

Engineered Wood

SPRING 2010

JOURNAL



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HOMEOWNERSHIP**
Implications for the
Wood Products Industry

**EWTA
2010 MEMBERSHIP
DIRECTORY**

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New Emphasis on Best
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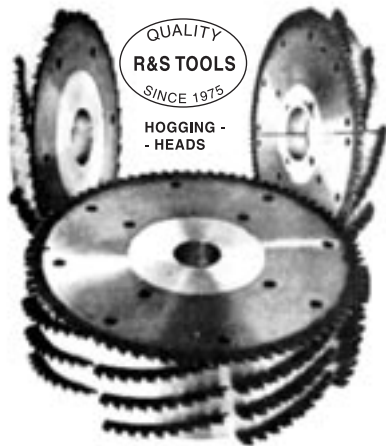
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About the Cover:
"Day's End," one of the signature paintings of industry artist Ken Brauner, whose career is profiled on page 12. Cover photo © Ken Brauner. Reprinted with permission.

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Will Housing Ever Come Back?

One of the conundrums of the current economic mess is that the housing market — a key prerequisite to recovery — cannot really recover until the unemployment rate declines. But a big segment of the unemployment ranks is comprised of people who were tied to the over-heated housing market — builders, lenders, appraisers, inspectors, construction product manufacturers and retailers, home furnishing manufacturers and retailers, etc. And since those jobs can't come back in force until the housing market does, a question now being asked is whether housing can ever return to pre-collapse levels.

As the *Wall Street Journal* put it earlier this year, "Many of the jobs created by the booms in the housing and credit markets... have likely been permanently erased by the subsequent bust."

It's possible the bust may also have had a significant systemic impact on future U.S. homeownership rates — an eventuality that APA Market Research Director Craig Adair and Forest Service Research Economist Al Schuler explore in an article starting on page 16 of this issue of the *Journal*.

As the authors note, changes in the age demographics of the U.S. population, weaker political support for policies encouraging immigration, higher energy costs typically associated with single-family versus multifamily dwellings, and the huge loss of real estate and other investment equity and the resulting financial pressures now faced by millions of Americans could conspire to reduce U.S. single-family homeownership rates over the long haul. The size of homes also could be affected by those factors.

If homeownership rates were indeed to decline significantly, there could be significant corollary effects on demand for wood products since use volumes vary considerably between single-family and multifamily units. The authors present wood product demand estimates under three different homeownership rate scenarios — high, mid-range and low — while also factoring in unit size assumptions.

The bottom line is that under a low ownership scenario, the result could be an annual loss of some 4.6 billion square feet of structural wood panel demand, compared with the historical high ownership rate. Other wood product categories also, of course, would be negatively impacted.

It is important to point out that a low home ownership rate — defined in the analysis as 60 percent, versus a 68 percent high ownership rate — is not likely. And as the authors also note, such a development, were it were to occur, would likely be gradual and subtle, giving wood product manufacturers time to adapt through reassessment of their end-use markets and changes to their product offerings.

Still, given the economic earthquakes of the past couple of years, the importance of contingency planning cannot be overstated. Messrs. Adair and Schuler have provided an important tool to that end.

A Supplier Who's Who

Included in this issue of the *Journal* is an Engineered Wood Technology Association (EWTA) membership directory, the latest among a number of tools and activities by EWTA designed to help facilitate mutually beneficial business relationships between APA members and their product, equipment and service suppliers.

As with the Info Fair exhibitor listing in the fall issue of the *Journal*, the directory listings here include brief descriptions of the companies' products and/or services and key contact information. If you're a supplier to the industry but not a member, the directory also summarizes the benefits of membership. More information about EWTA functions and activities also can be found, of course, on the EWTA website at www.engineeredwood.org.

The plan is to make the directory an annual feature of the spring issue of the *Journal*. Suggestions on how we can make it more useful are welcome and encouraged.



Jack Merry

Panel Production Fell 21 Percent in 2009

U.S. and Canadian structural wood panel production totaled 24.32 billion square feet in 2009, down 21 percent from 2008 and almost 37 percent from 2007, according to yearend data released by APA.

Plywood production declined 16 percent for the year, while oriented strand board production was down almost 24 percent.

Among other engineered wood products, glulam timber production declined 33 percent, wood I-joint production dropped 38 percent and laminated veneer lumber output fell 37 percent.

APA's annual spring forecast is expected to be completed around May 1.

National Formaldehyde Legislation Nears Approval

A bill to establish national formaldehyde standards for composite wood products passed out of a U.S. Senate committee late last year and was expected at press time for the *Journal* to be enacted into law during the first quarter of this year.

Called the Formaldehyde Standards for Composite Wood Products Act (S. 1660), the legislation is based on the regulation promulgated in 2008 by the California Air Resources Board (CARB) and would be the first ever national standard for formaldehyde emissions. As with the CARB regulation, the bill effectively excludes structural wood panels, glulam timber, structural composite lumber and wood I-joists from the scope of the covered products, based on the well-documented extremely low formaldehyde emissions levels of those products.

The legislation was championed by the Composite Panel Association and the Sierra Club as an alternative to a complex and divisive Environmental Protection Agency (EPA) rulemaking process. Other organizations supporting the legislation and participating in its development included the American Forest & Paper Association, Alliance for Healthy Homes, APA, Business and Institutional Furniture Manufacturers Association, Hardwood Plywood & Veneer Association, and National Environmental Health Association, among others.

The legislation's provisions would take effect Jan. 1, 2012.

CPA Calls for Fix to Proposed USDA Biomass Regulation

The Composite Panel Association (CPA) has called for a fix of a new regulation now under consideration by the U.S. Department of Agriculture that the association says "threatens the existence of many U.S.-based wood product manufacturers and could shut down entire industries if implemented in its current form."

CPA says that the USDA's Biomass Crop Assistance Program (BCAP), while well intended, is dangerously faulty because its list of eligible subsidized materials includes residual wood, such as sawdust and wood chips, that are already being used for higher value purposes in homes, furniture, cabinets, doors, flooring and other consumer and construction products. If left unchanged, the provision could "wipe out the entire feedstock of U.S. composite panel manufacturers, estimated at \$400 million in 2010" by diverting it to the biomass fuel industry, CPA warns.

More information can be found at www.bcacreform.org, a special website on the matter created recently by CPA.

Commercial Construction Recovery Looking Bleak According to AGC Outlook

Nearly 90 percent of contractors believe there will be no recovery in 2010, according to a national construction hiring and business forecast released earlier this year by the Associated General Contractors of America (AGC).



Fewer contractors plan to purchase construction equipment, and after a year of near-record industry layoffs, many doubt they'll be able to hire new staff this year, said AGC, which represents the U.S. commercial construction industry.

"Unfortunately for the industry and for our economy, this year's construction outlook is far from positive," said Stephen Sandherr, the association's chief executive officer. "As long as the construction industry remains mired in its own depression, broader economic and employment growth will continue to lag."

The outlook, which is based in part on survey responses from nearly 700 construction firms submitted in December and January, shows that privately funded construction activity is likely to decline even further this year. Indeed, 64 percent of responding contractors expect demand for new manufacturing facilities will decline, while 71 percent expect demand for new retail, warehouse and lodging facilities will drop.

One of the relatively few bright spots for the industry was the federal stimulus, AGC said. Thirty-one percent of contractors said they were awarded stimulus-funded projects over the previous year.

Environmental Fact Sheets Supporting Wood Products Published

CORRIM (Consortium for Research on Renewable Industrial Materials), the Seattle-based research consortium, has published two new titles in a series of fact sheets on environmental topics and issues.

The latest two documents, titled *Product and Process Environmental Improvement Analysis for Buildings — Carbon Life Cycle Assessment* and *Maximizing Forest Contributions to Carbon Mitigation*, are the fifth and sixth in the series that the organization has published over the past several years. The series provides a wealth of scientifically credible data and information supporting the environmental merits of forest products.

Created in 1976, the Consortium was re-formed in 1998 with a new research plan to develop a scientific base of information relating to the environmental performance of wood-based building products.

All of the fact sheets and numerous other reports on environmental subjects can be downloaded from the CORRIM website at www.corrim.org.

Industry Watch

Large Home Builders Launch New Organization

Several of the country's largest home builders have chartered a new home builder business organization as a result of a policy clash with the National Association of Home Builders (NAHB), according to news reports.

The new organization, called the Leading Builders of America, said it will

focus on legislative issues of importance to large builders. According to reports, the breakaway companies plan to maintain their NAHB memberships, but NAHB's specialty group for large builders, the High Production Builders Council, will disappear.

The split was reportedly precipitated by disagreement between NAHB and the

large builder group over a tax bill related to the time frame for companies to carry back net operating losses. That issue was said to be the latest manifestation of friction between NAHB, whose membership includes large numbers of smaller builders, and the larger builder constituency.

AWC Organizes New Industry Coalition

The American Wood Council (AWC) announced recently it has launched a new wood products industry coalition to provide an organizational structure for addressing building codes and standards issues, green building policy issues, and federal and state environmental regulations affecting manufacturers.

"The new coalition will ensure that wood products manufacturers have a broadly supported, unified and powerful voice at the table so that we can secure a strong future for the wood products industry in the face of an onslaught of challenges," said AWC Executive Director Robert Glowinski.

AWC is governed by a board comprised of all coalition members.

SFI® Releases New Standard

The Sustainable Forestry Initiative® (SFI®) Inc. has released a new standard that reinforces its role in supporting and promoting sustainable forest management as one of the world's leading third-party forest certification programs, the organization said in a press release.

The new SFI 2010-2014 Standard, the result of an 18-month public review, includes revisions that improve conservation of biodiversity and address emerging issues such as climate change and bioenergy, strengthen SFI fiber sourcing requirements, complement SFI activities aimed at avoiding controversial or illegal offshore fiber sourcing, and expand requirements for logger training.

The new standard took effect January 1, and program participants have up to one year to implement its changes.

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LP's Wagner Assumes Chairmanship of APA Board of Trustees



Jeff Wagner, executive vice president of OSB at LP, became chairman of the APA Board of Trustees late last year, succeeding Mike Rehwinkel, who left Georgia-Pacific Wood Products.

Wagner had served as vice chairman for the previous year and has been a member of the APA Board since 2006. In more than 30 years with LP, he has worked in forest land management and procurement, and more recently served as vice president, forest resources, supply management and logistics. He has been leading LP's OSB business for the past four years. He holds a Bachelor of Science in Forestry from Humboldt State University.

In other changes to the Board, Mary Jo Nyblad, plywood sales and marketing manager for Boise Cascade LLC, was elected vice chair of the Board. Nyblad has been an APA trustee for four years and most recently served as chair of the APA Marketing Advisory Committee. Also elected to the Board were Mark Luetters, president, wood products, of Georgia-Pacific Wood Products, LLC; Rick Huff, president of Ainsworth Lumber Co. Ltd.; and Tom Ray, vice president, Montana Operations, at Plum Creek.

IRC Lateral Bracing Guide Published by APA and ICC

A new illustrated guide to improve understanding and application of the 2009 International Residential Code® (IRC) lateral bracing requirements has been published by APA and the International Code Council (ICC).

Titled *A Guide to the 2009 IRC Wood Wall Bracing Provisions*, the document explains how to use the IRC to provide bracing necessary for a residential structure to resist the lateral loads that can result from

wind and seismic events. The publication addresses all IRC-approved wall bracing methods, including those using plywood or oriented strand board wall sheathing.

"The IRC bracing requirements are a common source of confusion and misapplication," said APA Senior Engineer Ed Keith, who co-authored the book with APA Engineered Wood Specialist Greg Bates in support of the association's structural wood panel sheathing education and promotion efforts. "In some parts of the country, where the IRC has not been previously adopted, the 2009 IRC will be the first time many builders, designers and code enforcement personnel have been exposed to wall bracing requirements. In this book, we demystify the prescriptive bracing provisions," Keith said.

The guide is available for purchase for \$41 (\$33 for ICC members). Visit www.iccsafe.org for more information (Product #7102S09).

Siding Standard Approved for Reference in 2012 International Codes

A new American National Standard for engineered wood panel siding, *Standard for Performance-Rated Engineered Wood Siding* (ANSI/APA PRP-210), was approved for acceptance into the 2012 International Building Code (IBC) and the International Residential Code (IRC) at the 2009 Code Development Hearings in Baltimore last fall.

The standard was developed by APA under the consensus process of the American National Standards Institute (ANSI) and was approved for publication by ANSI in December 2008. APA is accredited by ANSI as a standards developer of American national consensus standards that can be recognized by the national building code, regulatory bodies and government agencies.

Based on APA's PRP-108 *Performance Standards and Policies for Structural-Use Panels*, ANSI/APA PRP-210 provides requirements and test methods for qualification and quality assurance for performance-rated engineered wood exterior siding. There were previously no American National Standards covering these products. APA served as the secretariat of the Standards

Committee that initiated development of the new standard in December 2007.

More information can be found on APA's Standards Development page at www.apawood.org/standards.

Annual Meeting Returns to Tucson in October

APA's 72nd annual meeting will return October 16-19 to the Westin La Paloma in Tucson, Ariz., where the meeting was last held in 1999.

The meeting site is located on 250 acres in the high Sonoran Desert foothills of the Santa Catalina Mountains with picturesque mountain, desert and golf course views. The resort features 487 guest rooms and suites, a 27-hole Jack Nicklaus Signature golf course, seven restaurants, a tennis and health center, retail shopping and 64,000 square feet of indoor meeting space.

