

INNOVATIVE BUILDING PRODUCTS

Most of the new building materials on the market today are either plastics or composites — alternatives that combine unlike materials in new ways. To make these products saleable, manufacturers design them so that they can be worked and installed with traditional tools and skills. In many cases, the raw materials come from what has traditionally been considered waste. Wood I-joists, for instance, are made

from glued-together veneers and chips from small-diameter trees. And the makers of medium-density fiberboard

Plastics and composites are nosing their way to the forefront in the search for new building materials

(MDF) take wood chips from mill waste, break them down to their individual

fibers, and glue them back together under heat and pressure. The process yields a paintable panel with enough uniformity and dimensional stability for use in both cabinets and furniture.

But wood I-joists and MDF are only the tip of the innovative product iceberg. Almost every part of a house can now be made from plastics and composites. Here are some of the available choices.

Glulam Meets LVL

An engineered timber, *Redi-Lam* is a novel product made from two familiar ones. Three-quarters of its cross section — the core and compression face — is a standard glue-laminated beam. But the bottom quarter — the tension face — is made from laminated veneer lumber (LVL).

Redi-Lam comes in all the same sizes as the popular Parallam beam, but the manufacturer claims that Redi-Lam costs less, has about 10% more strength (an Fb of 2,800 as compared with 2,400 for Parallam), and weighs 20% less.

Contact: Rosboro Lumber Co., P.O. Box 20, Springfield, OR 97477; 503/746-8411.



Open-Wall Cellulose System



Demand for “green” products has given loose-fill cellulose — made from recycled newspaper — a growing bite of the attic insulation market. Walls, however, are a different story. To help the cellulose fibers stick together so they won’t fall out of the open wall cavity, the material is usually mixed with water before being sprayed. But most builders don’t want water in their walls, and they certainly don’t relish the prospect of waiting for the insulation to dry before hanging wallboard. Dry cellulose solves this problem, but it must be installed at a relatively high density (about 3 pounds per cubic foot) to keep it from settling in place. This puts enough pressure on the drywall to make it bulge.

The *Dry Pac Wall System* claims to have a solution. In fact, the manufacturer bills it as the first cellulose wall insulation that can be blown dry into an open wall cavity. The secret is in the polyester, tire-cord-reinforced vapor retarder. This nonelastic sheet is installed using a special stretcher and is stapled across the face of the wall studs with extra long (1³/₄-inch) staples. The dry cellulose insulation is then blown through slits made near the top of each bay. Unlike standard polyethylene sheeting, the reinforced sheet won’t stretch, so it can hold the cellulose in place without bulging. And the drywallers can come right behind.

Contact: Parco Inc., P.O. Box 1533, Norfolk, NE 68702; 800/228-0024.

Cam-Lock Panels

Foam-core panel homes are energy efficient and simple to build because they're prefabricated. Murus panels make installation even easier because of the tongue-and-grooved edge profile and the foamed-in-place cam locks built in to each panel. The cam locks — made from recycled ABS plastic — let you stand the panels in place and quickly lock them together. Murus says that this feature slashes installation time by 30%. (The company claims that a 2,000 square-foot house can be fully enclosed in less than a week.) Each panel also includes a standard electrical chase.

Murus also claims that its panels are stronger than conventional 2x6 stud walls (a 4x8 panel will support up to 23,000 pounds). The 4-foot-wide panels come in lengths up to 20 feet, and in thicknesses of 4½, 5½, or 6½ inches. Insulation values range from R-28 to R-43, depending on thickness, and prices range from \$3 to \$7 per square foot, depending on thickness and whether or not the panel comes with exterior cladding. While materials costs are higher than for stick framing, the company claims that labor savings make installed costs competitive.

Contact: The Murus Co., P.O. Box 220, Mansfield, PA 16933; 717/549-2100.



Durable Decking

Plastic Wood

We know of a builder who submerged a length of plastic decking in a salt marsh. When he dug it up two years later, it was as sound as the day he buried it. Tired of callbacks for split and splintered decking, he's now sold on plastic.

