

In the News

New Glue Creates Superior Bond Without Formaldehyde

Plywood made with the soy-based adhesive passes rigorous boiling-water test

Plywood, OSB, LVL, and glulams have one feature in common: They depend on glue for their strength and durability. Unfortunately, that glue often carries an environmental price. Urea formaldehyde used for interior hardwood plywood tends to off-gas into living space, and even adhesives that are more stable in service, such as the phenolic formaldehyde used in exterior sheathing panels, cause environmental and safety problems at the manufacturing plant.

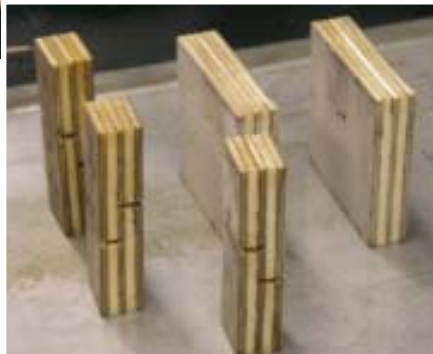
A new soybean-based adhesive may change all that. Developed by an Oregon State University research team led by assistant professor Kaichang Li, the protein glue was inspired by the natural substances that ocean creatures like mussels use to attach themselves to rocks in the pounding surf. An expert in “interfacial adhesion,” Li studies compatibilizers, which help wood and plastic stick together in composite materials. After analyzing the mussel proteins, he figured out how to modify soybean proteins to create tough, waterproof glues with a similar chemical structure — adhesives that, unlike phenolic formaldehyde, don’t rely on oil and natural gas as raw materials.

The main ingredient in Li’s formula is soybean flour. The trick, he says, is to add a few side groups to the natural soy protein’s molecular

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In a two-cycle boil test, samples of plywood made with a soy-based adhesive are submerged in boiling water for four hours and dried for 20 hours, then boiled again for four hours and dried for another 20. Even after such rigorous treatment, the samples do not delaminate.



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REMODELING SPENDING

Amid all the frantic speculation about the fate of the nation’s booming housing market, the remodeling industry continues to quietly rake in the cash. According to the U.S. Census Bureau, U.S. consumers spent \$198.6 billion on remodeling in 2004, an increase of 12.5 percent over 2003. The NAHB Remodelers Council expects the upward trend to continue with an estimated \$209 billion in spending in 2005 — and *Kitchen and Bath Business* magazine’s “2005 Market Forecaster” predicts that kitchen and bath remodeling alone will generate more than \$100 billion in volume this year. Many factors are feeding the growth, including low interest rates, quickly appreciating home values, and an ample supply of older homes.

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chain, improving the way the sticky material grabs on to the cellulose and lignin molecules in wood and making the bond much more resistant to water.

“When wood gets wet it swells, and when it dries it shrinks,” Li explains. “The swelling and shrinkage create lots of stress along the glue line. So if the adhesive is not strong enough, the board will fall apart. Or if the adhesive is not waterproof, then it dissolves.” But panels made with Li’s new soybean glue can withstand hours of boiling without delamination — a test that standard hardwood plywoods manufactured with urea formaldehyde can’t pass.

Li admits that the boiling test is somewhat extreme; it’s voluntary even for exterior grade plywood and OSB. In those exterior products, urea formaldehyde doesn’t provide the needed weather resistance, which is why CDX plywood and OSB use the more stable (and more expensive) phenolic adhesive.

Li has already struck deals with chemical company Hercules to manufacture commercial versions of his new adhesive. And in May, Columbia Forest Products announced plans to convert all its hardwood plywood mills to the soy-based glue. Says Columbia spokesman

John McIsaac, “The new adhesive outperforms our existing urea formaldehyde adhesive for both water resistance and strength. So why wouldn’t we jump on it?” He adds, “With this product, we have no emissions at all, and that’s better for our employees and for our customers.”

But what about exterior panels? Says Li, “We are working with Louisiana-Pacific to get that going, and we did successfully make some OSB. They cut a corner off a panel and threw it in boiling water while we were working there, and boiled it for something like two days, and it held together. It was pretty amazing.”

