

Plastics News

Soy-based foam improves window performance, sustainability 

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By: **Catherine Kavanaugh**

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Let the green accolades — and sales — begin.

Called U-Core+, the low density insulating foam is injected by fabricators into vinyl and fiberglass window cavities, where WFI touts that it improves thermal performance up to 8 percent.

U-Core+ also is the only window foam certified by the U.S. Department of Agriculture BioPreferred Program, WFI President Terry Walker, 56, said in a telephone interview. The certification requirement calls for a bio-based content of 7 percent, he added, but he exceeded it and reached just over 19 percent.

The USDA program is aimed at providing new markets for farm commodities — move over tofu, crayons, car seats and biodiesel fuel — while reducing the nation's reliance on non-renewable petroleum-based products. The program also is tied to another federal initiative called Grow It Here, Make It Here.

Walker shares all of those objectives. He uses the natural oil polyol to replace some of the petroleum-based components of polyurethane foam.

"Soybeans are renewable materials that reduce greenhouse gases and lower global warming potential in contrast to petroleum products," Walker said. "There's a unique chemistry behind using them but they work and they work well."

He partnered with Joseph (Jay) Fabick Jr., president of Fabick Inc., which manufactures industrial sprayed-on coatings, to produce his foam innovation at a Fabick affiliate business in Madison called Tria-chem LLC.

"Jay decided to help me launch this and get it off the ground," Walker said, adding the time is right. "Several years ago raw material pricing was quite high but it's become more competitive."

Earthwise Group LLC is an early customer. The federal certification helped seal the deal with the Liberty Township, Ohio-based network of independent window and door fabricators, Executive Director Mark Davis said in an email.

"From a marketing perspective, we love the fact that U-Core+ is a USDA certified bio-based product," Davis said.

"Environmental responsibility is important to us and, to the best of our knowledge, no other expanding foam product can make that claim."



Earthwise has 18 U.S. manufacturing facilities and distributes windows and doors mostly in the eastern half of the United States but it is expanding west. The fact that U-Core+ also is U.S. made was another plus for Davis. He vouches for the thermal boost, too.

"From a performance perspective, the U-Core+ material has a better insulating value than we were able to find with any other product," he said. "We saw an increase of 3-8 percent in the thermal performance of our products, which is significant."

Walker said the thermal resistance could give some window fabricators "that added push" to meet new Energy Star standards without a major window redesign.

On the cost side, the foam's low density allows it to flow 20-30 percent better than the competition, Walker said, which improves the material's yield.

Davis put it this way: "We can fill more lineals and use less foam."

In developing the product, Walker said he tried other materials like castor oil and cashew oil, but he settled on a soy-based polyol made by Bio-Based Technologies, which is headquartered in Arkansas.

"The short and sweet of it for me is I wanted to be different. I wanted to bring something new and better to the market,"

Walker said. "Out of all the renewable products I tested, the soybean oil polyol performed the best and gave me the best attributes."

A 30-year veteran of the urethane foam and coatings industry, Walker got his start with a small family-owned business before moving to a mid-size company and then an industrial giant, Illinois Tool Works (ITW). He parted ways with ITW in 2011 after two years of pondering the startup of his own business.

"I had put in enough time and effort to know I could do this on my own," Walker said.

He did consulting work for others while he tweaked his business plan around the BioPreferred Program and worked out a partnership. Walker handles all product development and sales, including Canada, while Fabick oversees manufacturing.

"The first year was pretty much design, development and testing," Walker said. "For the second year, we're approaching \$1 million in sales, which is good for one man."

Also, good for the partners: WFI Global received a 2014 Green Award from Door and Window Market Magazine for innovative fenestration products that are environmentally sustainable.

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