The meeting, as usual, will feature the Info Fair supplier exhibition, numerous business sessions, APA Safety and Health Awards presentations and several social and networking events.

Engineered Wood Journal Available by E-Mail

The *Engineered Wood Journal*, published twice annually by the Engineered Wood Technology Association (EWTA) and distributed by mail free of charge to engineered wood products industry representatives throughout the United States and Canada, is now also available by e-mail.

Recipients of the print edition who do not receive the e-mail version because their e-mail addresses are not in the magazine's recipient database can sign up for electronic delivery. Simply send your name and e-mail address to kim.sivertsen@apawood.org. E-mail edition recipients can also opt out, of course, if they wish.

The electronic edition features the entire content of the print version, provides navigational aids and includes a list of advertisers with links to their websites, thus providing additional reach and value to advertisers at no additional cost.

Tim Fisher Elected Advisory Committee Vice Chair



Tim Fisher, director of sales, veneer/plywood machinery at Grenzebach Corporation, Gladstone, Ore., was elected vice chair of the EWTA Advisory Committee at the

committee's meeting in Florida late last year. He succeeds Tim Ayers, who recently retired from Willamette Valley Company.

Also elected to the Advisory Committee were Kevin Blau, manager of product development and quality for strand based business at Tolko Industries Ltd., Vernon, British Columbia; Rodney Schwartz, business director of air abatement systems at MEGTEC Systems, Inc., De Pere, Wis.; and Tony Vuksich, vice president at Willamette Valley Company.

The Advisory Committee chairman is John Murphy, Murphy Company.

GP Chemicals Launches New Low-Emissions Adhesives

Georgia-Pacific Chemicals (www.gp.com/chemical) announced recently the launch of its LEAF™ low-emission adhesives designed to aid in complying with a variety of green building standards and the California Air Resources Board's (CARB) Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products Phase 2 requirements.

LEAF wood adhesives are designed for use in particleboard and medium density fiberboard used in furniture, paneling, cabinetry and other products with composite wood parts.

The new products "can easily be substituted into current manufacturing processes and help our customers move ahead of the curve in terms of CARB Phase 2 compliance," said Ashlee Cribb, Georgia-Pacific wood adhesives business

manager. "CARB Phase 2 emissions are not required until 2011, but due to the time needed for certification and other concerns about sell-through provisions, it is critical for manufacturers to start the certification and conversion process now," Cribb said.

Raute North America Relocating its B.C. Headquarters

Raute North America (Raute Canada Ltd.) announced recently that it is relocating its operational headquarters from New Westminster, British Columbia to a new site and modernized facility in Delta, British Columbia.

The new site, at 1633 Cliveden Avenue on Annacis Island, is centrally located in the Vancouver area and is in close proximity to Raute's local customer and supplier base, as well as to key transportation links, the company said. Raute Corporation President and CEO Tapani Kiiski said that in conjunction with the move, Raute North America will also be making investments in manufacturing machine-tool technology and other critical operational infrastructure. The company expects to be fully operational at the new site by mid-year.

More information can be found at www.raute.com.

Technology Forum Articles Now Posted on Website

A new Technology Forum containing articles on a variety of engineered wood industry technology topics is now posted on the EWTA website at www.engineeredwood.org.

Most of the articles are authored by EWTA member company representatives and have appeared in past issues of EWTA's *Engineered Wood Journal*. The articles run the gamut from dryer efficiency and product marking to spark detection, emissions control and product treatment technologies.

Article ideas for both the *Engineered Wood Journal* and the online

Technology Forum are welcome. Please see the Writer's Guidelines posted in the *Engineered Wood Journal* section of the EWTA website.

Hexion Receives Business Improvement Award

Hexion Specialty Chemicals, Inc. (www.hexion.com) recently received a 2009 Global Six Sigma & Business Improvement Award recognizing its achievements in utilizing Six Sigma for organizational business improvement. Six Sigma is a disciplined, data-driven approach and methodology for eliminating defects in any business process.

The company was recognized for its use of Six Sigma for business improvement in the chemical and pharmaceutical industries. The award was part of an overall awards program presented by Worldwide Conventions and Business Forums (WCBF), which produces Lean Manufacturing and Six Sigma events.

Yearend Report Available on Website

The 2009 EWTA Yearend Report to the Membership was e-mailed recently to all EWTA members and also is now posted on the website at www.engineeredwood.org.

The report covers activities and achievements in a number of areas over the past year, including communications, networking events, research support, membership retention and recruitment, and governance. Also included are complete membership lists of both EWTA supplier members and APA manufacturing members.

Article Published on EWTA-Sponsored CORRIM Research

An article on the results of a life-cycle inventory (LCI) study funded in part by EWTA recently was posted as a preprint in a special issue of the *Journal of Wood and Fiber Science*.

The article, written by Jim Wilson, professor emeritus in the Department of Wood Science and Engineering at Oregon State University, is titled "Life-Cycle Inventory of Formaldehyde-based Resins Used in Wood Composites in Terms of Resources, Emissions, Energy and Carbon." It can be found at www.swst.org/wfs/prePublication.html.

The study was conducted by CORRIM (Consortium for Research on Renewable Industrial Materials) and is among a number of life-cycle assessment studies undertaken by CORRIM to provide scientifically credible data on the environmental merits of various materials. EWTA and EWTA members contributed a combined \$20,000 in support of the study.

The resins LCI report also is posted on the CORRIM website at www.corrim.org.

Ashland Chemist Develops New Adhesive

Dr. Zhaohui Sun, a chemist at Ashland Performance Materials (www.ashland.com), is being credited for developing an innovative, two-component engineered wood product adhesive package that the company says offers numerous performance and environmental advantages.

Identified as ISOSET[®]UX160/WD3-A322, the adhesive contains no formaldehyde, thus qualifying for LEED credits; cures at ambient condition, thus saving energy; and offers high strength with superior bonding at ambient, wet and elevated temperature conditions. The adhesive meets all of the relevant standards, including ASTM D2559, ASTM D5055/ASTM D7247, and CSA 0112.10, and is now commercially available, the company reports.

Dr. Sun, who received her Ph.D. in polymer science from the University of Akron in 2005, joined Ashland as a senior research chemist supporting the company's Structural and Industrial Adhesives Group. More information on the product can be found on the company's website.



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Canvas Chronicle



"Last Load of the Day" © Ken Brauner. Reprinted with permission.

Remembering the Industry Artistry of Ken Brauner

by Jack Merry

When Ken Brauner died in 2008 at age 84, he left behind both a vivid chronicle of timber industry life in 20th century America and an art business that continues to thrive under the direction of his widow, Phyllis; son, Tom; and daughter, Lois.

Brauner, whose paintings hang in offices, conference rooms, universities and museums around the country and beyond, had a childhood interest in art and pursued it avidly as a hobby through middle age. As the story goes, his grandmother deserves much of the credit for getting him started when she gave the 11-year-old a set of oil paints, the medium he preferred and most employed throughout his life.

Brauner received little formal training as an artist. He took art courses for two years at the University of Oregon after serving with the Army Infantry in the Philippines during World War II. Other than that, however, he was essentially self-taught and perfected his craft while working full time in the forest products industry.

In 1976, when the company he worked for — Giustina Bros. Lumber Company — shut down, he decided to turn his part-time avocation into a full-time vocation. At 52, it was a significant career change. But he was well prepared.

Brauner's knowledge of and appreciation for the themes of his work were the result of practical experience and lifelong observation. His 23-year career with Giustina Lumber encompassed both production and sales. He served on advisory committees of the American Plywood Association and the North American Wholesale Lumber Association, through which he met and established

friendships with industry colleagues and leaders around the country. And, most importantly perhaps, he was born and raised in Western Oregon, where he was witness over several decades to the rise of the country's leading timber-producing region and its thriving sawmill, plywood and other wood products industries.

"I thought, 'All I'll have to do is sell two paintings a month to match my [Giustina Lumber] take-home pay.' I just started painting," Brauner was quoted in a 2007 *Eugene Register-Guard* feature. With that intrepid optimism and his honed and established talent, it wasn't long before the business took off.

Early sales came primarily through the sizable network of forest products industry contacts that Brauner had established. Direct mail eventually was added to the marketing plan, and later still, with the new technology, e-mail and a website. The U.S. and Canadian

Brauner was essentially self-taught and perfected his craft while working full time in the forest products industry.

mailing list now approaches 20,000 and is still growing. Trade magazine advertising is also occasionally employed.

Although Brauner in later years painted scenes depicting the latest industry technologies, most of his work reflected the heyday of independent entrepreneurship — that more rough-and-tumble era when the industry was populated by countless small and thriving privately held enterprises up and down the West Coast and in other timber producing regions. "His forte," says son, Tom, "was to preserve the history of logging and wood products. He would find photos of actual sites, research them, and provide

a printed story with each painting. He often said that the photos from which he painted were rapidly deteriorating and that he wanted to preserve the scenes in oils, which would last hundreds of years."

That "bygone" flavor in most of Brauner's work has become a sort of signature trademark and a chief attraction and appeal to those who buy his work, or see it displayed in galleries, museums and other public places. Perhaps his most emblematic painting in that vein, and best known, is "Day's End," which captures three loggers, laden with tools of their trade, emerging from a forest after a day's work.



"Logging Old Growth Timber" © Ken Brauner. Reprinted with permission.

(That painting is reproduced on the cover of this issue of *Engineered Wood Journal*.) Paintings for purchase and shown on the Brauner website are organized by subject, such as forestry, railroads, horses, southern pine, harvest, mills, water, covered bridges, etc. Approximately 160 of his best paintings were eventually published in the book *Paintings from Timber Country*.

While oils were Brauner's chief medium, he also compiled an impressive body of illustration and cartooning work. His illustrations, for example, have appeared in

Terms of the Trade, published by Random Lengths Publications. And for nearly four decades he created cartoon-style backdrops for the Oregon Logging Conference, the largest logging equipment show in North America. Those depictions, usually satires dealing with issues facing the logging industry and eventually compiled in a book, earned him an honorary life membership from the Conference.

Brauner also was commissioned to paint murals, such as his "Forestry in Oregon" for Bohemia, Inc. and "100 Years of Logging

in Oregon" for Associated Oregon Loggers. Both works are reproduced in *Paintings from Timber Country*. His paintings have been exhibited at numerous museums and institutions, including Georgia-Pacific Corporation Museum, Mount Shasta Museum, Coos Bay Art Museum, Umpqua Community College, Oregon State University, University of Oregon School of Business Administration, Concordia University, Georgia Forestry Commission, Oregon Logging Conference and Lincoln City Art Museum. And when not laboring in his studio, he managed to find time to teach oil painting.

The business side of the Brauner art enterprise was always primarily — and remains — the province of Phyllis, who handles sales and marketing, now with help from the Brauner children. "We will continue to sell signed and numbered prints, matted and framed prints, Christmas cards, note cards, calendars, etc.," Tom emphasizes. More than 300 of Brauner's paintings were never published, and plans are for those to be released a few at time over the next several years.

The business website (www.kenbrauner.com) was recently upgraded, and plans are in the works to expand distribution of the newsletter via e-mail. The Brauners also recently started producing Giclee reproductions, which employ the latest and most sophisticated ink-jet technology. The technique produces an extremely smooth and consistent image on canvas that is true to the original painting. "We will probably issue one [Giclee reproduction] per year indefinitely. However, any painting can be reproduced into a Giclee on custom order," Tom explains.

Brauner never tired of his craft and was painting right up to the day before he went into the hospital. He had several unfinished projects that he was working on at the time of his death. The last painting on his easel belongs now to his son Doug. A larger legacy — the historical memory of an earlier time — belongs now to the timber communities and wood processing industries that Brauner captured so vividly on canvas. ●

Jack Merry (jack.merry@apawood.org) is editor of the *Engineered Wood Journal* and an independent communications contractor and consultant.

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The FUTURE of

Implications for the Wood Products Industry

by Craig Adair and Al Schuler

Editor's Note: The following article is a substantially condensed version of a paper of the same title that the co-authors wrote last year. The entire paper, including all tables, can be downloaded from the Publications/Market Research section of APA website at www.apawood.org. For historical U.S. homeownership rate data, see Table 14 on the U.S. Census Bureau website at www.census.gov/hhes/www/housing/hvs/annual08/ann08ind.html.

The homeownership rate in the United States is retreating from historical highs, and a falling rate could mean that fewer and smaller single-family homes will be built in the future compared to multifamily. That in turn could impact demand for wood products.

Homeownership peaked at 69.2 percent in the fourth quarter of 2004, driven by low interest rates, lax regulations, exotic mortgages, promotion by government sponsored enterprises (GSEs) such as Fannie Mae and Freddie Mac, and the belief that house prices would continue upward indefinitely. The housing crash and recession have combined to drive

the homeownership rate back to 67.4 percent in the second quarter of 2009.

Homeownership languished at about 45 percent from 1900 to 1945 and then exploded as the booming post-war economy, tax laws that included a mortgage interest deduction, a rejuvenated building industry and easier financing all contributed to the increase.

Homeownership rates are important because of the importance of residential construction to the structural lumber and panel industries, and also because structural panel and framing lumber prices are tied closely to the ups and downs of the residential sector.



Homeownership

Is a 67 to 69 percent homeownership rate plausible in today's environment? The current recession has left many baby boomers and younger Americans questioning the merits of owning their own homes. Immigration, a key component of housing demand, also is being negatively impacted by the economy. If homeownership does continue falling and this becomes a fundamental shift in the economy as opposed to a short-term phenomenon, how will this impact demand for wood products?