Plastic decking has a number of strong selling points. It's made from recycled materials, it won't absorb moisture, and it doesn't need waterproofing, painting, or staining. It won't shrink, rot, warp, crack, or splinter, either. And it's protected against sun damage and fading by additives, like UV stabilizers and anti-oxidants.

Several recycled-plastic lumber products are on the market. *Trex* combines wood fibers and recycled polyethylene, the plastic in recycled grocery store bags, while *Re-Source* and *Polywood* are composed of 100%



high-density polyethylene resin from recycled milk and soda bottles. Costs can be quite high — comparable to clear redwood.

The range of processes and materials used to manufacture these products means that they vary quite a bit in quality. This has made it hard for plastic lumber to get code approval for structural use. And because a plastic board is almost always weaker than a wood one, it won't span as long a distance. The good news is that you can cut it, screw it, drill it, and rout it just like wood. Some suppliers claim plastic decking holds galvanized and stainless steel screws five times better than wood does.

Contact: Mobil Chemical Co., Composite Products Division, P.O. Box 5445, Norwalk, CT 06856; 800/289-8739.

Re-Source Lumber, Ltd., 920 Davis Rd., Suite 101, Elgin, IL 60123; 800/231-9721.

Polywood Enterprises Inc., P.O. Box 547, Findlay, OH 45839; 800/270-5703.

Snap-On Plastic Decking

A vinyl decking called *Teck Deck* is designed as a two-piece system. A rigid plastic channel is screwed to the deck frame, then a flexible top piece is rolled out and snapped over the channel. The channel comes in 10- and 16-foot lengths that can be cut to fit any angle and butted together where necessary. The top piece comes in continuous 160-foot rolls, eliminating seams and joints.

Contact: Heritage Vinyl Products, Hwy. 45, Box 460, Macon, MS 39341; 800/473-3623.



Windows Without Wood

Fiberglass Takes a Bath

Marvin's *Integrity* is a wood window with an exterior shield of Ultrex — a composite material that resembles fiberglass but is made differently. Through a process called "pultrusion," individual glass fibers are pulled through a liquid resin bath, then placed in a form. As

the form is heated, the resin cures around the glass fibers to form a tough matrix.

According to Marvin, pultruded components can be made thinner than standard fiberglass with no loss in strength, so more detailed shapes are possible.

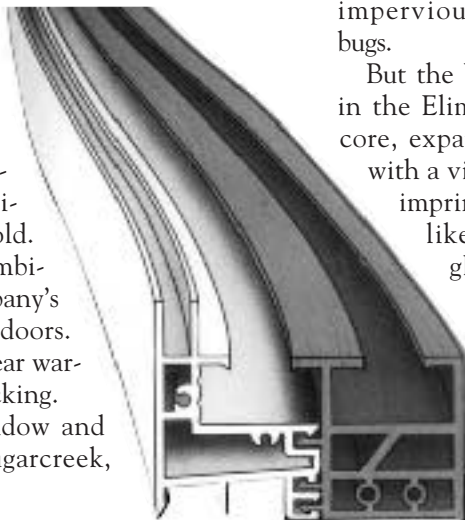
Marvin claims that Ultrex is so hard it must be cut with diamond-impregnated blades. It's also dimensionally stable — in fact, it expands and contracts at the same rate as window glass. When subjected to a given temperature change, Ultrex will move one-third as much as aluminum and one-tenth as much as vinyl. This keeps the window from warping, and reduces wear and tear on the glazing's edge seals. Ultrex won't oxidize, corrode, or transfer heat and cold like aluminum, and it won't become spotty or crack under extreme temperatures like vinyl.

Contact: Marvin Windows and Doors, Hwy. 11, Warroad, MN 56763; 800/862-7587.

Vinyluminum

Sugarcreek's *Vinyluminum* composite replacement window includes a patented joining system that locks a vinyl interior to an aluminum exterior. The result is a strong, maintenance-free window that minimizes transfer of heat and cold. It's available in 27 color combinations that match the company's line of storm windows and doors. The colors come with a 50-year warranty against chipping or cracking.

Contact: Sugarcreek Window and Door, 425 S. Broadway, Sugarcreek, OH 44681; 216/852-2416.