Currently, Li notes, modern OSB plants have to deal with excess formaldehyde. To control emissions, he says, “they actually use natural gas and burn everything up. But the problem is that the natural-gas bill is larger than their profit. That’s lots of money.”

A natural glue that can achieve better adhesion and durability with less toxic risk has the potential to spread throughout the industry. Modified soy protein chemistry also has possible uses in site-applied glue and for better-adhering paints and coatings. “We’re working on that,” Li says. “But we aren’t there yet.” — *Ted Cushman*

In a case of reverse work-site theft, a group of endangered plants mysteriously appeared on a contested development in Sebastopol, Calif., according to the June 11 *Sacramento Bee*. The first biologists on the scene reported no ground disturbance and concluded that the Meadowfoam flowers were native. However, under pressure from developer Scott Schellinger, the California Department of Fish and Game investigated further and, after digging up the plants and finding foreign soil and vegetation underneath, deduced that the Meadowfoam had been transplanted. An ensuing criminal investigation was unsuccessful in rooting out the culprit.

Air conditioners, plywood, power tools, and copper tubing are walking off job sites in record numbers, but they’re not doing it on their own legs. Taking a step toward deterring work-site theft, the General Assembly of North Carolina passed legislation on July 6 that stiffened penalties for stealing “from a permitted construction site.” As of December 1, 2005, larceny involving stolen construction goods valued from \$300 to \$1,000 — or the possession or reception of such goods — will be considered a Class 1 felony.

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RESOURCES

Guide to FSC-Certified Wood

The goal of the Forest Stewardship Council is to improve forest management through socially and environmentally responsible purchasing. Recently, the nonprofit organization partnered



with Forest Products Solutions to release a training guide for building professionals who use certified wood products in their projects. Called *Designing and*

Building with FSC, this 28-page booklet includes a program overview, case studies, sample specification language and documents, and a resource guide. It can be downloaded in PDF format for free from the FSC Web site (www.fscus.org).

Web Manual for Homeowners

While written warranties, manuals, and other documents are becoming an increasingly common part of new-home sales, most houses still lack specific instructions on their use. To fill that information gap, the Builders Association of Minnesota and the Minnesota Building Industry Foun-

dation have launched Home-Smart, a free Web site that gives homeowners an online guide to understanding and maintaining their homes (www.home-smart.org).

In addition to basic step-by-step tutorials explaining the various systems found in a typical home, Home-Smart offers monthly maintenance checklists, a trouble-shooting guide, and short features on such topics as understanding outside moisture sources and lowering utility bills. The site is designed to comply with Minnesota's building codes, so homeowners in other states (California, for example) might find some of the content irrelevant. Still, builders groups throughout the country can view this project — which was also funded by the NAHB, the U.S. Department of Energy, and the Minnesota Department of Commerce — as a useful model.



Lumber Chain Thrives With Builder Focus



It's called "the survival speech," and it has become a company legend at 84 Lumber. The year was 1992, and company president Joe Hardy had called a strategy session with top executives. "He told them, 'There's Lowe's and there's Home Depot,'" says

company communications director Jeff Nobers. "You can either go head-to-head with them — and you'll have to do a lot of things right — or we can go back to our roots and serve professional contractors. One way, we'll be very successful. The other way, we'll probably be out of business in two years. You figure it out."

The company chose the contractor-focused path, with Hardy's daughter, Maggie Hardy Magerko, at the helm as president. By 1994, sales hit a billion dollars. In 2002, they topped \$2 billion, and in 2004, \$3 billion. This year, 84 Lumber will put 50 new stores on line; next year, perhaps

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100. Clearly, the company is riding the nationwide expansion of the home-building industry. Says Nobers, “We’re going into markets where we expect 3,000 or more starts per year for the foreseeable future.”

For 84 Lumber, Nobers says, success is all about identity. “We are not a retail home center. We are a hard-core building-materials supplier. Ninety-five percent of our business nationally is with professional contractors. You aren’t going to see a garden section in one of our stores. They’re steel buildings with vapor lighting — nothing fancy. That helps to keep prices down.”

Instead of frills, Nobers says, 84 Lumber delivers competitive pricing and a full range of builder services. “We do blueprint takeoffs. We provide builder’s risk insurance and credit. In some cases we do construction financing. We even have an in-house travel agency that will book personal or business travel for our customers on a no-fee basis.”