Homeownership varies dramatically by country, and there is a lack of consensus as to why there is so much variation. Homeownership factors can include the existence of preferential tax treatment/mortgage interest deduction, income levels, access to mortgage money, and social norms. But those factors don't always provide explanation. For example, Greece has a higher homeownership rate than the United States, but the United States has a higher standard of living as measured by per capita income (PCI). China has a PCI one-eighth of the United States, yet China's homeownership rate is slightly higher. Germany and Spain have similar PCI, but Spain's homeownership rate is double Germany's rate.

Three major trends that could well impact future homeownership rates in the United States are demographics, environmental policies impacting energy costs, and financial pressures under the long-term performance of the U.S. economy.

Demographics

From a demographic standpoint, a key question is what type of shelter will the 75 million baby boomers choose? As a group, boomers have been more severely impacted by the recent economic/financial crisis because they are approaching retirement. Equally important, this

group has a high homeownership rate. According to census data, the homeownership rate for people 55 and older was 80.1 percent in 2008. For married couples 55 and older, with families, the rate was 91 percent. Will they prefer smaller single-family homes, whether detached, row, condos? Or will they prefer to rent, possibly upscale rental units? Or, might they stay in place? The jury is still out on those questions.

The echo boomers group (children of the boomers) is slightly larger than the baby boomer segment. These are younger people who may decide to rent, given the recent experience of their parents. According to the latest State of the Nations Housing Report by the Harvard Joint Center for Housing Studies, the echo boom generation actually outnumbers their parents by about 5 to 6 million.

This population shift has important implications for housing demand over the next decade. "First, as members of the echo boom generation enter prime household formation and home buying ages, they will reverse declines in the 25 to 44 age group created by the much smaller baby bust generation," says the report. "With the number of households in this age group projected to increase between 2.0 and 3.4 million, the demand for rentals and starter homes will surge." The same study proposes that "the rapid growth in the population under age 45 and over age 65, as well as the rising minority share, will shift the composition of housing demand over the next 20 years. . . . These changes in the age distribution will mean greater demand for both starter homes and rentals, and for senior housing."

Historically, and particularly the past two decades, immigrants have had a major impact on shelter demand. Key



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questions are whether immigration will continue at the rapid pace it has followed in the past two decades, and what type of shelter immigrants will desire.

The growing immigrant population, led by Hispanics, is approaching 44 million people, and now makes up about 14 percent of the U.S. population. By 2020, they will make up 15.5 percent, and by 2050, one quarter of the U.S. population (102 million) will be Hispanic, according to projections by the U.S. Census Bureau.

Once immigrants get settled, homeownership increases dramatically. For example, all immigrants arriving in the 1960s had homeownership rates approaching 27 percent by the 1970s; by the 1980s it was approaching 46 percent; by the 1990s, 65 percent; and in this decade, more than 70 percent, exceeding that for native born Americans. The bottom line is that if national policy favors immigration, this will be positive for both rental housing and first-time/entry level housing.

Energy Costs

Countries all over the world are getting serious about dealing with environmental issues such as climate change and energy independence. The current administration is moving forward with various types of legislation that will put more emphasis on cutting greenhouse gas emissions while placing more emphasis on renewable energy sources. The end result could be higher energy costs, at least for the next decade or so.

The Congressional Budget Office (CBO) estimates that average household electricity costs will go up by \$175/year as public utilities pass on the costs related to reducing emissions. At the other end of the scale is the American Petroleum Institute saying the bill could cost the average taxpayer up to \$3,300 annually by 2020. There will be a focus on the residential and transportation sectors because they consume half of the energy. The auto industry will face higher CAFE (miles per gallon regulations) standards as well.

What does all of this mean for housing? Quite possibly, it may encourage the construction of smaller single-family homes; possibly more people will rent; possibly more will use building materials and building systems that are environmentally friendly and energy efficient. Building materials that are carbon neutral and materials that require less energy utilization throughout their life cycle may gain more acceptance.

Financial Pressures

The recession, stock market collapse and sharp drop in housing values has left many Americans in poor financial health. For most Americans, their house was their most important asset. However, in the past few years, more than \$6 trillion dollars of housing wealth has been destroyed, and for one group of Americans, the baby boomers, there is not enough time to recoup their losses. In fact, many retiring baby boomers may be forced to rent because they may have to rely primarily on Social Security.

Affordability may also be an issue for echo boomers. High household debt, mortgage lending industry collapse, tighter credit standards, and declining wages and disposable income trends all point to housing affordability problems for many younger people. If this is the case, it will favor rental housing.

One conclusion could be that more Americans in the future will allocate less of their wealth and income to housing, which could mean more rental demand, or smaller single-family homes.

Table 1**Homeownership Rates and Housing Starts Assumptions***

	Single-family & Mfg. Homes 1996-2008 High Ownership	Single-family & Mfg. Homes 1962-1981 Mid-range Ownership	Single-family & Mfg. Homes Low Ownership	Multifamily 1996-2008 High Ownership	Multifamily 1962-1981 Mid-range Ownership	Multifamily Low Ownership
Ownership Rate	68%	64%	60%	68%	64%	60%
Starts Mix	80%	70%	60%	20%	30%	40%

*Note: The homeownership percentage and the single-family plus manufactured home starts percentage are not the same because homeownership is calculated using *all* households in the United States, and the percentage of units that are single-family and manufactured home starts are for only those started in the forecast period of 2011-2020. In addition, many single-family homes are rented and not owned. For example, row homes and townhomes are classified as single-family and are often rented.

Wood Product Demand Implications

While it's difficult to predict the direction of homeownership, several reasons for a possible period of lower homeownership have been presented. In order to understand the potential impact of lower ownership on the demand for wood products used in residential construction, demand was calculated for three basic ownership scenarios.

The first scenario is called "high ownership" and is taken from the period 1996 through 2008 when homeownership averaged 68 percent. This level could continue well into the future if consumers want large homes complete with media rooms, dens, formal dining rooms, recreation rooms and other luxury living spaces. In fact, most current housing forecasts use the assumption that high levels of homeownership will continue for many years.

During another period, 1962 through 1981, ownership averaged 64 percent and may be termed "mid-range ownership." This level of ownership could become the norm in the future if more consumers pull back from their desire to live in single-family homes and opt to live in apartments.

At the other end of the scale, the assumption is that homeownership could be headed even lower and, for this analysis, 60 percent was chosen to represent a "low ownership" scenario. This could happen if larger numbers of consumers want to simplify their lifestyle in favor of multifamily living instead of single-family ownership.

The decade of the 1950s averaged about 55 percent homeownership and it was even lower in the early 1900s. The share of single-family home construction compared with multifamily increased rapidly in the 1950s because of the pent-up demand for single-family homes after World War II. A level of 60 percent homeownership has not been reached in recent decades and is a theoretical level to illustrate what could happen.

For the purpose of calculating changes in wood product demand, three levels of single-family and multifamily housing starts were estimated for the three different levels of homeownership. A hypothetical decade of 2011-2020 was chosen. This period would provide time for the current recession to end and move toward one of the three homeownership assumptions. The housing start mix was selected by examining history. Table 1 helps explain the rationale for choosing a mix of housing starts for levels of high, mid-range and low ownership.

During the recent period of high homeownership, single-family starts averaged 70 percent and manufactured homes averaged 13 percent of the mix, for a total of 83 percent single-unit residences. Manufactured homes have been trending toward a lower share of the housing mix and have been only 7 percent of all starts for the past six years.

For the purpose of this analysis, the following mix of housing starts was chosen for the high scenario: 80 percent single-unit (73 percent conventional and 7 percent manufactured homes) and 20 percent multifamily. The housing mix for this scenario is similar to the period 1996-2008. For the mid-range scenario, a mix of 70 percent single-unit (63 percent conventional and 7 percent manufactured homes) and 30 percent multifamily was chosen, which is similar to the period 1962-1981. For the low scenario, a mix of 60 percent single-unit (53 percent conventional and 7 percent manufactured homes) and 40 percent multifamily was chosen.

Again, we do not have a good comparable time period to match with the low scenario. The closest period may be in the late 1960s and early 1970s when single-family construction was just below 65 percent at times and multifamily was just above 35 percent for a couple of years. In summary, single-family homes become a smaller percentage of underlying home demand and multifamily become a higher percentage of demand in the progression from high to mid-range to low scenarios.

There have been several estimates of underlying housing demand in the past decade. The National Association of Home Builders stated in their 2008 long-term housing forecast that "the underlying trends in fundamental demand factors point toward the need for 1.9 to 2.0 million housing units per year — composed of 1.5 million single-family units, between 350 and 400 thousand multifamily units, and between 100 and 150 thousand manufactured homes."

Forecasts of underlying demand depend on several assumptions, including household formations, immigration and replacement demand due to age or natural disasters. With today's political uncertainties, immigration is one of the most difficult factors to predict. For this reason, a conservative underlying demand estimate of 1.85 million homes per year was selected for the 2011-2020 decade in this analysis.

Another set of assumptions used in the three homeownership scenarios relate to home size. This is important because construction

material usage is very dependent on home size — the larger the home or multifamily unit, the more volume of construction material used. There has been a trend toward larger single-family and multifamily homes and apartments, and their size may change under different assumptions about the future.

The floor area of U.S. single-family homes rose steadily for over a decade until the average square footage of homes sold declined slightly from 2,479 in 2007 to 2,459 in 2008. The decline was probably due to the decision of builders to construct less expensive homes that had a better chance to sell in the housing recession. The assumption for the future is that, starting with the past four-year average of 2,480 square feet, single-family home size will increase 1.5 percent per year for the high scenario, increase only .25 percent per year for the Mid-Range Scenario and decline .25 percent per year for the low scenario.

The high scenario assumes that if homeownership continues at a high rate and household incomes continue to increase at about the same rate as in the recent past, home size also should increase at the same rate as over the past 20 years. The assumption for the mid-range scenario is that there will be minimal growth of home size. And if the homeownership rate shifts to the low scenario, the assumption is that average single-family home size will decline slowly because consumers will favor smaller homes and many will choose apartments.

The assumptions for the average size of multifamily units are much different. For the high scenario, the assumption is that single-family homes will remain in favor and that the average size of multifamily units will not increase at all. In fact, the size of multifamily units has increased less than 1 percent per year in the past 10 years, when homeownership has been very high.

For the mid-range scenario, starting with the past four-year average of 1,250 square feet, the assumption is that multifamily units will increase 0.5 percent per year because consumers will want more

space than in the past, and the forecast decade average will be 1,285 square feet.

For the low scenario, the assumption is that multifamily units will be in favor for the reasons listed earlier. Apartments will have the advantages of lower maintenance, providing more time for travel and leisure, and possibly lower overall cost per square foot over time than single-family homes. For the low scenario, the assumption is that starting with the past four-year average of 1,250 square feet, multifamily units will grow 1 percent per year, and the forecast decade average will be 1,320 square feet per unit.

Table 2 is a summary of ownership rates, housing demand and floor area used in the three scenarios. The number of annual starts was held constant at 1.85 million to reflect average underlying demand. The percentage of manufactured homes and the manufactured home floor area were held constant so that the effect of changing the mix of conventional single-family and multifamily could be analyzed better. Single-family and multifamily floor areas reflect the assumptions already discussed.

Demand Calculations

Housing starts and home size assumptions in Table 2 were multiplied to arrive at total floor area, and this area was multiplied by product volumes per square foot of residential construction to estimate wood product volumes used in the three scenarios of high, mid-range and low homeownership. Market shares were held constant for the calculations in an attempt to isolate the effect of changing homeownership. For example, the share of solid sawn lumber compared to engineered wood was held at the same level as 2006. The share of concrete floor construction compared to raised wood floors was also held at the 2006 level. Table 3 shows the results of calculating structural wood product volumes for both single-family and multifamily construction using the three ownership scenarios.

Table 2

Housing Starts and Size Assumptions at Different Levels of Homeownership in the United States for the Period 2011-2020

	High Ownership		Mid-range Ownership		Low Ownership	
Home Ownership Rate	68%		64%		60%	
Annual Starts (000)/Decade Averages						
U.S. Single-family	1,350	73%	1,165	63%	980	53%
U.S. Multifamily	370	20%	555	30%	740	40%
U.S. Manufactured Homes	130	7%	130	7%	130	7%
	1,850	100%	1,850	100%	1,850	100%
Single-family Floor Area	2,695		2,515		2,445	
Multifamily Floor Area	1,250		1,285		1,320	
Manufactured Home Floor Area	1,600		1,600		1,600	

Note: U.S. Department of Commerce definitions were used in this analysis. Single-family includes detached homes, semi-detached, row and townhomes. Multifamily includes low or high-rise apartments and condominiums.