Insulated Fiberglass

Owens Corning's *Fibron* window goes a step beyond insulated glass. Its sash and frame consist of a core of high-density fiberglass insulation wrapped in a composite shell of polyester resins and fiberglass reinforcements. It won't warp, swell, shrink, rot, or corrode from moisture or temperature changes. The exterior is coated with a high-performance polyurethane finish.

Contact: Owens Corning, Fiberglass Tower, Toledo, OH 43659; 419/248-8000.



Is It Pine or PVC?

The large horizontal surface area of most window sills makes them especially vulnerable to sunlight, rain, ice, snow, and insects. The *Eliminator's* answer to this is a frame and sill made from Werzalit, a composite material made by shredding and drying seasoned hardwoods, mixing them with resins and preservatives, then fusing them under extreme heat and pressure. Topped with a resin-impregnated overlay, the finished product won't warp, split, or rot, and is impervious to bugs.

But the Werzalit sill isn't the only unusual material in the Eliminator. The sash is made of a new, solid-core, expanded-foam PVC. The exterior is wrapped with a vinyl overlay, while the prefinished interior is imprinted with a wood-grain pattern that looks like Ponderosa Pine. With regular insulated glass, the sash and frame have a combined insulating value of R-2.17; warm-edge "ultra" glass raises it to R-3.12. According to the manufacturer, the Eliminator costs about 10% less than a comparable clad-wood window.

Contact: Jeld-Wen, 335 Commerce Dr., Mt. Vernon, OH 43050; 614/397-3403.



Insulated Stucco Base

Developed as a base for polymer-modified stucco, *Excel Board* is a polyisocyanurate foam sheathing reinforced with aspen fiber. The nonwoven matrix of aspen fibers makes it stronger than standard foam



board, while its rough surface texture means that you can spread synthetic stucco over it without lath or mesh. In fact, the material will serve as a sheathing base, vapor retarder, exterior insulation, and lath all in one. It's usually sold as part of an exterior insulation and finish system (EIFS) called "Excel Plus."

The 4-foot-wide sheets are $\frac{3}{4}$ inch thick and come in lengths up to 12 feet. They have an insulating value of R-4, can be fastened to wood, masonry, or steel, and won't absorb water, swell, or delaminate. When installed with adhesive, SBCCI has approved Excel Board as a structural sheathing for normal loading.

Contact: American Excelsior Co., 850 Ave. H East, Arlington, TX 76011; 817/640-1555.

Metal Barrel Tiles

Here's a product for people who want the look of barrel tiles, but whose roof framing can't support the weight. *Met-Tile* tile panels are made by forming a tile pattern into a 26-gauge zinc/aluminum-alloy-coated steel panel. The 3-foot-wide panels come in eight colors and in lengths up to 20 feet. They weigh only 1.25 pounds per square foot — one-tenth the weight of some concrete and clay tiles. They can often be applied directly over an existing roof surface without stripping, which greatly simplifies reroofing.

The panels are suitable for all climates, and offer fire, wind, and moisture resistance. A single long-length panel often reaches from ridge-to-eaves, making for a more weathertight roof because there are fewer horizontal seams.

Contact: Met-Tile, 1745 Monticello Ct., Ontario, CA 91761; 909/947-0311.



Flexible Rockwool Batts

The in-place R-value of batt insulation is nearly always less than what's on the package. The reason? When standard, friction-fit batts are pushed into stud bays, they bunch up at the back corners, leaving hidden, heat-losing voids. But help has arrived in the form of rockwool batts that go in one edge at a time. The company that manufactures *Flexibatts* — Roxul Inc. of Milton, Ont. — starts with conventional rockwool batts (made from basalt rock and recycled steel slag), then uses a proprietary process to form a $1\frac{1}{2}$ -inch-wide resilient or "springy" strip along one edge. The batts are installed like a shower-curtain rod: When the springy edge is compressed against the face of one stud and the batt is released, the other edge bounces back to the face of the opposite stud, filling the cavity.

