



PVC breeds controversy

Can vinyl fit in a green world?

Fabric Architecture | January 2009

By Janice Kleinschmidt

Poor Waldo Semon. Today the inventor would no doubt fly his private jet to his private island, where he would entertain VIPs in just about any industry you could name. But in 1926, when the B.F. Goodrich Co. researcher devised polyvinyl chloride (PVC), his employer had a hard time marketing it.

Today, manufacturers in industries ranging from medical to building and products ranging from packaging to consumer goods such as automotive interiors, wall coverings, apparel and upholstery rely on PVC for its durability, flexibility, light weight and low cost. And yet this 50-year-old workhorse has detractors whose goal is to wipe it off the face of the earth.

Part of the challenge facing both camps is defining what constitutes a "green" product. Even five years of study by the Technical and Scientific Advisory Committee of the U.S. Green Building Council left committee members scratching their heads about whether the council should issue a LEED® credit for avoiding PVC.

"For the applications studied, does the available evidence indicate that PVC-based materials are consistently among the worst of the alternative materials studied in terms of environmental and health impacts?" asked Chairman Malcolm Lewis. "We concluded that a simple yes or no answer to this question was not adequate."

THE BIG PICTURE

"How does that help direct architects and designers to better materials if all you have to do is avoid PVC? What if they choose something less environmental?" wonders Alan Blakey, senior director of public affairs for The Vinyl Institute trade association. Noting that there is no LEED credit for durability, he further asks, "Isn't durability an example of conserving resources?"

"Just because something contains PVC does not disqualify it from being an environmentally friendly product," says Craig Dasse, technical and architectural sales manager of 3G Mermet, a solar screen manufacturer based in Cowpens, S.C. "Bamboo is popular because it is a natural plant. However, it is not a native species to North America. It is grown in China and shipped here. That requires quite a bit of petroleum."

Mermet sells PVC-free polyester screens for customers who want to go that route, but they are not as washable, durable or dimensionally stable (though they are easier to recycle) as PVC. That's why Mermet warrants PVC screens for five years and polyester for only three years, though Dasse estimates that polyester screens would have to be replaced "conservatively, at least three times" over the life of one PVC screen. He further notes that the Greenguard Environmental Institute certifies Mermet's PVC screens.

"They are very efficient at reducing solar heat gain, while maintaining connection with the outdoors, and that's a health and well-being issue," Dasse says. The screens reduce not only energy consumption by air-conditioning systems, but also by manufactured lighting.

But Tom Lent, policy director for the Healthy Building Network, is more concerned with PVC's "persistent bioaccumulative toxicants" such as dioxin released not only during the manufacturing process, but also during the product's life cycle, including possible burning in landfill fires.

INPUT, OUTPUT

Although both sides acknowledge that dioxin levels have plummeted some 90% during the last 20 years (due to closure of inferior incinerators and improved closed-loop processes), Mike Schade, PVC campaign coordinator of the Center for Health, Environment and Justice, says, "Studies by the federal government have documented that residents [near vinyl manufacturing plants] have more than three times the level of dioxins in their blood." Yet a September 2007 U.S. Department of Health report on cancer incidence from 1988 to 2004 in the Mossville community near Lake Charles, La., where vinyl is made, concluded that "there is no clear pattern indicating that Calcasieu Parish has any consistently higher-than-expected rates for most cancers."

"Another big concern with vinyl is the additives that go into it," Lent asserts, pointing specifically to phthalates that soften vinyl for its signature versatility. "The problem with phthalates is that they are associated with asthma and other bronchial problems, as well as some developmental problems for young children."

The Phthalate Esters Panel of the American Chemistry Council, however, says that even under the scrutiny of the European Union, U.S. Consumer Products Safety Commission, U.S. Centers for Disease Control, National Institutes of Health and International Agency for Research on Cancer, "There is no reliable evidence that any phthalate has ever caused any harm to anyone."

A NEW PVC?