Table 3

Wood Products Demand from New Residential Construction Using Three Levels of Home Ownership – Annual Averages 2011-2020¹

Single-family & Multifamily	High Ownership	Mid-range Ownership	Low Ownership	High to Low Percentage	High to Low Difference
Lumber - BBF	24.2	21.2	19.3	-21%	(5.0)
Engineered Wood					
Glulam Timber MMBF	196.4	182.4	177.1	-10%	(19.3)
Structural Composite Lumber MMFT					
LVL	44.1	43.0	40.5	-8%	(3.6)
Other SCL³	<u>113.2</u>	<u>111.3</u>	<u>110.5</u>	<u>-2%</u>	<u>(2.7)</u>
Total SCL	157.3	154.3	151.0	-4%	(6.3)
I-Joists MMLF	911.4	808.3	744.7	-18%	(166.7)
Structural Panels BSF 3/8"					
Plywood	3.1	2.7	2.5	-18%	(0.6)
OSB	<u>18.5</u>	<u>16.1</u>	<u>14.5</u>	<u>-22%</u>	<u>(4.0)</u>
	21.6	18.8	17.0	-21%	(4.6)
Single-family (incl. Manufactured Homes)²					
Lumber - BBF	22.2	18.1	15.0	-33%	(7.2)
Engineered Wood					
Glulam Timber MMBF	163.6	131.7	107.7	-34%	(55.8)
Structural Composite Lumber MMFT					
LVL	36.3	29.3	24.1	-34%	(12.3)
Other SCL³	<u>109.5</u>	<u>105.7</u>	<u>102.8</u>	<u>-6%</u>	<u>(6.8)</u>
Total SCL	145.9	135.0	126.8	-13%	(19.0)
I-Joists MMLF	823.3	672.3	558.5	-32%	(264.8)
Structural Panels BSF 3/8"					
Plywood	2.7	2.1	1.7	-36%	(1.0)
OSB	<u>17.2</u>	<u>14.0</u>	<u>11.7</u>	<u>-32%</u>	<u>(5.5)</u>
	19.9	16.1	13.4	-32%	(6.5)
Multifamily					
Lumber - BBF	2.0	3.1	4.3	111%	2.3
Engineered Wood					
Glulam Timber MMBF	32.9	50.7	69.4	111%	36.6
Structural Composite Lumber MMFT					
LVL	7.8	13.7	16.4	111%	8.6
Other SCL³	<u>3.7</u>	<u>5.7</u>	<u>7.7</u>	<u>111%</u>	<u>4.1</u>
Total SCL	11.4	19.3	24.1	111%	12.7
I-Joists MMLF	88.2	136.0	186.2	111%	98.0
Structural Panels BSF 3/8"					
Plywood	0.4	0.6	0.8	100%	0.4
OSB	1.3	2.1	2.8	112%	1.5
	1.7	2.7	3.6	109%	1.9

¹ Wood use per square foot was multiplied by floor area and unit size assumptions in Table 2 to calculate product volumes. Wood use per square foot came from Wood Used in New Residential Construction, U.S. and Canada – 2006, a Wood Products Council Study. March, 2009.

² In single-family calculations, manufactured home floor area and number of starts are held constant for each scenario. As a result, volumes change by different percentages from year to year, depending on the product. For multifamily, all factors changes for each scenario and result in the same percentage changes from one scenario to the other.

³ "Other SCL" includes the strand lumber products: parallel, laminated and oriented strand lumber.

Single-Family Summary

As shown in Table 2, the high ownership scenario included the most single-unit homes, an average of 1.35 million and 130,000 manufactured homes for the decade 2011 through 2020. The high ownership scenario also had the largest average single-family floor area, 2,695 square feet. The high ownership scenario is in line with most current forecasts of housing and wood product demand.

The combination of large homes and a fairly high level of single-family starts resulted in the largest volumes of wood product demand when compared to the other scenarios: more than 22 BBF of lumber, almost 20 BSF of structural panels and large volumes of glulam, I-joists and structural composite lumber. The mid-range ownership scenario, with smaller homes and fewer starts, resulted in nearly 20 percent less volume for all products. The low ownership scenario, with even smaller homes and fewer starts than the mid-range ownership scenario, resulted in 17 percent less volume than the mid-range scenario.

The difference between the high and low scenarios was a 32 to 34 percent loss of structural wood product volume.

If the United States does indeed move toward and reaches the low ownership scenario, the lost demand from single-family construction will be substantial. Compared with the high ownership scenario, there would be an annual loss of 7.2 BBF of softwood lumber, 6.5 BSF of structural panels, 264.8 million linear feet of I-joists, 19.0 million cubic feet of structural composite lumber and 55.8 MMBF of glulam timber. These losses become magnified if an entire decade is considered. The difference between the high and low ownership scenarios over a 10-year period would be more than 70 BBF of lumber, more than 550 MMBF of glulam, 190 MMFT³ of structural composite lumber and nearly 65 BSF of structural panels.

Multifamily Summary

Table 3 shows that the demand for wood products used in multifamily construction was lowest under the high ownership scenario because it assumed fewer and smaller apartments than in the mid-range and low ownership scenarios. Again, the high ownership scenario with modest levels of multifamily construction is in line with most current forecasts of housing demand. The mid-range and low ownership scenarios use the assumptions that multifamily units will grow in floor size and there will be more demand for them. In the low ownership scenario, apartments reach an average 1,320 square feet in the decade 2011 through 2020 and average 740,000 units per year, compared with 1,250 square feet and 370,000 units in the high ownership scenario.

The mid-range ownership scenario results in 55 to 60 percent more demand for structural wood products than the high scenario, and the low ownership scenario results in 30 to 40 percent more than the mid-range scenario. If the United States reaches the low ownership — meaning more multifamily units — there will be substantial wood product volume gains, but not enough to overcome the loss of single-family units. Volume increases from high to low ownership would just about double. For lumber, the annual gain would be nearly 2.3 BBF, for glulam nearly 40 MMBF, for I-joists nearly 100 MMLF, for structural composite

lumber over 12.7 MMFT³ and for structural panels 1.9 BSF.

Combining All Three Scenarios

The net result of lower single-family construction and increasing multifamily construction moving from high ownership to mid-range to low ownership is shown at the top of Table 3. For the major volume products, lumber and structural panels, the result would be a volume loss of about 12 percent moving from high to mid-range ownership and just less than 10 for most products moving from mid-range to low ownership. Overall, there would be about a 20 percent loss for most products moving all the way from high to low ownership. As noted previously, the multifamily volume gains would not be great enough to overcome the single-family volume losses.

Lost product demand would be substantial if the United States moved to the low ownership scenario and single-family home size and housing starts declined. It should be made clear that the low ownership scenario is not being forecast by housing experts and it has a relatively low probability of happening. However, it could happen and the last column in Table 3 shows the difference between the high and low scenarios in terms of potential lost annual demand: lumber (5.0) BBF, glulam timber (19.3) MMBF, I-joists (166.7) MMLF and structural panels (4.6) BSF. If ownership moved to the mid-range scenario, potential volume losses would be about one-half of the move to the low scenario.

The three scenarios presented here reinforce the fact that wood product manufacturers have benefited greatly from a relatively heavy mix of single-family construction in the years leading up to the current housing recession. If, when housing starts move back toward trend in response to underlying demand, the share of single-family versus multifamily declines significantly, demand for structural wood products could be weaker than expected. However, if that happens, the change will most likely be subtle and not a big shock, giving wood product manufacturers time to reevaluate their product offerings and best end-use market opportunities. ●

Craig Adair is director of market research at APA. Al Schuler, Ph.D., is a research economist with the U.S.D.A. Forest Service.

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THROUGH CONNECTIONS

Engineered Wood Technology Association 2010 Membership Directory

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message from john murphy

EWTA advisory committee chair



Welcome to this 2010 EWTA Membership Directory, which is designed to provide yet another EWTA-sponsored link between engineered wood product manufacturers and their suppliers.

The plan is to make this directory a regular annual feature of the spring issue of EWTA's *Engineered Wood Journal*, which for years has itself been a valuable information transfer vehicle for both manufacturers and suppliers.

As the chair of the EWTA Advisory Committee and as a member of the APA Board of Trustees, I commend the Committee for its vision and leadership in supporting and extending the value-added reach of EWTA-sponsored communications, such as this directory, to the APA membership and the industry in general.

I would also like to thank the many advertisers who make both this directory and the *Journal* possible. Your support is very much appreciated by the APA membership.

Finally, I urge industry suppliers who are not yet members of EWTA to strongly consider joining. As outlined elsewhere in this directory, membership provides numerous benefits that taken together provide tangible meaning to the EWTA motto — "Strength Through Connections."

Please feel free to call on the EWTA staff if it can be of assistance or service. And thanks for reading.

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EWTA Advisory Committee
and APA Trustee

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who we are



The Engineered Wood Technology Association (EWTA) is a related nonprofit corporation of APA—The Engineered Wood Association, the leading North American association of engineered wood product manufacturers. Products represented by APA include softwood plywood, oriented strand board, glulam timber, wood I-joists, laminated veneer lumber and other structural engineered wood products.

EWTA was founded in 1945 as the Plywood Research Foundation (PRF) for the purpose of advancing processing and technology research of benefit to the plywood industry. With the advent of new engineered wood products, industry consolidation, and more companies doing their own proprietary research, EWTA's primary purpose has shifted to serving as a vehicle for the exchange of research results, technical data, market intelligence, market development ideas, and industry trends and development information among engineered wood product manufacturers and their industry product, equipment and service providers.

All APA members are automatically members of EWTA. In addition, associate membership is open to industry suppliers of machinery, equipment, adhesives, engineering and consulting services, safety equipment, and other products and services required by engineered wood product manufacturers.

EWTA is governed by the APA Board of Trustees and by an industry Advisory Committee comprised of APA and associate member company representatives. The advisory committee identifies, plans, authorizes and funds activities and programs.

EWTA activities include sponsorship of research projects of benefit to the APA membership; management of the annual Info Fair supplier exhibition held in conjunction with the APA annual meeting; sponsorship of forums, meetings and networking events; and other information transfer efforts.

Vision

To be the leading supplier organization in the engineered wood products industry.

Mission

To enhance the competitiveness and growth of the APA and EWTA memberships by providing resources to APA members in their continual improvement process, helping to grow the membership base by being ambassadors for APA, representing the interests of the APA/EWTA membership at regional, national and international venues, and providing a means by which business relationships within the membership are strengthened.

membership benefits



Who Should Join

Any supplier of products, equipment or services to the engineered wood products industry will benefit from membership in EWTA. Examples of EWTA member products and services include:

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service ■ Plant design and engineering ■ Mill
optimization consulting services ■ Packaging
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labeling ■ Measurement equipment ■ Spark
detection and fire suppression systems ■
Assembly systems ■ Preservative treatments
■ Electrical engineering ■ Management
consulting ■ Employment services ■ Training
■ Safety equipment and services ■ Recycling
equipment

The annual cost of EWTA membership is just \$1,200. New members may join anytime during the year at a pro-rated amount. For more information about the benefits of membership and a membership application, contact Terry Kerwood, Managing Director, 253-620-7237, terry.kerwood@apawood.org.

Membership in EWTA provides “strength through connections”—invaluable networking and information transfer links between and among engineered wood product manufacturers and their product, equipment and service providers. EWTA membership benefits include:

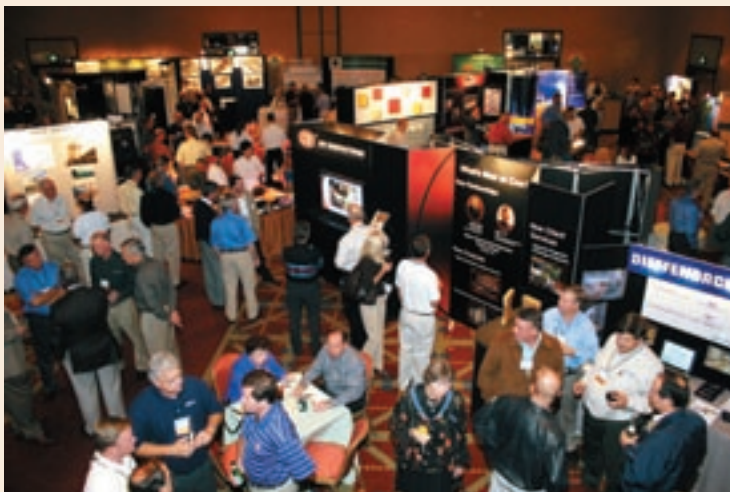
- Direct business-to-business links with your customers in the engineered wood products industry through such vehicles and events as Info Fair, an annual supplier show held in conjunction with the APA annual meeting; industry forums and seminars; APA annual meeting roundtables and workshops; company news and advertising in the EWTA Engineered Wood Journal; and dissemination of your company news and technology innovations via the EWTA website and e-newsletter.
- Free access to APA market forecast and housing reports.
- Discounts on APA events and *Engineered Wood Journal* advertising.
- Free company listing and profile in the annual meeting issue of the *Engineered Wood Journal* for EWTA Info Fair exhibitors.
- Member products and services directory.
- Annual meeting and other event sponsorship opportunities.
- Supplier awards recognition.
- Opportunities to exchange information with other EWTA members, APA members and APA staff via an EWTA advisory and subcommittee structure.
- Access to APA’s staff of quality, technical, market research, market communications, field services and other expert professionals.
- Opportunities to support, participate in and receive the results of important industry technical and market research projects.
- Access to APA laboratory and research resources in support of APA member-driven project and service requests.

info fair 2010

Established in 1993, the EWTA-sponsored Info Fair is the premier supplier exhibition for companies wishing to connect with North America's leading engineered product manufacturers. It is held in conjunction with APA's annual meeting and therefore provides a direct and close-range connection with key decision makers from APA's member companies, including owners, principals, CEOs, sales and marketing executives, and other senior managers.

Unlike other shows where exhibitors are chained to their booths during the entire length of the exposition, Info Fair is open at various strategic times during the three-day annual meeting, providing exhibitors ample opportunity to participate in the numerous other networking and information transfer opportunities featured during the convention.

Exhibitors also can elevate their exposure and broaden their reach to prospective customers through sponsorship of various meeting events and activities. Several sponsorship categories are available. And Info Fair exhibitors receive free company descriptions in the annual meeting issue of EWTA's *Engineered Wood Journal*.



