

Wood Coatings Symposium to Serve Wide Audience



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Coatings for wood and wood based substrates will be the focus of an upcoming symposium sponsored by the FSC. "Coating Wood and Wood Composites: Designing for Durability" will be held July 23-25, 2007, in Seattle, WA. This ACSeries event is co-sponsored with the *Journal of Architectural Coatings* (JAC).

This symposium on wood coatings follows the very successful one held in 2005 in Charlotte, NC. The FSC is hoping to build on that success and broaden the attendance to include all groups that affect wood coatings, from those that develop formulations to those involved in maintenance and testing of applied products. The inclusion of architects is one major change from the 2005 conference. According to the FSC, programming will go a step further than what was presented previously, exploring the ways in which coating performance is dependent upon the architectural design of a building. There is an entire section of the symposium that will be certified by the Architectural Institute of America (AIA).

This approach was a perfect fit for JAC. "JAC focuses on technology and reaches out to a very broad audience," says publisher Harold Hower. "With respect to wood coatings, we cover topics that are of interest to raw material suppliers, applicators, builders, contractors, architects, building owners, etc. The Coating Wood and Wood Composites symposium is trying to reach a similarly broad audience and make it possible for all of the constituent groups to inform one another about their experiences, needs, and possibilities with regard to technology. It will help catalyze interactions that are unlikely to take place otherwise," he continues.

The symposium should benefit anyone involved in the research and development of coatings (resin, pigment, and additive suppliers and formulators) for wood and wood composites, those who use wood-based materials (architects and builders), and those who apply coatings to wood substrates. Attendees will gain an increased knowledge of current market dynamics, new regulations, and technological advances.

Having representatives from both the coatings and wood industries at one conference is a key attribute for this symposium, adds Dr. Victoria Scarborough, director of New Technology for Sherwin-Williams' Diversified Brands Division. "Attendees will have the opportunity to mingle with experts who specialize in both wood chemistry and coatings chemistry. Bringing the two disciplines together is rare and very useful in advancing the understanding of how to best coat wood," she declares. "It is thrilling to get coatings formulators together with forest products folks, and include architects as well," notes D. Douglas Mall, architectural coatings

specialist with The Dow Chemical Company.

The symposium will begin with a session focusing on the properties of different wood-based substrates. Dr. Frederick A. Kamke, JELD-WEN Professor of Wood-Based Composite Science in the Department of Wood Science and Engineering at Oregon State University, will open this session with a discussion about how the basic material properties of wood and wood composites can affect the durability of different coatings systems. "Each specific application will have a different requirement for durability. When developing and selecting coatings, a first step is to define durability for

the intended application. Coatings formulators and applicators need to have a good understanding of wood substrates and the different nuances of durability in order to be able to do so," reports Dr. Kamke. His talk will address these issues.

Two speakers from the USDA Forest Service Forest Products Laboratory (FPL) will follow with presentations about basic wood anatomy and how manufacturing processes can affect wood surfaces. Alex Wiedenhoef will provide an introduction to wood structure and the differences between species. Dr. R. Sam Williams, project leader, Lignocellulose Materials and Surface Science and a member of FSC's Coating Wood Task Force, will talk about how the processing of wood can affect its surface. "The performance of wood products depends on the grade of the wood, which relates to the type and part of the tree it came from and the cutting process at the mill. A particular type of wood of a particular grade will be ideal for a particular purpose," he explains. An awareness of these issues will help coatings formulators and applicators develop and select the best coating for different wood substrates.

Dr. Scarborough, who is also a member of the Coating Wood Task Force, will talk about how durability of coatings can be affected when reformulating for low VOC content. "Meeting VOC regulations by changing formulations can directly impact the durability of a coating. