



## Soft Power

**Paraweave is not like any floor covering you have ever seen: It feels soft like carpet, but it's durable like tile. And it may be the most environmentally friendly soft floor on the market today.**

by James A. Bacon

**B**ob Broomfield is fitting out his Play N Trade video game store, which he hopes to open in mid July. With a location in the busy Carytown retail corridor of Richmond and with events planned like online tournaments and a Wii singles bowling night, he's expecting plenty of walk-in traffic. Among the many details he has to consider is the quality of floor covering.

As luck would have it, someone recommended a new soft tile product manufactured by a Richmond-area start-up company, C&G Flooring. The soft tile feels like a carpet under the feet so customers should like it, Broomfield says. But it's far more durable -- he won't have to replace it in five or six years. And, because it doesn't have tufts like carpet, the flooring doesn't hide dirt and bacteria, and it's a snap to clean. The cost, including installation, is slightly less than carpet. And, as a bonus, the tiles are recyclable. "I like that," he

says. "It's a green product that doesn't take the green out of your pocket!"

What Broomfield lacks in size as a customer, he makes up with enthusiasm. The retailer is recommending C&G's soft tile to the Play N Trade corporation for use across all of its franchises. They like the green angle, he says. "They're from California."



*Pictured here, Paraweave soft tile flooring appears in a commercial setting. The checkerboard effect is created by turning the tile so it refracts light from a different angle.*

On the basis of testimonials such as Broomfield's, C&G President David Armentrout is jazzed about his prospects for his "paradigm shifting" product to make inroads into the \$22 billion-a-year U.S. flooring marketplace. Even

under normal economic conditions, the flooring would have wide appeal, he says. But with energy prices soaring and customers placing an ever-greater premium on recyclable, energy-efficient products, he contends, his Paraweave soft tile is a slam-dunk.

"The product will sell itself," affirms Davis Lee, a former DuPont employee and now a carpet industry consultant who has worked with C&G for more than a year. "You want the market to pull the product. You want people to be asking for it."

And that's exactly what's happening. Word of mouth is spreading fast. In just one morning the other day, Armentrout says, "Four new orders came in while I was sitting in the office."

C&G's patent-protected Paraweave tile is only one of many products -- though potentially the most lucrative -- to emerge from the labs of parent company Xymid LLC, a spin-off from DuPont's fiber R&D and manufacturing facilities in Richmond.

Xymid was founded in 1995 by William Spencer, a long-time DuPont employee. His goal was to commercialize a number of fiber technologies

developed at DuPont but deemed too small for the chemical giant to bother with. Spencer teamed up with a retired researcher, Dmitri Zafiroglu, one of the company's most prolific inventors, who is the genius behind most of Xymid's technology. From his personal lab in Wilmington, Del., the 70-year-old wizard has churned out a remarkable stream of patentable inventions.

Based in Chesterfield County, Xymid focuses mainly on specialty fabrics. The company's Lanx Fabric Systems provide chemical protective garments. Its Wearforce fabrics and composites are used in high-performance athletic apparel requiring abrasion resistance. Its Zyflex sportsgear is designed to protect the cold and wet outdoors.

The carpet industry is very different from the apparel business, however, so Spencer set up a subsidiary, C&G Flooring, to commercialize the soft-tile technologies. He hired Armentrout, 46, who'd spent his career mostly in banking, financing and consulting to operate the start-up.

"My responsibility," says Armentrout, "is to direct the strategy and marketing of the company, with Xymid contributing technical support and manufacturing production."

Carpet dominates the floor covering industry because it is soft and attractive, coming in a wide variety of colors and textures. But it has big

drawbacks. Under heavy traffic, carpet tends to compress, or flatten. Tufts attract dirt and bacteria that even aggressive vacuuming and shampooing cannot entirely clean. Carpet, which is vulnerable to fraying at the edges, also has a relatively short life expectancy, especially in commercial settings, which means it must be replaced frequently, typically within five to seven years.

An alternative to carpet known as soft flooring strives to provide the advantages of carpet without those disadvantages. The trick is to create a woven product that mimics the look of carpet, not a wrestling mat. But that has proven a difficult challenge. Interface Flooring Systems, a leader in the soft flooring industry, developed a flat woven flooring in the 1990s, but it didn't fare well, says Lee, the consultant. The edges frayed. The product did not hold up.

But Zafiroglu devised the solution: a polyester-based fiber that could be spun into a fabric with the weight and feel of felt. He combined that with a thin, hard shell of woven polyester that has the look of a woven fabric. While Paraweave isn't as plush to the touch as carpet, it withstands compression and stands up to a pounding. A test of the product at a Florida theme park exposed it to literally millions of footsteps, and it showed a fraction of the usual wear. Other critical advantages: Paraweave does not fray at the edges, it can

be cut into squares and installed like tile, and it is easily recycled.

Willie Wise, owner of a commercial office building near the Hanover Air Park, has installed Paraweave. He was sold on the economics of the product, he says. Not only is it more durable than carpet, it's much easier to repair. "We could take up one or two tiles and replace them with new tiles. That's a lot more efficient than replacing the whole floor."

An immense benefit, the significance of which was not appreciated initially, is that Paraweave can be made from recycled carpet, and it is itself easily recycled. The manufacturing process requires half the energy that new carpet does -- a huge environmentally friendly credential. With builders increasingly adopting Leadership in Energy and Environmental Design (LEED) standards, Armentrout says, he hopes that designers eventually will begin asking for the product as an alternative to carpet.

The carpet industry signed a memorandum of understanding with the Environmental Protection Agency earlier in the decade that set a goal of recycling at least two percent of the roughly five billion pounds of old carpet that winds up in landfills every year. It's becoming increasingly evident, Armentrout says, that the industry is falling behind. Paraweave could be part of the answer.

Xymid currently manufactures Paraweave for C&G Flooring with 40 percent recycled raw material, and expects to move to 60 percent recycled content before the end of the year. Ultimately, Armentrout says, his team has "identified raw material sourcing that could, dependent upon availability, allow us to move to 85 percent to 100 percent."

Compare C&G' use of recycled material for *new* carpet with the EPA goal of recycling 40 percent of *old* carpet by 2012. Armentrout says his company should be able to recycle 100 percent of its old Paraweave carpet when it's outlived its floor life. C&G has the front end covered and the back end, too.

In marked contrast to the frenetic "first to market" mentality of the high-tech sector, Armentrout is taking his time. His patent protection is locked up, and he wants to get things right before going national. You might call it a "soft flooring" roll out.

Armentrout is limiting his installations mainly to Virginia -- mostly in the Richmond area. He hasn't started focusing on any particular niche yet. For now, he is selling to a wide variety of customers with the goal of getting broad feedback from the marketplace. The business is still small enough that Armentrout sometimes delivers the soft tile personally, and he routinely inspects the installations himself. Says he: "We want to keep it hands on

and customer focused."

He still has a few things to figure out, Armentrout willingly concedes. Breaking into the flooring installation business is one big issue. The carpet and flooring industry is highly concentrated, and the distribution system has been consolidating under the influence of a handful of big players like Shaw and Mohawk. "Right now," he says, "we're not even a speck of dust on the back of an ant."

That will change, of course, if Paraweave is remotely as successful as Armentrout thinks it will be. In his search for the product's sweet spot, he's honing in on the hospital and educational markets. Hospitals and schools like carpet because it's soft and quiet. But it traps allergens and bacteria, so many institutions are looking for a substitute. Paraweave may be the answer.

Xymid and C&G have adopted the DuPont model (without the bureaucracy) for product introductions. "We're very slow, methodical, deliberate," Armentrout says. "We believe we're delivering a real product. It's been tested for four years now. Our nature is to push our inventions to find the fatal flaws."

"As hard as we've looked," he adds, "we've yet to find one."

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