Info Fair 2010 will be held in conjunction with the APA annual meeting scheduled for Oct. 16-19 at the Westin La Paloma in Tucson, Arizona. Info Fair exhibitors are limited to member companies of EWTA. For more information or to reserve your space, contact us at 253-620-7237, ewta@apawood.org.

EWTA supplier members by company



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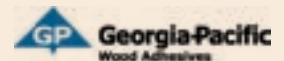
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Globe Machine and Burelbach Industries are two companies with one direction. Both companies offer single machine centers along with complete systems to the following industries: OSB, MDF, particleboard, plywood, strawboard, moulded door skins, membrane presses, siding, LVL, laminate flooring and sheet plastics. Globe Machine is the leader in the supply of automated I-joist assembly systems, while Burelbach has achieved a leadership role in the cement fiberboard industry and molded door lines. Together, Globe Machine and Burelbach Industries have more than 140 years of experience.

EWTA supplier members by company

GreCon Inc

15875 SW 74th Avenue
Tigard, OR 97224
T: 503-641-7731
Stephan Rehr-Zimmermann
F: 503-641-7508
szimmermann@grecon-us.com
www.grecon.com

Manufacturer of spark detection systems and quality assurance systems for the wood based panel industry.



GRENZSBACH

Grenzsbach Corporation

15 82nd Avenue Suite 30
Gladstone, OR 97027
Tim Fisher
T: 503-723-0730
F: 503-722-4537
tim.fisher@grenzsbach.com
www.grenzsbach.com

Grenzsbach Corporation is a leading global manufacturer and supplier of turnkey veneer drying lines. In addition, Grenzsbach has successfully completed extensive rebuilds on all makes and models of existing dryer machinery. Worldwide installations include dryer infeed machinery, jet, longitudinal and press dryers complete unloading, automatic color veneer scanners and stacking systems. Grenzsbach also provides complete parts support for all makes of dryers along with supporting engineering services.



Guardian Chemicals Inc.

Guardian Chemicals, Inc.

155 Estate Way W4 Sturgeon
Ind. Pk.
Ft. Saskatchewan, AB T8L 2T1
Canada
Mike Larke
T: 800-661-6544
F: 780-992-1185
info@guardianchem.ca
www.guardianchem.ca

Independent Canadian company since 1961. Specialty chemicals for all forest sector industries.

Hexion Specialty Chemicals, Inc.

520 112th Avenue NE, Suite 220
Bellevue, WA 98004
Mark Alness
T: 425-455-4400
F: 425-462-6528
mark.alness@hexion.com
www.hexion.com

Hexion Specialty Chemical is a leading global source for adhesives, resins, formaldehyde, melamine and derivatives, and UV-cure coatings serving a broad range of markets, including the forest products, foundry, automotive, construction, composites, electronics and oilfield industries, operating more than 50 manufacturing plants in North America, Latin America, Europe and Asia/Pacific.

Hinz, A Rockwell Automation Company

750 Chester Road
Delta, BC V3M 6J1
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Darrell Hinz
T: 604-521-2233
F: 604-521-4466
darrell.hinz@hinz.com
www.Hinz.com

Hinz, A Rockwell Automation Company, is a single-discipline electrical engineering company focused on the design of industrial controls and power distribution systems for the engineered wood industry.

Hunt Guillot & Associates

603 Reynolds Drive
Ruston, LA 71270
Stephen Blackwelder
T: 318-255-6825
F: 318-255-8591
information@hga-llc.com
www.hga-llc.com

Hunt Guillot & Associates, LLC (HGA) is a multi-disciplined project management and engineering design firm. HGA has been serving the forest products industry since the firm's founding in 1997. HGA continues to provide expertise to the engineered wood products, LVL, I-joist, OSB, plywood, particleboard, glue lam and lumber industries. Services provided include project management, feasibility studies, preliminary engineering, detailed design engineering and on-site technical support services.

Huntsman Polyurethanes

10003 Woodloch Forest Drive
The Woodlands, TX 77380
John Bebak
T: 281-719-4916
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john_f_bebak@huntsman.com
www.huntsman.com

Huntsman is a global manufacturer and marketer of differentiated chemicals. Its operating companies manufacture products for a variety of global industries, including chemicals, plastics, automotive, aviation, textiles, footwear, paints and coatings, construction, technology, agriculture, health care, detergent, personal care, furniture, appliances and packaging. Originally known for pioneering innovations in packaging, and later for rapid and integrated growth in petrochemicals, Huntsman today has more than 12,000 employees and operates from multiple locations worldwide. The company had 2008 revenues exceeding \$10 billion.

IBC

1940 Barnes Street
Penticton, BC V2A 4C3
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F: 250-493-3257
cpedersen@ibcworld.net
www.ibcworld.net

International Bar Coding Systems & Consulting Inc. is a full-service data collection, labeling, bar coding and inventory provider with extensive experience in wood products and building materials, since 1993. With specialized solutions targeting industrial applications, IBC is well-positioned to service your company anywhere in North America. We offer excellent after sales service and support.



IMEAS

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Peachtree City, GA 30269
Nathan Rutherford
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F: 678-364-1920
imeas@imeas.net
www.imeasinc.com

IMEAS is a world leader in surface finishing solutions, with more than 2,400 machines operating worldwide. IMEAS sanding and grinding machines are used to achieve precise surface finish and thickness on a wide variety of products such as plywood, LVL, composite wood panels, decorative laminates, flooring, and solid surface products, etc. IMEAS specializes in extra-wide machines - 10' (3.2 meter) and cross-belt sanding for wood products, and non-directional mirror finish for specialty steel products.

Itipack Systems

919 Zelco Drive
Burlington, ON L7L 4Y2
Canada
Harry Scholtens
T: 905-333-3695 x224
F: 905-681-3172
hscholtens@itipacksystems.com
www.itipacksystems.com
Itipack Systems has been in business since 1970. We are a manufacturer of automated strapping systems.

Jeffrey Rader Corporation

398 Willis Road
Woodruff, SC 29388
Doug Sublett
T: 864-476-7530
F: 864-476-7510
dsublett@jeffreyrader.com
www.jeffreyrader.com
Jeffrey Rader Corporation manufactures size reduction, screening and processing, material handling, pneumatic systems, storage and reclaim and vibratory feeder/conveying equipment. Jeffrey Rader has more than 50 years of experience supplying equipment and/or systems to the Forest Products industry. Jeffrey Rader is your single source for processing bark, chips and woody biomass materials.

Kimwood Corporation

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Complete engineering services for the engineered wood products industry.

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jens.svensson@limab.com
www.limab.com
LIMAB provides laser measurement equipment for thickness, width and length.

Matthews Marking Products

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Pittsburgh, PA 15206
Heidi Knapp
T: 412-665-2555
F: 412-665-2550
info@matw.com
www.matthewsmarking.com
Matthews International has been a leading supplier of marking and coding equipment for product and package identification since 1850. Its team of application engineers has developed specialized systems for marking wood products. Its automated systems are designed for in-line printing to allow product marking during production, reducing downtime and saving valuable production and shipment time.

EWTA supplier members by company

MEGTEC Systems

830 Prosper Road
De Pere, WI 54115
Mary Van Vonderen
T: 920-339-2787
F: 920-339-2793
mvanvonderen@megtec.com
www.megtec.com

MEGTEC supplies air pollution control equipment, heat recovery systems and engineering services to industries such as the engineered wood industry.

Metriguard, Inc.

2465 NE Hopkins Court
Pullman, WA 99163
Daniel Uskoski
T: 509-332-7526
F: 509-332-0485
duskoski@metriguard.com
www.metriguard.com

Metriguard designs and manufactures electronic and mechanical equipment for testing and grading wood products. This equipment is used worldwide by sawmills, wood products companies and research facilities. Various Metriguard products are designed to measure the physical properties of structural dimension lumber, timber, particleboard, oriented strand board (OSB) and veneer for use in structural laminated veneer lumber LVL.

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Javier Romero
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F: 770-229-1885
cshaw@osmose.com
www.osmose.com
Osmose, Inc., an Osmose affiliated company, is headquartered in Griffin, Ga., and is responsible for the sale of Osmose brand wood preservatives and treating plant equipment to wood treating plants around the world. Osmose, Inc. is recognized as the premier supplier of state-of-the-art engineering services and customized marketing services with emphasis on advertising, sales promotions and merchandising assistance to treating plant customers and retail lumber dealers serviced by these plants.

Pallmann America, Inc.

6420-A1 Rea Road Suite 335
Charlotte, NC 28277
Thomas W. Dopp
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tdopp@pallmannamerica.com
F: 704-543-5580
www.pallmannamerica.com
For more than 100 years, Pallmann has designed and built size reduction machinery. Specializing in high-capacity, high-performance stranders, flakers, refiners and mill utilized by the engineered panel board industries.

Panel World Magazine / Hatton-Brown Publishers, Inc.

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Montgomery, AL 36104
Rich Donnell
T: 334-834-1170
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rich@hattonbrown.com
www.panelworldmag.com
Panel World's international readership receives six issues per year, with emphasis on mill project startup articles. Product coverage includes softwood and hardwood plywood and veneer, oriented strand board, medium density fiberboard, particleboard and other composite boards and engineered wood products. Hatton-Brown publishes magazines for the forest products industry, of which *Panel World* is one.

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David Bond
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Permapost provides custom pressure treating solutions for engineered wood products used throughout the United States and Asia.

PQ Corporation

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PQ Corporation is a leading producer of specialty inorganic chemicals, catalysts and engineered glass products, including high-performance silicate-based products used in many applications such as coatings, adhesives, detergents, pulp/paper processing and water and waste treatment.

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chris.whelan@ca.henkel.com
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Purbond, Inc. is a joint venture of Henkel Corporation and Collano AG and is a leading supplier of high performance moisture curing liquid polyurethane adhesives. PURBOND HB E line is the only 1 part PUR adhesive certified under ANSI 405-2008, including ASTM D7247 High Temperature, as well as passing E119 HRA testing. PURBOND HB E line offers excellent open time/set time ratios, ductile bond lines that significantly reduce glue line checking and are of neutral color, as well as containing no formaldehyde or solvents. Henkel Corporation, with the acquisition of National Adhesive, is now the largest specialty chemical company in the world.

Raute

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Martin Murphy
T: 604-524-6611 x 379
F: 604-521-4035
martin.murphy@raute.com
www.raute.com
Raute is a technology company serving the wood products industry worldwide. Its core expertise lies in manufacturing processes for the plywood and LVL industries. Raute is the world market leader as a supplier of mill-wide projects but also can supply individual process lines, line modernizations and equipment upgrades.

Samuel Strapping Systems

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Woodridge, IL 60517
Dave Gagnon
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dgagnon@samuelstrapping.com
www.samuelstrapping.com
With more than 50 years serving the lumber and forest products industry, Samuel Strapping Systems offers its customers in the engineered wood industry a single source supply for all of their strapping and packaging requirements. Samuel's product line includes steel and plastic strapping, pneumatic and manual hand tools, seals, edge protection, stretchwrap, product identification equipment, and fully automated strapping systems. Our industry leading VK-30 strapping head has been used in both new and retrofit applications to convert our customers from steel to polyester strapping. Samuel is a leader in strapping for engineered wood products and had the first AAR approved polyester strapping for LVL.

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SCOOPSOFT is the only fully integrated management system specifically designed for the wood products industry. It enables mill owners and senior executives to automate, streamline and efficiently manage the full range of company-wide wood product operations, from production and inventory to sales, transportation, accounting, purchasing and e-business.

Siemer Milling Company

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www.siemermilling.com
Siemer Milling manufacturers and supplies special protein-starch glue extenders, as well as cereal-based adhesives and furnish additives for the plywood/panel industry.

Siempelkamp Limited Partnership

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Dirk Koltze
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The Siempelkamp Group of Companies are world leaders in the supply, installation and startup of equipment and complete production plants for the manufacture of wood based panel products, energy systems, dryer systems, panel handling and finishing systems.

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dennism@signode-ips.com
www.signode.com
Signode is a multi-national manufacturer of steel and plastic strapping, stretch film, pressure sensitive carton sealing tape and application equipment and accessory products for industrial packaging.

Southern Chemical Corporation

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Houston, TX 77060
Scott Lee
T: 832-448-7140
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slee@southernchemical.com
www.southernchemical.com
SCC is the largest importer of methanol, the precursor of formaldehyde, and will soon be importing melamine. All product is supplied from our production company (MHTL) in Trinidad. MHTL's complex includes five methanol plants, three ammonia plants, and soon a UAN and melamine plants. SCC serves customers from terminal locations stretching from Quebec City to Mexico and is the largest investor of terminals supporting the methanol industry in North America.

EWTA supplier members by company



Spar-Tek, Inc.

2221 North Argyle
Portland, OR 97217
Roger Daniels
T: 503-283-4749
F: 503-289-1621
roger@spartek.com
www.spar-tek.com

Spar-Tek Industries manufactures high-quality machinery with the latest, cutting-edge technology for many industries, including plywood, LVL, rubber and others. Today's high volume plywood production lay-up lines place an emphasis on efficiency. Spar-Tek's lay-up lines, hot and cold presses, loading and unloading equipment, glue application systems and other equipment is designed to meet these demands. Helping customers meet and exceed their production and operating goals is a driving force at Spar-Tek. We are here to help you meet your goals, and to do so requires innovative technology and machines designed to work at the highest operating speeds.

Specialty Wood Journal

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Canada
Bert Kleiser
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bkleiser@clbmedia.ca
www.specialtywoodjournal.com
Trade magazine for the industry.