84 Lumber also runs 18 component plants that build floor and roof trusses and wall panels, with more sites planned. And it offers a plan book of predesigned homes with complete materials estimates.

“We have relationships with some production builders, but our bread and butter is guys that are building maybe 25 homes a year,” says Nobers. Remodelers are also part of the picture, he says, especially in Northeast markets where new construction is relatively less active. — *Ted Cushman*

Gas Leak Leads to Recall

On August 2, Desa Heating Products recalled 534 compact fireplaces that have a faulty burner-tube connection to the gas valve. When these units’ main burner is on, the connection can leak gas, creating the risk of a flareup.

Named in the recall are Vanguard models VMH10TPC and VMH10TNC and FMI models EFS10TPA and EFS10TNA. Affected fireplaces bear serial numbers 015200000 through 017400000 and would have been purchased between April 2004 and June 2005. Owners should contact Desa at its recall hotline, 866/279-3225, or visit www.desatech.com.



Two more title insurers are shelling out millions of dollars to settle allegations that they paid kickbacks to builders, real estate agents, and lenders in exchange for referrals. Fidelity National Financial Inc. and Land-America Financial Group joined the kickback settlement club July 20, sitting down at the table with First American Title Insurance Co. — which just settled with Colorado regulators in February (see *In the News*, 7/05) — to work out a settlement with the California Department of Insurance. The three companies ultimately agreed to pay \$23.8 million in penalties and consumer refunds, bringing the total in settlement fees for the illegal rebating scheme to an impressive \$46.8 million.

After agreeing to donate \$12.5 million to address lead-paint poisoning, DuPont was dropped from a Rhode Island state lawsuit against former lead-paint manufacturers, announced Attorney General Patrick C. Lynch on June 30. The money will go directly to such institutions as the Children’s Health Forum, a Washington, D.C., nonprofit organization, and Brown University’s School of Medicine to help fund public education and research. Still facing a September trial date in the state Superior Court are ConAgra, Atlantic Richfield Co., Millennium Holdings, NL Industries, Sherwin-Williams Co., and American Cyanamid Co.



Texas Attempts to Fix Workers' Comp System

An eleventh-hour compromise in the Texas legislature between competing versions of workers' comp reform was signed into law on June 1 — to the evident relief of all concerned. In a deal brokered by Governor Rick Perry, the final law sets up a new division in the Texas Department of Insurance to regulate workers' comp and lays out new mechanisms for managing claims, adjudicating disputes, handling complaints, and providing care to injured workers. Under the new plan, for example, employees will have to get treatment within a designated provider network, and wage-replacement benefits are slated to rise by 12 percent.

Texas workers, employers, doctors, and insurance companies have all struggled for years with what was widely recognized as a “broken” workers' comp system. “Everybody genuinely said, ‘This system that may have been intended to be all things to all people is nothing to nobody,’” says Jay Dyer, a Texas Association of Builders staff executive. But despite a universal clamor for change, reform efforts hit a snag late in the legislative session. “It was just the classic standoff between the two chambers of the bicameral legislature,” Dyer says. One sticking point was the Texas Workers' Compensation Commission, the agency that administered the old system. The House bill eliminated the TWCC, while the Senate bill kept it. In the end, the TWCC went.

An issue legislators may revisit in future years is whether to make participation in the new system mandatory. At present, Texas is the only state in the nation that lets employers “opt out” of workers' comp coverage. If a worker for a company that doesn't carry comp is injured, both employer and employee must take their chances in the civil court system. During hearings on the House bill, state Rep. Bert Solomons, a leader in the reform effort, said he wasn't ready to push for mandatory participation in a system that was acknowledged to have high costs and inadequate benefits.

Dyer says that for now his association is taking a “wait and see” approach to the idea of requiring all builders to carry comp. “We may get there yet,” he says. “But one of the things that has discouraged people from joining is that the premiums have been cost-prohibitive and the coverage has not been satisfactory. If the system does become affordable and workable, most folks might just make the business decision to go ahead and join.”

— *Ted Cushman*

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