New Soy Flour Adhesive Bonds Costs & Safety – *Without* Formaldehyde

by the United Soybean Board

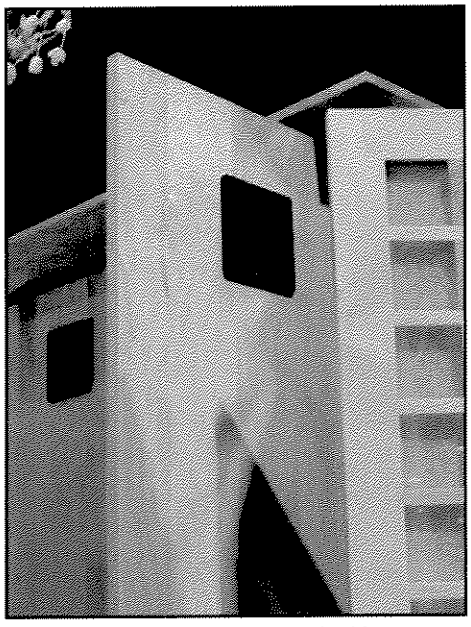
"Soy-based adhesives make perfect sense from an environmental and economic standpoint," said Todd Allen, a United Soybean Board Director and soybean farmer from West Memphis, Ark. "The technology offers an alternative that is safer for people and the environment, and the costs are very competitive with non soy-based adhesive technologies."

Soybean flour is being used in combination with Kymene® Wet Strength Technology to form a new adhesive for the manufacture of plywood. This new use for soy flour might someday completely replace formaldehyde in plywood adhesives. The move away from urea formaldehyde (UF) follows the World Health Organization International Agency for Research on Cancer's designation of UF as "carcinogenic to humans."

The new adhesive technology was developed through the cooperative efforts of the soybean checkoff, Columbia Forest Products, the Dept. of Forestry at Oregon State University, and Hercules Incorporated.

The use of animal blood in adhesives has also been a source of controversy. Substitution of soy flour for animal blood results in reduced levels of volatile organic compounds (VOCs) and less odor, both of which have huge environmental benefits. The use of soy flour as the foaming agent in plywood production has economic benefits as well. Using animal blood as a foaming agent is often more expensive, which makes the soy flour agent more cost effective by comparison.

Columbia Forest Products, North America's largest manufacturer of hardwood plywood and hardwood veneer, announced the move toward formaldehyde-free manufacturing processes in May. The conversion to formaldehyde-free manufacturing utilizes a Kymene® and soy flour adhesive technology and is expected to be complete within a year. Converting helps to lessen the environmental impact of the company's hardwood plywood manufacturing operations.



Neil Kelly Signature Cabinets go non-toxic with veneer-core hardwood plywood from Columbia Forest Products. "PureBond adhesive will provide a cost-competitive solution while increasing moisture resistance without urea formaldehyde," stated Ed Woods, Columbia's Executive VP/Sales & Marketing.

Hercules Inc. produces Kymene Wet Strength Technology, a range of polymer products. The Kymene product is combined with soy flour, obtained from a different source, on-site by end-users in ratios specific to the function required. Kymene is a water-soluble product [that has] been used for over 40 years to add wet strength to paper and paper products. An exclusive license for use of this patent pending adhesive system was granted to Columbia Forest Products by Hercules for hardwood plywood production and limited exclusivity for production of Medium Density Fiberboard (MDF) and other products.

Costs for the Kymene/soy flour adhesive technology are expected to be equal to the current urea formaldehyde-based adhesive technology commonly used today. This means that a healthier, safer alternative is available without significant cost impact. Researchers are also optimistic that Kymene/soy flour adhesive technology will also be cost competitive compared to various other formaldehyde-based adhesives.

The increased safety levels, environmental benefits, and cost effectiveness of soy flour based adhesive technologies should make it an attractive alternative for use in plywood and fiberboard manufacturing.

For more information on soy-based adhesives contact Hercules, Inc. at (302) 992-8174 or at www.Hercules.com; or visit Columbia at www.columbiaforestproducts.com.

You can find additional information on soy-based adhesive technology and learn about other soy building materials by checking out the Soy Products Guide at www.unitedsoybean.org/newuses.