Standex Engraving Group

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Bradley Foster
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F: 804-226-3462
bfoster@standexengraving.com
www.standexengraving.com
Standex Engraving manufactures engraved steel press plates, embossing machinery and engraved molds. Their staff of designers and engineers specializes in the creation of customized, life-like, user-friendly textures for a variety of wood based products.



Stantec

845 Prospect Street
Fredericton, NB E3B 2T7
Canada
Jeff Foreman, P. Eng.
T: 506-452-7000 x1569
F: 506-452-0112
jeff.foreman@stantec.com
www.stantec.com

Stantec (formerly NGM International) has been providing composite panel plant engineering for more than 30 years. The Composite Panel Group is located in Fredericton, NB, and is supported by local Stantec offices throughout North America. Stantec provides engineering services and consulting services for both greenfield and retrofit projects and can help improve productivity and reduce operating costs from wood yard through finishing.

Steinemann Technology USA

4607 Dwight Evans Road
Charlotte, NC 28217
Peter Schneider
T: 704-522-9435
F: 704-522-9438
sanding@steinemannusa.com
www.steinemannusa.com
Steinemann Technology offers comprehensive sanding solutions with machines, sanding paper, 24-hour technical expertise and support, and a large inventory of spare parts in our Charlotte, N.C., facility.

Sweed Machinery

653 - 2nd Avenue
Gold Hill, OR 97525
Charlie Smith
T: 866-800-7411
F: 541-855-1512
sweed@sweed.com
www.sweed.com/panel/

Sweed Machinery has been manufacturing scrap choppers since 1956 and dryer infeed equipment since 1957. Currently, Sweed has attained prominence in recycling equipment in a wide range of industries. Sweed scrap choppers are the dependable choppers of choice to manage your company's scrap recycling needs. Sweed choppers are a simple solution to help companies eliminate manufacturing by-products such as plastic and steel banding. In addition to the chopper line, Sweed has taken steps to solidify its manufacturing systems and modernized its panel and veneer handling equipment to help processors achieve higher production goals with less downtime.

Temple-Inland

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Diboll, TX 75941
Pat Patranella
T: 936-829-1483
F: 936-829-1731
patpatranella@templeinland.com
www.temple.com
Temple-Inland produces and supplies quality veneer to the engineered wood products industry.

TMS Machinery Sales

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T: 800-766-6705
F: 256-761-2579
rhonda@tmsco.com
www.tms-sales.com
TMS Machinery Sales services the logging, sawmill, pallet and woodworking industries with our printed publication, as well as our interactive website, www.tms-sales.com.

TSI

20818 44th Avenue West
Suite 201
Lynnwood, WA 98036-7709
Andrew Johnson
T: 425-771-1190 x128
F: 425-775-8363
ajohnson@tsi-inc.net
www.tsi-inc.net

TSI designs and manufactures complete panel finishing lines for OSB, particleboard and MDF with saws, including such features as rapid position change, adjustable blade exposure and scoring blades. High-speed stacking of panels is easily achievable with TSI's proprietary "primary stacker" approach, with proven success in the highest capacity plants. TSI also supplies heat energy and drying systems for OSB and particleboard based on single pass recycle technology. The dryers are proven to increase productivity and reduce emissions compared to other systems. Moisture control is very good, and conditioning of strands for OSB can help reduce resin consumption.

TTS, Inc.

9527-49 Avenue
Edmonton, AB T6E 5Z5
Canada
Tamrat Tekle
T: 780-465-1532
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tam.tekle@ttsfpl.com
www.ttsfpl.com
Established in 1998. Forest products development and testing. Consulting in products and process development, training and process improvement.

TurboSonic

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Canada
Ed Spink
T: 519-885-5513
F: 519-885-6992
info@turbo sonic.com
www.turbo sonic.com
TurboSonic Technologies designs and markets state-of-the-art air pollution control equipment to industrial companies worldwide. TurboSonic has provided emissions control and evaporative gas cooling solutions for more than 2,000 projects, helping companies in many industries comfortably meet the strictest emissions regulations, improve performance and reduce operating costs. TurboSonic air pollution control products such as the Turbotak Atomizing Scrubber, TurboVenturi Scrubber and the SonicKleenä WESP can improve process performance and protect thermal oxidizer equipment. In addition to new system design and supply, TurboSonic also offers parts, service and system upgrades for all makes of air pollution control equipment used in the wood products industry.

US Borax Inc.

8051 E. Maplewood Avenue
Greenwood Village, CO 80111
Mark Manning
T: 303-713-5228
F: 303-713-5788
mark.manning@riotinto.com
www.borax.com
Manufacturer of borate based wood preservatives and flame retardants

valspar

Valspar Corporation

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EWTA supplier members by company



Ventek, Inc.

4030 West 1st Avenue Suite 100
Eugene, OR 97402
Rodger Van Voorhis
T: 541-344-5578
F: 541-344-3780
rodger@ventek-inc.com

www.ventek-inc.com

Ventek utilizes cutting-edge machine vision technology to design and manufacture automated process controls for the veneer and plywood industry. We provide vision-based scanning systems for both green and dry veneer, in-line moisture detection, and robotic systems for automation of veneer plug patching and panel repairs, along with complete green and dry veneer stacking lines. Ventek, founded in 1991, has fast become the industry standard in vision technology and one of the leading suppliers of such equipment in North America. We are proud to have been honored as the APA's Supplier of the Year in 2007 and 2008.

Viking Chains, Inc.

7392 Progress Place
Delta, BC V4G1A1
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clane@vikingchains.com

www.vikingchains.com

The Viking Chains Group is a manufacturer and distributor of standard and special industrial conveyor and roller chains and related products.

Westmill Industries, Ltd.

3063 275A St.
Aldergrove, BC V4W3L4
Canada

Mike Crondahl

T: 604-607-7010

F: 604-607-7099

crondahl@westmill.com

www.westmill.com

Westmill manufactures the most thermally efficient, highest production JET and LONGITUDINAL dryers available today. As North America's premier

dryer re-builder and re-modeller, Westmill eliminated common problems found with other designs. Westmill provides dry-end consulting and engineering services/expertise. Westmill supplies infeed and outfeed equipment, vacuum feeders, scissor lifts, corner transfers, pinch feeders, re-feeder system, lappers, and more. Westmill is the largest dryer parts supplier of hard-to-find parts for virtually every make and model. Westmill introduced a highly accurate green veneer moisture measurement system called LightSORT™. Westmill provides proven PLC and LabView Control solutions for dryers and stackers. Call 877-607-7010 for information.

Willamette Valley Company

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tony.vuksich@wilvaco.com
www.wilvaco.com

The Willamette Valley Company manufactures epoxies, putties and urethanes for the upgrade of all wood substrates and coatings (primers, sealers, water repellants, lacquers, stains — all water based), various wood substrates and application systems for the above. Its Equipment Division specializes in the design and manufacturing of advanced fluid management systems, including the ability to pump, meter, proportion, mix and dispense multi-component fluid, semi-fluid and dry powder materials. The Performance Coatings Division manufactures polyurea spray, caulks and sealants.



WPS Industries Group

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Paul Phillips

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F: 318-247-8094

pPhillips@wpsindustries.com

www.wpsindustries.com
The WPS Industries Group is a unique collection of companies, each with specialized skills for its use in turnkey projects for engineered wood mills. Our capabilities include project management, process and system consulting, engineering and design, manufacturing, construction and installation, computer, and PCL programming, and R & D.

EWTA supplier members by category

CONSULTING SERVICES

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CPM Consultants, Inc.
Evergreen Engineering, Inc.
Hinz, A Rockwell Automation Co.
Hunt Guillot & Associates
IBC
KTC Panelboard Engineering
MEGTEC Systems
SCOOPSOFT
TTS, Inc.
TurboSonic

EQUIPMENT

Andritz, Inc.
ARGOS Control
Bio-Reaction Industries, LLC
CARMANAH Design and Manufacturing Inc.
Clarke's Industries
Coe Manufacturing, A USNR Company
Coil Manufacturing, Ltd.
Con-Vey Keystone, Inc.
Costa & Grissom Machinery Co., Inc.
Dieffenbacher, Inc.
Electronic Wood Systems, N.A.

Flamex, Inc.
Genesis Systems Inc.
Globe Machine Manufacturing Company
GreCon Inc.
Grenzebach Corporation
IMEAS
Itpack Systems
Jeffrey Rader Corporation
LIMAB North America, Inc.
Matthews Marking Products
Metriguard, Inc.
Nicholson Mfg. Ltd
Pallmann America, Inc.

Raute
Siempelkamp Limited Partnership
Signode, an ITW Company
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Standex Engraving Group
Stantec Consulting
Steinemann Technology USA
Sweed Machinery
TSI
USNR
Ventek, Inc.
Viking Chains, Inc.

Westmill Industries, Ltd.
WPS Industries Group

MEDIA

Canadian Wood Products
Panel World
Specialty Wood Journal
TMS Machinery Sales

NON-WOOD/WOOD MATERIALS

Acme Packaging Systems
Applied Protein Systems
Arclin
Ashland Performance Materials
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Casco Adhesives
Casey Industrial, Inc.
Clarke Veneers and Plywood
DSM Melamine Americas, Inc.
Engineered Coated Products
Georgia-Pacific Chemicals, LLC
Guardian Chemicals, Inc.
Hexion Specialty Chemicals, Inc.
Huntsman Polyurethanes
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Anthony-Domtar Inc.
Anthony Forest Products Co.
Arizona Structural Laminators, LLC
Boise Cascade LLC
Boucher Bros. Lumber Ltd.
Brisco Manufacturing Ltd.
Brochmann Polis Industrial E Florestal
Calvert Co., Inc.
Coastal Forest Products LLC
Coastal Plywood Company
Eagle Plywood Specialties
Georgia-Pacific Wood Products LLC
Goodlam, Division of Goodfellow Inc.
The G. R. Plume Company
Gruen-Wald Engineered Laminates, Inc.
Hardel Mutual Plywood Corporation
Hood Industries, Inc.
International Beams/Lebcorp Ltd.
Jager Engineered Wood Products Ltd.
Louisiana-Pacific Canada Ltd.
LP
Loblolly Industries, LLC
Montana Sustainable Building Systems
Meadow Lake OSB Limited Partnership
Mississippi Laminators
Murphy Company
Natron Wood Products
Norbord
Nordic Engineered Wood
Olympic Panel Products LLC
Pacific Wood Laminates, Inc.
Pacific Woodtech Corporation
Peninsula Plywood Group LLC
Plum Creek
Potlatch Corporation
Riddle Laminators
Rosboro
Roseburg Forest Products Company
RoyOMartin
S.D.S. Lumber Company
Scotch Plywood Company of Alabama
Shelton Lam and Deck
Standard Structures Inc.
Stark Truss Company, Inc.
Stellar Wood Products LLC
Structurlam Products Ltd.
Superior Wood Structures Ltd.
Swanson Group Mfg. LLC
Textured Forest Products, Inc.
Timber Products Company
Tolko Industries Ltd.
Warmboard, Inc.
Western Archrib
West Fraser LVL
Western Structures, LLC

Innovation in Safety

by Jack Merry

APA Safety Awards Program Places New Emphasis on Best Practices Sharing

While companies and mills have obvious competitive reasons to keep their manufacturing practices close to the vest, there's one area where everyone benefits by sharing ideas and information: worker safety.

That principle was behind the decision to include an Innovation in Safety Award in the recently revamped APA Safety and Health Awards Program.

Now in its second year, the program was redesigned in 2008 by an APA Safety Awards Task Group comprised of several APA member company safety professionals. The task group has since been reconstituted as an APA Safety and Health Advisory Committee and its role expanded to provide a forum for sharing information and best practices among member company safety and health professionals.

The first set of award winners under the new categories (see page 27 for complete category descriptions) were announced last year, based on incidence data for 2008. Winners of the 2009 awards will be announced soon.

The Innovation in Safety Award is presented to a mill, group of mills or an entire company judged by the Safety Committee to have made a significant advancement in occupational safety and health excellence. Criteria for the award include demonstration that the innovation reduced occupational injuries or illnesses and that the technique or program be applicable across the industry.

The award bestows considerable prestige on the winner, which in 2008 was RoyOMartin for a program it developed called Winning with Wellness. But "the broader value of the category is that it helps drive the industry to operational excellence by sharing best safety practices," notes RoyOMartin's Mark DiCarlo, who is a member of the Safety Awards Advisory Committee. Nine other entries were submitted, all of which were then posted on APA's website (www.apawood.org) under a newly created Safety and Health section designed to encourage safety information sharing within the industry.

As summarized nearby, the safety innovation entries encompassed a wide range of ideas that taken together form a significant

APA Safety Awards Advisory Committee

Jeff Wagner, Chairman
LP

Christine Alford
Hood Industries, Inc.

Mark DiCarlo
RoyOMartin

Keith Harned
LP

Blu Santee
Plum Creek

Bonnie Schwartz
Georgia-Pacific Wood Products LLC

Pat Wright
Roseburg Forest Products Co.



first step in building a collection of industry safety strategies and tactics. Innovation in Safety Award entries from the 2009 and subsequent competitions will be added to that body of knowledge.

“The Innovation category encourages creative thinking in the areas of safety awareness and employee participation,” says Rod Cornutt, who submitted one of the 10 Innovation entries as safety coordinator at Rosboro. And the measures don’t necessarily have to be complicated or difficult.

“Sometimes the simplest measure can have a very powerful and positive impact on reducing risks of accidents,” notes Bruce Pepin, safety manager at LP’s Sagola, Mich., OSB mill.