According to the manufacturer, the springy edge compensates for irregularities in the framing and eliminates air gaps. Rockwool has the added advantages of being more heat resistant than fiberglass (it has a melting point around 2,000°F), and it blocks sound more efficiently. Its main disadvantage is its higher density and weight, which results in higher shipping costs.

Flexibatts come in five thicknesses, ranging from $2\frac{1}{2}$ to $8\frac{1}{4}$ inches, and in 16- and 24-inch widths. Insulating values are comparable to high-density fiberglass, and range from R-9 to R-32 (from R-3.6 to R-3.8 per inch).

Contact: Roxul Inc., 551 Harrop Dr., Milton, Ontario L9T 3H3, Canada; 905/878-8474.

Engineered Trim and Siding

Most builders use clear pine or cedar for exterior trim. But prices being what they are, clear lumber is overkill for paint-grade work. A less expensive, more resource-efficient alternative comes from a variety of engineered trim products, most of which are made with wood fiber from small-diameter trees. Engineered trim can cost half as much as clear pine, comes preprimed on both faces, and is more dimensionally stable.

PrimeTrim is a dense composite of resins and wood fibers designed for use as exterior trim, but it can also be used for paint-grade interiors. It resembles hardboard, but added waxes, resins, and oils give it better weather resistance. PrimeTrim is made by tearing wood down to its basic fibers, coating them with resin, then reassembling them in giant presses. The process eliminates defects — like knots, knot holes, splits, and checks — and the finished product is smoother, straighter, and more moisture resistant than the original wood.

PrimeTrim is covered with a factory-applied, oven-baked exterior primer. It installs like wood trim, but weighs 15% to 20% more. It comes in 16-foot lengths and in nominal widths of 4, 5, 6, 8, 10, and 12 inches.

Contact: Georgia-Pacific, 133 Peachtree St. N.E., Atlanta, GA 30303; 404/652-4000.



TrimCraft wood trim is made by pressing wood fiber from waste products into a dense material. Its uses include exterior corner boards, soffits, fascia, and door and window trim. It comes with a moisture-resistant, factory-applied primer.

Contact: Temple-Inland Forest Products, P.O. Box N, Diboll, TX 75941; 800/231-6060.



Comply lap siding is a hybrid of particleboard and plywood. It consists of three veneers of Douglas fir separated by two layers of reconstituted wood fiber. Its use of wood fiber is more resource-efficient than standard plywood because it uses a greater percentage of the log. It can be installed directly over 24-inch on-center framing, is moisture resistant, and is guaranteed not to delaminate.

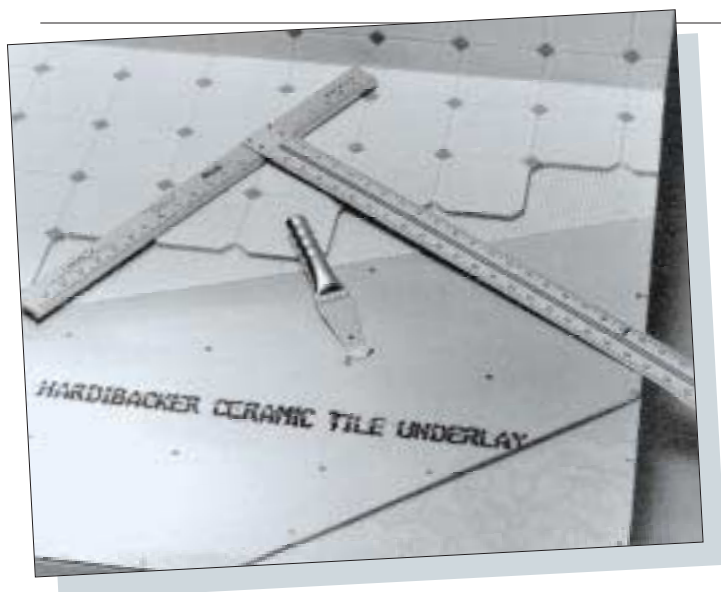
Contact: Oregon Strand Board Co., 34363 Lake Creek Dr., Brownsville, OR 97327; 503/466-5177.



