

## Material World: Fiber cement panels keep rain out

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Form-hugging wood and stucco cladding, ubiquitous on Bay Area homes until recently, have a new contender: integrally colored cement fiberboards that European builders have favored as rain-screen cladding for industrial buildings.

Unlike traditional cladding systems, colorful easy-care rain screens, which are like a curtain separated from the building by spacers, afford an attractive shield from driving rain. And the gap between the screen and the building creates an air pocket for better thermal insulation, thereby conserving energy. The most effective rain screens are made of fiber cement panels, although metal panels such as those used at the M.H. de Young Memorial Museum can also be used.

Fiber cement boards are not a new invention. They have been in production as underlayments for more than a century, but about four decades ago they lost favor as a cladding material in the United States when it was discovered that the asbestos fibers they contained were carcinogenic. Lawsuits pushed production out of the United States and the manufacturing of asbestos-free sheets continued only across the Atlantic.

Several brands such as Hardipanel (a pioneering firm that originated in Australia), Eternit, Cembonit and Minerit from Europe began to appear on the faces of modern buildings around the Bay during the last decade or so.

In San Francisco, architects Mark Horton and Jim Jennings each pioneered the use of cement fiberboard panels in different styles of buildings at a time when installation techniques were not fine-tuned. Installing these panels correctly is critical.

For Jack Falstaff restaurant's entryway in San Francisco, architect Mark Macy specified charcoal gray integrally colored Cembonit panels that were made in Denmark. They are now made only in Eastern Europe and Italy and will no longer be distributed in the United States. Cembonit and Minerit are produced in Europe, but because deliveries were irregular, their distributors, Cement Board Fabricators in Louisville, Ky., is only selling old stock.

Instead, it offers SIL-LEED fiber cement cladding, which is made in Kentucky, according to San Francisco architect Jim Zack, who may be among the first to use it in the Bay Area. It is also made in

Europe under the name Silbonit, whose Web site has clear diagrams that show the proper way to install such panels as a rain screen: screwed onto vertical metal or wooden battens. The installed screen of fiber-cement already impregnated with a sealer can be further protected from graffiti with custom spray-on sealers.

Swiss Pearl, another type of integrally colored cement fiberboard produced in Switzerland, is the darling of contemporary architects who want an attractive rain-screen panel for their buildings because of its superior composition and colors.

Also used by architect Thom Mayne of Morphosis on the Federal Building in San Francisco, Swiss Pearl is supplied on the West Coast by Western Specialty Fabricators in Sunnyvale, who say the product will last for about four decades.

Leddy Maytum Stacy Architects, who have used Prodema or Parklex, wood-veneered phenolic resin boards made in Finland for its rain-screens, also like Swiss Pearl; Zack and Emeryville Architect David Wilson are converts. "Fiber-C, a German product, is heavier than the other cement fiber panels but it can also be used in wider dimensions. We are looking at all the different options," Zack said.

During the last four years Wilson has completed five buildings that have fiber cement panels installed as a rain-screen skin. The panelized look is enhanced by using different colors in Swiss Pearl's broad palette, which results in a playful checkerboard pattern.

"We had always done white Swiss Pearl but this was the first time I combined two different pearlescent shades," he said. "It was like a blocky two-color container ship in the bay."

### At a glance

**Expert opinion:** Architect David Wilson says water resistance is essential in fiber cement panels chosen for use as rain screens. He picked Swiss Pearl fiber cement board because it remains dry even when it is left in a bucket of water for many hours.

According to Valerie Concepcion, a spokeswoman for Western Specialty Fabrications, who has represented Swiss Pearl since 2002, the green qualities of Swiss Pearl are self-evident. "It is naturally air-dried and so it uses a lot less energy than other fiber cement panels that are autoclaved or heat-dried. The UV resistance is also higher as a result, especially when combined with its tested sealer," she said. "Without proper UV resistance you inevitably get uneven fading and cracking."

**Price:** Depending on the type of cement fiber panel, expect to pay \$75 to \$250 for a 4-by-8-foot panel. In general, Hardipanel, the least elaborate, is the least expensive. It can be painted any color and the paint will not chip or peel for a long time because Hardipanel, unlike wood, is an inert material less prone to expansion and contraction.

Corrugated metal siding is about half the cost of fiber cement board siding but it has less effective sound- and thermal-insulating qualities. Interlocking zinc panels cost about twice what fiber cement boards cost on average.

Swiss Pearl sheets come in 4-by-8-foot and 4-by-10-foot sizes. They cost \$8 to \$16 a square foot, depending on quantity. Fasteners are extra but the special UV resistant sealer is included.

**Pros:** Rain-screen systems that use a cement fiberboard separated by vertical, inch-thick wood or metal battens from the final waterproofing barrier on a building's exterior help to diminish the force of heavy rains. Rainwater strikes the boards and trickles down its sides and much of the water never touches the building itself.

"The rain screen goes way beyond any particular panel type. The idea that the panels are held away from the body of the building with some kind of batten system keeps the building drier and the surface is getting better air circulation all around," Wilson said. "Fiber cement panels can be a lifetime skin."

Integrally colored fiber cement panels offer the greatest range of colors. Swiss Pearl has more than 50 hues to choose from. Swiss Pearl also has a metallic finish version called Reflex.

While Prodeema, Parklex and other resin and wood panels from Finland peel or fade quickly, some cement fiber panels remain handsome after years of use and are as easy to use as wood and almost as tough as metal.

Water-resistant sealers are impregnated in the panels but anti-graffiti sealers, usually applied after installation, also offer excellent protection.

**Cons:** Some fiber cement panels like Minerit, composed of mold-formed cement, sand, cellulose and mineral fibers, are autoclaved or dried in a high-heat pressurized system. In general, when such panels are not naturally air-dried and cured, their colors have less resistance to the discoloring effects of UV rays.

Integrally colored fiber cement panels are not all made equally well and in some cases, such as Eternit, Minerit and Cembonit, which are produced in many different countries, varied production

conditions have varied results. In some instances, colors can fade, panels can crack (when they are installed in such a way that they cannot expand and contract) or the supply to the United States is so irregular that it creates havoc with building schedules.

Try to specify a panel that is in stock and one that has a proven track record of durability and resistance to UV rays. Swiss Pearl meets those standards in field tests as well as in laboratory conditions. It is also air-dried during a three-week span that cures it to a hard finish and its colors become more stable than its competitors, according to Attila Mester of Western Specialty.

Fiber cement panels can be used effectively for exterior siding, interior walls and ceilings. Wilson does not recommend using it as flooring. "Dark panels that are sealed with Ardex (a wax finish would be too slippery) look good but they scuff easily," he said.

#### **Resources:**

- David Wilson, WA Design, 805 Folger Ave., Berkeley. (510) 883-0868, wadesign.com.
- Mark Horton/Architecture, 101 South Park, San Francisco. (415) 543-3347, mh-a.com
- Zack/de Vito Architecture, 156 South Park, San Francisco. (415) 495-7889, zackdevito.com.
- Jim Jennings Architecture, 49 Rodgers Alley, San Francisco. (415) 551-0827, jimjenningsarchitecture.com.
- Leddy Maytum Stacy Architects, 677 Harrison St., San Francisco. (415) 495-1700, lmsarch.com
- Cement Board Fabricators, 2148 S. 41st St., Louisville, Ky. (800) 366-5378, cbf11.com.
- Western Specialty Fabrications, 680 East Taylor Ave., Sunnyvale. (408) 294-4606, fibercementpanel.com.

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