APA Chairman Jeff Wagner, in presiding over the safety awards ceremony during APA’s annual meeting last fall, applauded the industry for its 2008 safety performance as measured by an average Time Incidence Rate (TIR) of 1.9, the second year in a row the rate was below 2.0. That mark was the latest on a trend line that has shown marked improvement since 1994, when the average TIR of mills reporting safety data to APA was 6.74.

Wagner, who also chairs the APA Safety and Health Advisory Committee, made it clear, however, that there is still room for improvement. He challenged the industry to reduce its average TIR to just 1 by 2011, half the rate recorded in 2008, and called for 100 percent APA member participation in the safety program, up from the 75 percent in 2008.

He also challenged APA’s membership to double the number of Innovation in Safety Award entries, from 10 to 20, a goal that supports one of the award program’s primary purposes — to encourage efforts to improve on-the-ground safety programs and practices through best practices sharing.

More information about the APA Safety and Health Awards Program, including entry forms for the Innovation in Safety Award, can be found on the APA website. Or contact John Hopp, APA Human Resources/Safety Manager, john.hopp@apawood.org, 253-620-7447. ●

Jack Merry (jack.merry@apawood.org) is editor of the Engineered Wood Journal and an independent communications contractor and consultant.

INNOVATION IN SAFETY

Brief summaries of the 2008 Innovation in Safety Award entries are provided below. The complete entries, including why and how the innovations were developed and the safety performance improvements that resulted, can be found in the Safety and Health section of the APA website at www.apawood.org.

2008 AWARD WINNER

RoyO Martin

Winning with Wellness

Submitted by Mark DiCarlo, VP of Technical Services

Based on the premise that healthy and fit employees are also safer workers, the Winning with Wellness program is a proactive initiative that promotes healthy lifestyles and teaches employees to accept responsibility by setting personal health goals. In the seven years the program has been in place, the companywide incident rate decreased from 4.87 to 1.13, annual worker compensation claims dropped from 64 to 25, and the growth in cost of medical/pharmaceutical claims has been limited to 1 to 2 percent per year, as opposed to the national average of 10 percent.

OTHER 2008 AWARD ENTRIES

LP—Corporate

Best of the Best

Submitted by Michael Rhea, EHS Specialist

Best of the Best was a two-phase program focused on hand safety and hazard recognition/resolution. Sites developed their own unique processes for reducing injuries and shared their findings with other sites.

LP—Sagola, Michigan

Automated Forming Line Screen Changer

Submitted by Bruce Pepin, Safety Manager

A new automated rack system was developed to insert large screens into position for in-line pickup. This eliminated the high risk of potential injury associated with manual handling of screens.

LP—Sagola, Michigan

Use of Highly Visible Green Clothing

Submitted by Bruce Pepin, Safety Manager

Employees working in the finishing or warehouse areas, or areas with potential forklift traffic, are required to wear highly visible green shirts or vests to improve pedestrian safety in those areas.

LP—Carthage, Texas
Employee of the Month

Submitted by Tracy Redditt, Safety Manager

The Employee of the Month program was aimed at increasing the use of hazard elimination cards to identify potential hazards and reducing at-risk behaviors.

Rosboro—Corporate
Safety Status Board Program

Submitted by Rod Cornutt, Safety Coordinator

The Safety Status Board was implemented through various divisions to serve as safety performance indicators in each plant. Each highly visible board keeps employees up to date on near misses, recordable incidents and safety award goals.

LP—Houlton, Maine
Integration of QJSA, SSOP, MSL, Behavior Safety Audits
Submitted by Michele King, Safety Manager

Through input from site employees, the forms used to complete a Quality Job Safety Analysis, Safe Standard Operating Procedure, Machine Specific Lockout Procedures and Behavioral Safety Audits were integrated into one document. This integration improved the overall process, which increased its use.

LP—Newberry, Michigan
Log Singulator
Submitted by Russ Norkoli, Safety Manager

A log singulator was designed, built and installed by employees to capture, straighten and retain each log. This greatly reduced the number of times an employee was required to enter the potentially hazardous transition area.

LP—Jasper, Texas
One Hundred Days of Summer
Submitted by Bob Burgess, Jr., Safety Manager

To keep safety awareness on everyone's mind during the summer months, employees were recognized for responding correctly to questions about topics discussed at shift tailgate meetings. This resulted in more active involvement by employees and improved the quality of STOP cards.

LP—Roxboro, North Carolina
Fire Detection and Suppression Systems
Submitted by Wayne Young, Plant Manager

Heat probes and flush systems were installed in three blender atomizer systems in an effort to prevent fires. If atomizer temperatures exceed 160 degrees, the probes trigger an alarm so that the atomizer can be shut down.

APA Safety Award Categories

Participating member mills are grouped into Division I (less than 400,000 hours worked in the year) or Division II (400,000 or more hours worked in the year). To be eligible for an APA award, a member mill must meet the following criteria:

- The mill must have operated for at least three months during the calendar year.
- The mill must have had no facility-related fatalities, including fatalities of outside service providers while working at the facility.
- The mill must have a WIR (Weighted Incident Rate) ranking among the best 50 percent of all mills that participate in the APA Safety Survey.

Divisional Awards

The following awards are presented individually to both Division I and Division II mills:

- Annual Safety and Health Honor Roll. Presented to the three mills in each Division with the best WIR.
- Three-Year Safety Award. Presented to the mill in each Division with the best average WIR over the previous three years.
- Safety Improvement Award. Presented to the mill in each Division with three consecutive years of improving WIR and the largest percentage improvement between the first and third year.

Innovation in Safety Award

Presented to the mill, group of mills or company judged by the APA Safety Awards Committee to have made the most significant advancement in mill safety and health operational excellence. The advancement must be an innovative/novel solution proven to reduce occupational injuries or illnesses and/or improve safety awareness on or off the job, and it must be applicable across the industry.

Safest Company Awards

The Safest Company Awards are based on the best average WIR for the company's member mills. One award is presented to a company with three or fewer mills, another award to a company with four or more mills.

Incident Free Honor Society

Any participating mill that achieves a 0.00 WIR for the year is recognized as a member of the Incident Free Honor Society.

Certifiable

Impact of Green Building on Wood Adhesives

by Ashlee Cribb

Composite wood products such as particleboard, medium density fiberboard (MDF) and interior plywood are ideal for creating stylish, durable and economical components of building interiors, furniture and fixtures. Although resource-efficient, these composite wood products have been under scrutiny for the associated formaldehyde emission levels related to the adhesives used to bind the products. As a result, green building standards typically include requirements that impact the adhesives used to manufacture composite wood products.

This article summarizes three U.S. green building standards and the impact of their requirements on the design of wood adhesives. The key standards that will be reviewed are Leadership in Energy and Environmental Design (LEED®), from the U.S. Green Building Council; Green Globes®, from the Green Building Initiative; and the National Green Building Standard™, from the National Association of Home Builders. These standards have been developed to meet the growing demand for green building certifications.

U.S. Green Building Standards

Green building certification systems provide validation to building owners, occupants and consumers that a building's design and construction meet a certain level of performance in key areas associated with building sustainability: site development, water savings, energy efficiency, materials selection and indoor environmental quality.

A number of standards and certification systems have emerged in the United States, including U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®); Green Building Initiative's GREEN GLOBES®; National Association of Home Builders' National Green Building Standard™; Collaborative for High Performance Schools® (CHPS); U.S. EPA's ENERGY STAR®; and various local or regional programs, such as Southface's Earth Craft House™, Atlanta Green Building Ordinance and Cascadia Region Green Building Council's Living Building Challenge™.



To define product requirements and meet the needs of the green building market for wood composite products, it is important to understand the requirements in these certification standards that may influence the design or sourcing of the resins.

Leadership in Energy and Environmental Design (LEED®) Rating System

The LEED® rating system family has grown from the initial and well-established LEED® for New Construction to more than 10 implemented and pilot rating systems. The following seven rating systems all reference adhesives or emissions from wood composite products:

- LEED® for New Construction & Major Remodeling (NC)
- LEED® for Commercial Interiors (CI)
- LEED® for Core & Shell (CS)
- LEED® for Schools
- LEED® for Retail: New Construction (pilot rating system)
- LEED® for Retail: Commercial Interiors (pilot rating system)
- LEED® for Home

Table 1

Source: Georgia-Pacific analysis, LEED® standards 1, 2, 3, 4, 5, 6

LEED® Indoor Environmental Quality Credits Composite Wood Products			
LEED Rating System	CREDIT	REQUIREMENTS	POINTS
LEED 2009 for New Construction & Major Renovations LEED 2009 for Commercial Interiors LEED 2009 for Core and Shell	IEQ Credit 4.4: Low-Emitting Materials: Composite Wood & Agrifiber Products	Composite wood products used on the interior of the building (i.e., inside the weatherproofing system) must contain no added unreaformaldehyde resins. Excludes fixtures, furniture and equipment.	1
LEED 2009 for Schools	IEQ Credit 4.4: Low-Emitting Materials-Composite Wood & Agrifiber Products	All composite wood & agrifiber products installed in the building interior must meet the testing and product requirements of the California Department of Health Services <i>Standard Practice for Testing of Volatile Organic Emissions from Various Sources using Small-Scale Environmental Chambers, Including 2004 Addenda</i>	1
LEED 2009 for Retail: New Construction or Commercial Interiors	EQ Credit 4: Low-Emitting Materials: Option D – Composite Wood & Agrifiber Products	*Specify composite wood products with no added unre-formaldehyde resins OR *All composite wood products will meet the testing and product requirements of the California Department of Health Services <i>Standard Practice for Testing of Volatile Organic Emissions from Various Sources using Small-Scale Environmental Chambers, including 2004 Addenda</i> Materials considered fit-out, furniture, and equipment are not considered under this credit.	1



The “Indoor Environmental Quality” (IEQ) category in the LEED® ratings systems has the most impact on adhesives for wood products. Table 1 lists the IEQ requirements associated with composite wood products for six of the rating systems. Three rating systems have a prescriptive requirement that requires composite wood products to be specified with a no-added urea-formaldehyde resin. The newer LEED® for Schools system has moved to a performance-based emission requirement, whereas the LEED® for Retail standards give the option of meeting the prescriptive or performance requirement.

One of the latest standards, LEED® for Homes, addresses the performance of the composite wood products in the Material

& Resources category under MR 2: Environmentally Preferable Products. Again, the standard takes a prescriptive approach, requiring composite wood products used in cabinets and trim to be specified with no-added urea-formaldehyde resins. Table 2 lists the specific requirements in the LEED® for Homes rating system.

The perception in the wood products industry has been that for a product to comply with LEED® requirements, it must contain a no added urea-formaldehyde resin. The above information shows that this is true for four of the standards. However, several standards now have performance-based requirements, allowing modified urea-formaldehyde resins to be an option.

Table 2

Source: Georgia-Pacific analysis, LEED standard 7

LEED® Material & Resources Credits			
LEED Rating System	CREDIT	REQUIREMENTS	POINTS
LEED for Homes	MR 2: Environmentally Preferable Products	2.2 Environmentally Preferable Products. Use building components that meet one or more of the criteria below. The material must make up 90% of the component, by weight or volume. a) Environmentally preferable products meeting specifications in Table 24: Cabinets & Trim – recycled content, FSC-certified, or reclaimed & composite materials must contain no added unrea-formaldehyde resins And/or b) Low emissions. Use products that meet emission specifications. (none applicable to wood products) And/or c) Local production. Use products that were extracted, processed, and manufactured within 500 miles of the home.	0.5 point per component, maximum 8 points

Table 3

Source: Georgia-Pacific analysis, GBI 01-200XP Draft Standard, 10/2009⁸

GBI 01-200XP			
Environmental Assessment Area	Section	Requirements	Points
10.2 Furnishings, Finishes, & Fit-outs (17 points)	10.2.1 Life Cycle Assessment	Use of Life Cycle Tools. Examples include: * BEES 4.0 * Third-party peer reviewed LCA's	Max 4 points (1 pt/product up to 4 pts)
	10.2.2 Material Content	Use of Bio-Based Products * 1% or more by cost or weight of all materials * Wood based products must be certified	Max 4 points
12.2 Source Control of Indoor Pollutants (34 points)	12.2.1 Volatile Organic Compounds	Materials meet the emission requirements specified using one of the following tests: 1. California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Sources using Small Scale Environmental Chambers 2. GREENGUARD Environmental Institute: Method for Measuring Chemical Emissions from Various Sources Using Dynamic Environmental Chambers OR Materials have attained a third party emissions certification from approved programs. Table 12.2.1-C excludes countertops, casework, cabinetry & shelving.	3 Points for materials in Table 12.2.1-A based on the following percentages: 0-40% = 1 pt 41-80% = 2 pts 81-100% = 3 pts (weight or quantity based)
			Table 12.2.1-C 2 pts for floor covering 2 pts for interior fit out products - All products in each category must meet criteria to attain these points

GREEN GLOBES® Rating System

The GREEN GLOBES® building rating system family is currently comprised of two systems: New Construction and Continual Improvement of Existing Buildings. In 2005, the Green Building Initiative (GBI) became an American National Standards Institute (ANSI) accredited standard developing organization and is committed to taking these commercial building standards through the ANSI consensus process. This standard (ANSI GBI 01-200XP: Green Building Assessment Protocol for Commercial Buildings) is currently in draft form and is the basis for the next version of the GREEN GLOBES® standard.

Two categories within the standard contain requirements relating to wood adhesives: Resources/Materials and Indoor Environment. Each category has a total number of points available and a minimum number of points required for compliance.

