ideal for coastal climates, though its popularity is growing in the Midwest and South because of its durability.

## A solution to thermal movement

Any cellular PVC siding needs to solve for the issue of thermal movement at the butt joints. During the seasonal fluctuation of summer and winter, PVC may expand and contract as much as 2 in. within a 12-ft. span. Manufacturers take different approaches to locking butt joints together and accommodating thermal movement. The West-

lake Royal Select Cellular Composite Siding installed on this project uses a rabbeted joint tooled into the ends of each board. Gripping like interlocking fingers, this machined joint causes the run of siding to move as one piece from end to end. And because the rabbeted union is precise, the seams virtually disappear. Expansion occurs at both ends of panel runs, with trim pieces covering any movement at corners and around windows and doors. This method of interlocking makes the siding very resilient once installed. Each piece of siding is fully secured on all four sides, giving it unbeatable strength, especially against strong winds and storm conditions.

## The many other benefits

As prices rise for other types of synthetic siding, cellular PVC's up-front cost has fallen more in line with that of its competitors. While

cellular PVC is still priced higher than fiber cement, its installation cost can be significantly lower, making it an attractive alternative. And like traditional vinyl siding, it's prefinished, low maintenance, and available in many colors. (See a side-by-side comparison at the bottom of this page, with material prices from my local dealer.)

Many homeowners want the look of wood siding, but not the price tag and maintenance. Vinyl siding accomplishes both objectives for a low-cost installation, but cellular PVC looks, feels, and acts more like wood. It's available in several profiles for a more customized exterior, including traditional clapboards with a smooth or wood-grain finish as well as shakes and vertical boards and battens. It looks convincingly like painted wood siding, installs with standard woodworking tools and techniques, and lasts a long time without maintenance. Most cellular PVC siding is warranted for at least 25 years.

With a cellular PVC siding installation, the boards stack on top of one another, interlocking horizontally. The nail hem provides oblong slots to center fasteners. This built-in water management allows the material to move and breathe and creates a rainscreen cavity behind the siding large enough to drain via gravity. Because the joints of the siding aren't airtight, the wall assembly behind the siding can dry to the exterior. PVC absorbs no moisture, so it can scribe along a roof edge or remain in contact with the ground without causing damage to the substrate or finish.

PVC is among the most easily recycled plastics because of its simple composition—it's made of just one plastic as opposed to a combination of many. As an embedded plastic installed on a house (not a single-use plastic that is discarded quickly, such as a water bottle), it does not readily pollute the environment. And though recycling used PVC building materials is still a challenge in many parts of the country, the manufacturing process for vinyl products yields virtually no waste.

The low global warming potential of vinyl products makes cellular PVC an attractive cladding alternative to brick (which may have a longer useful life but has a heavier up-front carbon footprint). If up-front carbon reduction and long-lasting siding are a priority, wood and vinyl claddings (including cellular PVC) are good options. And cellular PVC lasts longer and is more durable than traditional vinyl siding.

If a woodlike aesthetic is the goal, cellular PVC siding is an approachable and increasingly affordable alternative. I am convinced that solid, cellular PVC claddings—which are resilient, durable, and almost impervious to wind and hail—will become increasingly popular as one of the best material choices available when balancing performance and price. □

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## PREASSEMBLED PVC TRIM



Preassembling cellular PVC casings and trim and installing them as a unit is easier and ensures tight joints. Apply PVC cement to pocket-holed joints, and assemble with 1½-in. exterior pocket-hole screws. For narrow pieces, use PVC cement and CA glue (with an activator). The CA glue keeps the joint closed, while the PVC cement creates a permanent bond. Attach the casing assembly to the spacers using 1¾-in. color-matched stainless-steel screws. (For more, see "Prefabricating exterior window trim," *FHB* #260.

## SYNTHETIC SIDING, SIDE BY SIDE

Siding type	Cellular PVC	Vinyl	Fiber cement	Engineered wood
Material	Proprietary composite of materials, including polymeric resin	Polyvinyl chloride	Sand, cement, water, cellulose fibers	Wood strands and a resin binder
Warranty	Limited lifetime for original owner	50 years	30 years	25 to 50 years
Water resistance	Waterproof	Waterproof	Resists moisture	Treated to resist moisture
Paint performance	25+ year color warranty	N/A	Paint every 10 to 15 years	Paint every 10 years
Ground contact	Yes	No	No	No
Material cost	\$3.87 to \$4.40 per sq. ft.	\$0.94 per sq. ft.	\$2.42 per sq. ft.	\$2.57 per sq. ft.
Labor cost	\$4.50 per sq. ft.	\$2.90 per sq. ft.	\$5.60 per sq. ft.	\$5.10 per sq. ft.