Nevertheless, companies making products with PVC are testing new plasticizers. Ultraflex Systems Inc., a supplier of materials for signs and digital printing based in Randolph, N.J., has patented a flexible substrate made with an organic plasticizer. BIOflex® works like standard PVC and is biodegradable.

"There are microbes in the material that when you put it in a landfill under certain conditions—which are moisture, pressure and lack of sunlight—those microbes hatch and eat the PVC," explains Neil Baker, Ultraflex vice president of sales. The company

developed BIOflex for two reasons: "We see that as the place that Ultraflex needed to be—to develop products that are environmentally friendly and a big part of our social responsibility. And the market has really been asking for this."

Unfortunately, the profitable share of the market has been slow to warm up to the product that debuted in 2006, in part because of its higher price. With increasing consumer and corporate awareness of green products, Baker notes, "I would say in the last six months we have seen probably two times the momentum, if not more."

"We see this type of technology not just for our banner line. We foresee ourselves introducing this technology in a range of lines," Baker adds, noting that it even could be used for grocery bags.

In June, Ultraflex previewed UltraTex Organic U230, a new corn-based fabric for banners, displays, wall coverings and theatrical uses. Although it possesses all the flexibility, it is more expensive and does not have the same durability as PVC.

"Until there's a clear indication that they're not needed, we will continue to offer PVC-based products," Baker says. "We could envision 10 years down the road a completely non-PVC-based product line, but we don't see that happening in the short term."

SUPPLY AND DEMAND

Omnova, a wall-covering manufacturer in Fairlawn, Ohio, is studying plant-based plasticizers. "This is about responding to customer preference," says Dan Fox, manager of performance films. "I feel that the materials in our PVC products are quite safe." With conglomerates such as Wal-Mart making news by announcing a phase-out of phthalates, companies such as Omnova must respond.

"Several of our customers sell to big-box retailers," Fox says. "They have spoken to us about either more sustainable vinyl products or vinyl alternatives. An issue that they have is that they don't have good guidelines from the big boxes in general."

"Some things vinyl does really, really well; I don't know how you would replace it," Fox says. One thing vinyl does well is stand the test of time. Non-PVC products need more aggressive chemicals and paints to keep them looking new (opening the door to toxins). Omnova has a number of programs in place looking at alternatives. "Biodegradability is clearly in our development scope," Fox says.

Replacing PVC with a more expensive, less durable alternative presents the quintessential market challenge, says Pete McKernan, CEO of Herculite Products in Emigsville, Pa. His company—which laminates/coats PVC on textiles for the awning, marine, health care, and graphics industries—also is evaluating PVC films with biodegradable composites. "It looks like we are gaining on the question," McKernan says. "Are people going to be prepared for the price of the technology? I think some will if they find the attributes to be worth the investment."

"The alternatives are going to be more expensive right now, so where is that trade-off going to occur? Our approach is that we want to work with our key suppliers in developing more environmentally attuned products because we think we can get there without giving up all the other durability features of a vinyl product."

For now, which way the scale tips on a case-by-case basis may be the best method of determining whether PVC fits in a green world.

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Ferrari's BatylineClassic® and Batyline XP5® mesh, used to filter sun in a boardroom in Italy, contains recycled PVC made through the Taxyloop process, an initiative of the Ferrari Group. Photo: Ferrari Textiles Corp.



3G Mermet's screen fabrics, which have been certified by the Greenguard Environmental Institute for low chemical and particle emissions, provide solar protection and energy savings as well as acoustical and aesthetic comfort. Photo: 3G Mermet



Vinyl-laminated polyester fabric by Herculite Products was used in awnings covering guest room balconies at The Ritz-Carlton South Beach in Miami Beach. Photo: Herculite Products Inc.

SOURCES

Ferrari Textiles Corp.

Herculite Products

Omnova

3G Mermet

Ultraflex Systems Inc.

Vinyl Institute

COMMENTS

There are not yet any comments.