A primary focus of the GREEN GLOBES® rating system is an emphasis on Life Cycle Assessment (LCA). Section 10.2 in the Resources/Materials category addresses the Life Cycle performance and bio-based content associated with furnishings, finishes and fit-outs in the building. Indoor air quality is addressed in section 12.2, Source Control of Indoor Pollutants. GREEN GLOBES® targets volatile organic compound (VOC) emission performance of a variety of products and provides several options for measurement. Table 3 is a summary of the requirements, but it is recommended that the standard be consulted to completely understand all of the details.

National Green Building Standard™

The National Green Building Standard™ (NGBS) ICC 700-2008, a consensus standard developed by the National Association of Home Builders, became the first green building ANSI standard in January 2009. The standard is for only residential new construction and renovation and applies to green residential buildings, building sites and subdivisions.

There are two categories that have an impact on wood adhesives. Resource Efficiency focuses on the use of renewable materials and life cycle analysis tools. Indoor Environmental Quality has

Table 4

Source: Georgia-Pacific analysis, National Green Building Standard 01/09⁹

National Green Building Standard™			
Chapter	Section	Requirements	Points
		606.1 Biobased Products definitions (h) products with the minimum biobased contents of the USDA 7 CFR Part 2902 (i) Other biobased materials with a minimum of 50% biobased content (by weight or volume)	
Chapter 6: Resource Efficiency	606 Renewable Materials	606.1 Biobased materials (8 pts max) 606.1 (1) & (2) Two types of biobased materials are used, each for more than a specified percent of the project's projected building material cost 0.5% 3 points 1.0% 6 points 606.1 (3) For each additional biobase	8 pts max
	609 Life Cycle Analysis	609.1 15 points Max A more environmentally preferable product or assembly is selected ... based on the use of a LCA tool.... 3 points per product/system comparison 15 points – whole building LCA analysis	15 points max

specific requirements for wood products and cabinets to reduce the amount of interior emissions. The requirements in the Resource Efficiency category are outlined in Table 4.

As noted in Table 4, bio-based products have a very specific definition. The United States Department of Agriculture (USDA) 7 CFR Part 2902 does have a section that refers specifically to composite wood products and should be referenced for further information. However, the key factor that impacts wood adhesives is the requirement that a material have a minimum of 50 percent bio-based content (by weight or volume) to be considered a renewable material. The next section of the standard outlines the points achievable if bio-based materials are used.

The requirements in the Indoor Environmental Quality category are outlined in Table 5. The NGBS standard typically uses other recognized standards and regulations to satisfy the point requirements in this category and to provide performance-based options. For example, points

can be achieved for both wood materials and cabinets using materials that have been certified and meet the requirements of California Air Resources Board (CARB) ATCM on Formaldehyde¹⁰.

Resin Technologies

A variety of technology solutions are available to enable panels to comply with the requirements of these green building standards. Traditional urea-formaldehyde (UF) resins have been modified with improved scavenger systems to create lower emitting panels. Melamine-formaldehyde (MF) and phenol-formaldehyde (PF) resins, which also enable certain LEED® credits to be earned, have also been re-formulated to lower emissions when used in conjunction with better scavenger technology. Melamine-urea-formaldehyde (MUF) resins have also been re-formulated and introduced to the market to provide a cost-effective solution for meeting new regulations and some standards.

Table 5

Source: Georgia-Pacific analysis, National Green Building Standard 01/09⁹

National Green Building Standard™			
Chapter	Section	Requirements	Points
Chapter 9: Indoor Environmental Quality	901.4 Wood Materials	A minimum of 85% of material within a product group (i.e., wood structural panels, countertops, composite trim/doors, custom woodwork, and/or component closet shelving) is manufactured in accordance with the following:	
		(1) Structural plywood... is compliant with DOC PS1 and/or DOC PS2. OSB... is compliant with DOC PS2. The panels are made with moisture-resistant adhesives.	Mandatory
		(2) Particleboard & MDF is manufactured and labeled in accordance with CPA A208.1 and CPA A208.2 (points awarded per product group)	2
		(3) Hardwood plywood in accordance with HPVA HP-1 and HUD Title 24, Part 3280.	3
		(4) Particleboard, MDF, or plywood is in accordance with CPA2.	4
		(5) Composite wood or agrifiber panel products contain no added urea-formaldehyde or are in accordance with the CARB Composite Wood Air Toxic Contaminant Measurement Standard.	4
		(6) Non-emitting products	4
	901.10 Cabinets	A minimum of 85% of kitchen and bath vanity cabinets are in accordance with one of the following: (Where more than one of the following practices is used, the practice with fewer number of points is awarded.)	
		(1) Kitchen and bath vanity cabinets in accordance with KCMA ESP 01, or equivalent, are installed.	2
		(2) Kitchen and bath vanity cabinets in accordance with CARB Composite Wood Air Toxic Contaminant Measure Standard are installed.	3
		(3) Kitchen and bath vanity cabinets are installed that contain no added urea-formaldehyde or are in accordance with GGPS.EC.010.RO, ASTM D 6670, or equivalent.	5

Table 6 – Formaldehyde Resin Technologies

Source: Georgia-Pacific analysis


√ - May qualify for standard X - Does not qualify	CARBP Phase 2	LEED NC, CI, CS, Home	LEED Schools, Retail	Green Globes	NGBS
UF w/New Scavenger Systems	√	X	√	√	√
MUF	√	X	√	√	√
MF w/New Scavenger Systems	√	√	√	√	√
PF	√	√	√	√	√

No-Added Formaldehyde (NAF) technologies continue to evolve as alternative resin systems for contributing to LEED® credits. These include polymeric methylene diphenyl diisocyanate (pMDI), polyamidoamine epichlorohydrin (PAE) soy hybrids, poly vinyl acetate (PVAc) and other new polymer systems in development. In addition, hybrid technologies have been developed that combine formaldehyde and NAF technologies to create resin systems that may offer improved performance.

Table 6 shows the relationship between the formaldehyde-based resin technologies and the regulations and green building standards.

Conclusions

As seen by the various requirements of the green building standards, there are a wide range of opportunities for new adhesives product development. These include the development of low-emission adhesives, resins with bio-based or renewable content and the continued development of technologies with alternative chemistries.



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The market opportunity for these types of new technologies will continue to grow as green building becomes ubiquitous in the building industry. Climate change legislation and initiatives will result in a continuing shift in green building from prescriptive to performance-based standards and holistic approaches, impacting and evolving the design criteria for wood adhesives. ●

Ashlee Cribb is business manager, wood adhesives at Georgia-Pacific Chemicals, Atlanta, Ga., 1-866-4GP-CHEM (866-447-2436), GPCchemical@gapac.com.

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- Living Building Challenge™ is a trademark of the Cascadia Regional Green Building Council.
- Collaborative for High Performance Schools® is a trademark of Collaborative for High Performance Schools, Inc.

References

- 1 LEED 2009 for New Construction and Major Renovations, www.usgbc.org
- 2 LEED 2009 for Commercial Interiors, www.usgbc.org
- 3 LEED 2009 for Core and Shell, www.usgbc.org
- 4 LEED 2009 for Schools, www.usgbc.org
- 5 LEED 2009 for Retail: New Construction, www.usgbc.org
- 6 LEED 2009 for Retail: Commercial Interiors, www.usgbc.org
- 7 LEED for Homes, January 2009, www.usgbc.org
- 8 GBI Proposed ANSI 01-200XP Draft, April 10th, 2009
- 9 National Green Building Standard™ January 2009 Edition, ICC 700-2008
- 10 California Air Resources Board (CARB) “Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products, 93120-93120.12, title 17, California Code of Regulations”

Upcoming Events

APRIL

- 20-22** Forest Products Society Smallwood 2010 Conference, Hot Springs, Ark., 608-231-1361, ext. 208, www.forestprod.org
- 21-24** Wood Machinery Manufacturers of America 18th Annual Wood Industry Conference, Monterey, Calif., 215-564-3484, www.wmma.org
- 28-30** International Wood Products Association World of Wood 2010, Miami Beach, Fla., 703-8220-6696, www.iwpawood.org

MAY

- 2-4** Composite Panel Association spring meeting, Bonita Springs, Fla., 703-724-1128, www.pbmdf.com
- 12-14** Construction Specifications Institute Construct 2010, Philadelphia, Pa., www.constructshow.com
- 16-18** NAHB Green Building Conference, Raleigh, N.C., 800-368-5242, Ext. 8338, www.nahb.org

JUNE

- 3-5** Forest and Resources Expo, Prince George, British Columbia, 250-563-8833, www.forestexpo.bc.ca
- 10-12** American Institute of Architects National Convention 2010, Miami, Fla., 888-538-7794, www.aia.org
- 20-22** Forest Products Society 64th International Convention, Madison, Wis., 608-231-1361, ext. 208, www.forestprod.org

JULY

- 14-17** Southeastern Lumber Manufacturers Association Annual Conference, Naples, Fla., 770-9631-6701, www.slma.org
- 22-24** Southeast Building Conference & Green Building Show 2010, Orlando, Fla., 800-261-9447, www.sebcshow.com
- 25-28** International Woodworking Fair 2010, Atlanta, Ga., 404-693-8333, www.iwfatlanta.com

OCTOBER

- 13-15** National Lumber & Building Material Dealers Association ProDealer Industry Summit, 202-367-2359, www.dealer.org
- 16-19** APA Annual Meeting and Info Fair, Tucson, Ariz., 253-620-7429, www.apawood.org

NOVEMBER

- 4-6** North American Wholesale Lumber Association Traders Market, Chicago, Ill., 800-527-8258, www.nawla.org
- 15-17** National Lumber & Building Material Dealers Association Annual Meeting, Colorado Springs, Colo., 202-367-1169, www.dealer.org
- 16-18** North American Building Material Distribution Association Annual Meeting & Show, Colorado Springs, Colo., 312-747-7862, www.nbmda.org
- 16-19** Greenbuild Expo 2010, Chicago, Ill., 800-795-1747, www.greenbuildexpo.org

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Ashland, Inc. Inside Front Cover
www.ashland.com

BIO-MASS COMBUSTION EQUIPMENT

Fiber Energy LLC 14
www.fiberenergy.net

CAST ELASTOMERS

Willamette Valley Company 24
www.wilvaco.com

COATINGS

Willamette Valley Company 24
www.wilvaco.com

CONTINUOUS PANEL SYSTEMS FOR LVL

Dieffenbacher GMBH + CO. KG 19
www.dieffenbacher.de
Engineered Coated Products, a division of
Intertape Polymer Group 24
www.ecpinfo.com

CONTROL SYSTEMS

Corvallis Tool Company 22
www.corvallistool.com

CUSTOM APPLICATION SYSTEMS

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www.wilvaco.com

CUSTOM MANUFACTURING SYSTEMS

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Raute 11
www.raute.com

CUTTING HEADS

R&S Cutterhead Mfg Co. Inc. 3

DESIGN ENGINEERING

Stantec 15
www.stantec.com

DISPENSING EQUIPMENT

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DRYER SYSTEMS

Grenzebach Corp Inside Back Cover
www.grenzebach.com

ENGINEERED WOOD MANUFACTURERS

Nordic Engineered Wood 8
www.nordicewp.com

ENGINEERING SERVICES

Evergreen Engineering, Inc. 24
www.evergreenengineering.com

EPOXIES

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EQUIPMENT / PARTS & SALES

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EQUIPMENT/MACHINERY

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www.combilift.com
Corvallis Tool Company 22
www.corvallistool.com
Siempelkamp Maschinen- und Anlagenbau
GmbH & Co. Inside Back Cover
www.siempelkamp.de

HEAT TRANSFER FLUIDS

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MACHINERY

Sweed Machinery, Inc. 3
www.sweed.com

MATERIAL HANDLING EQUIPMENT

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NON-STRUCTURAL LVL

Clarke Veneers and Plywood Outside Back Cover
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POLYURETHANES

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QUALITY CONTROL TESTING

GreCon Inc. 46
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SEALERS

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www.wilvaco.com

SERVICE & INSTALLATION (EQUIPMENT)

Willamette Valley Company 24
www.wilvaco.com

SOFTWARE

Nordic Engineered Wood 8
www.nordicewp.com

SPARK DETECTION & EXTINGUISHMENT

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www.clarkes-ind.com
FLAMEX, Inc. 3
www.flamexinc.com
GreCon Inc. 46
www.grecon-us.com

SPECIAL POLYMERS & ADHESIVES

Hexion Specialty Chemicals 4
www.hexionchem.com

STRAPPING & PACKAGING SUPPLIES

Acme an ITW Company 15
www.acme-packaging.com
Samuel Strapping Systems 23
www.samuelstrapping.com

STRUCTURAL & DECORATIVE VENEER

Clarke Veneers and Plywood Outside Back Cover
www.clarkeveneers.com

WOOD GRINDER

West Salem Machinery 32
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WOOD PATCH COMPONENTS

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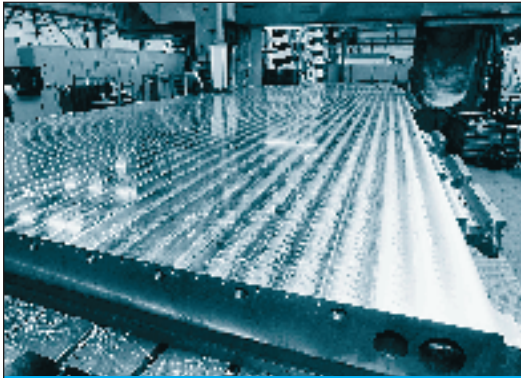
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