Inner-Seal mates an OSB substrate to a protective, resin-impregnated overlay. It's available as trim or lap siding and arrives at the job site primed and ready to paint.

Contact: Louisiana Pacific, 111 S.W. Fifth Ave., Portland, OR 97204; 503/221-0800.





Fiber-Cement Backerboard

Traditional concrete tile backers tend to crumble when screwed close to the edge. But the makers of fiber-cement boards claim to have solved that problem. Fiber-cement backerboards, such as *Hardibacker* and *Ultraboard*, are made like fiber-cement roofing and siding. The materials are deposited in layers on a slurry, cut into sheets, then cured in an autoclave (a high-pressure oven). One big advantage of fiber-cement is that it's easier to work with than traditional backerboards. Manufacturers claim that the product is easier to score and snap than a concrete backerboard. Because the materials are cement-based, they're immune to water, rot, and insects. They won't swell, peak at the joints, or deteriorate, either. And they're about a third lighter — around 2 pounds per sq. ft. as compared with 3 pounds per sq. ft. for standard cement board.

Contact: James Hardie Building Products Inc., 10901 Elm Ave., Fontana, CA 92337; 800/426-4051.

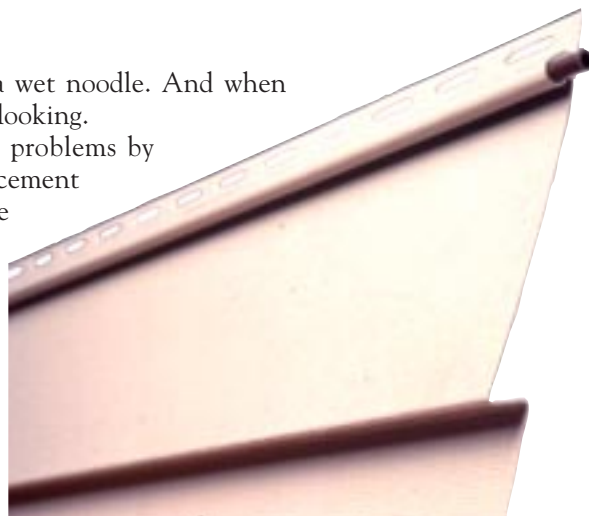
Contact: Eternit, Excelsior Industrial Park, P.O. Box 679, Blandon, PA 19510; 800/233-3155.

Reinforced Vinyl

Handing a vinyl siding panel up a ladder can be like passing around a wet noodle. And when installed over uneven walls, the finish surface tends to be wavy and cheap-looking.

The manufacturer of *Benchmark* vinyl siding has taken aim at these problems by equipping its product with a backbone. Benchmark's "Stabilizer" reinforcement system consists of a high-density fiberglass tube inserted along the top edge of the panel and an extra deep interlock channel where succeeding courses meet. The company says that because Benchmark is 50% stiffer than standard vinyl siding, it can be easily installed by one person. And because it's also 64% more rigid, it yields straighter course lines and flatter laps, even when installed over wavy walls. It's available in double 4-inch and double 5-inch clapboard, and 4½-inch dutchlap.

Contact: Wolverine Technologies, 17199 N. Laurel Park Dr., Suite 201, Livonia, MI 48152; 800/521-9020.



Prefab Stucco Panel



A wall system called *Strukturoc* marries the look of stucco with the ease of prefab construction. The 20- to 22-gauge steel panels have crushed marble bonded to one side with acrylic. They're available in galvanized and Galvalume steel. Galvalume, which has a protective aluminum-zinc alloy coating, tends to last longer in coastal areas.

The 16-inch-wide panels come in lengths up to 20 feet, and weigh only 1.84 pounds per square foot. They're snapped into place over horizontal channels screwed into the framing through a layer of rigid foam insulation. When installed over rigid insulation, they permit insulation levels as high as R-40. The rectangular panels are installed with narrow control joints that absorb any movement caused by thermal expansion or structural settling, protecting the panels from cracking. The system includes a complete line of window and door flashings, as well as inside and outside corner pieces.

Contact: Transamerican Strukturoc, 150 E. 107th St. Circle, Bloomington, MN 55420; 612/884-7694. ■