

PVC: A Green Building Product?

A Prudent Analysis of Product Alternatives Shows Plastic Might be the True Green Alternative

By John D. Wagner

The green building movement has matured in fits and starts over the last decade, but one place where it has really excelled recently is consumer savvy. These days, some manufacturers still toss around unfounded green marketing claims, but people who buy their products - dealers, contractors, and consumers - have developed an impressive degree of critical judgment about what makes a product green.

The result? Growing recognition that a product's greenness can't be determined using overly simplistic distinctions. Instead, how green a product is can be gauged only when examining a wide range of attributes, from manufacturing techniques and the energy consumed by the supply chain, to the durability and "sustainability analysis" and of the final installed product.

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What's remarkable is that consumers' critical judgment has emerged by necessity, because, frankly, more than a few companies out there are trumpeting questionable green claims, and it's been up to the buyer to sort these out. Here's an example: Just a year or two ago, you could have asked someone if wood were a green product. Most people would have responded, Yes. But ask that same question today and an increasing number of people will want to ask a few conditional questions before responding off-the-cuff, e.g. Where was the wood harvested? What chemicals were used to treat it? What's its service life once installed?

Take another example. Today, there is a minor movement to ban PVC pipes for not being a "natural" product. But a counter-argument points out that extracting copper and iron to manufacture PVC alternatives has a potentially greater negative environmental impact than PVC production. You see, the product's complete lifecycle (from raw material extraction and manufacture, to delivery, use, and eventual disposal) is the most prudent way to counter the overly simplistic, and often wrong, understanding of what makes a product green. In the end, bumper sticker slogans just don't cut it in a world full of complex, often subtle, interdependencies.

The Rise of PVC Alternatives to Wood

One sign of an overall growing sophistication around green building is the growing acceptance of PVC alternatives to wood. Recently, PVC trimboards have seen dramatic growth. Despite the housing slump, sales of wood-plastic composite and plastic lumber are expected to jump 9.2% each year to \$5.3 billion in 2013. The reason? "Increasing consumer acceptance," according to the Freedonia Group study.

Why the surge in sales? Well, the quality and durability of non-wood cellular PVC alternative products (especially trimboards, sheetgoods, and decking) is very clear. Cellular PVC performs far better than wood in dimensional stability, cut-ability, mill-ability, and workability. It is extremely stable; far more stable than wood. What's not to like?

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Is PVC Really Green?

With the rise of PVC lumber products, questions have swirled around the greenness of PVC. The cause for these concerns is that PVC manufacturing creates a small amount of dioxin. However, on closer inspection - leave aside the "bumper sticker slogans" - you see that dioxin created by PVC manufactured is truly minimal. The cumulative total of dioxin created across the entire U.S. vinyl industry is 8 to 10 grams per year, which is less than 1 percent of all dioxin created in the US annually. Moreover, for U.S.-based production of vinyl, the release of those toxins is heavily regulated, monitored, and trending down.

Most importantly, once PVC is manufactured, it is inert and does not contain toxins, nor does it risk leaching them. By comparison, a treated-wood product releases chemicals into the environment at the production plant, and then potentially again, board by board, all the way through its service life, right to the landfill.

The takeaway: Everything has an environmental cost to produce, ship, and use. The goal of green building is to reduce and contain the negative contributions, mindful of how the product influences the environment during its entire service life, from manufacture to disposal. In that analysis, PVC products win over "natural" wood products, hands down.

Sustainability Life Cycle Analysis

Sustainability analysis examines the full arc of a product's entire lifecycle, from the component chemicals used to create the product, right through to the impact of its disposal. PVC stands up very well in sustainability analysis, even better than wood. Here's why: PVC products are so durable they can last four or five times as long as a comparable wood product, clearly negating the relatively minor environmental impact of their manufacturer. Take Kleer Lumber's Trimboards for an example. A trimboard constructed of plainsawn pine may have a service life of around a decade without proper maintenance, and longer with diligent care, which has its own environmental impact. If the wood has to be replaced, lumber has to be re-harvested, re-milled, retreated, reshipped, stored, hauled, and reinstalled... and this may be required many times during the service life of a single cellular PVC alternative product.

Honestly, what's the greenest alternative? The environmental impact of wood trimboards (and their replacements) as they are repeatedly manufactured or maintained, with ongoing environmental impact? Or one highly durable PVC product? The greenest choice is clear: It's PVC.

The award-winning author of many books and articles about construction, and a frequent contributor to the industry's leading trade magazines, John D. Wagner is the Green Editor for LBM Journal, Residential Design and Build, and Qualified Remodeler magazines. He is also co-founder of the Certified Green Dealer Program. A sought-after speaker for industry events, he can be contacted at www.JohnDWagner.com.

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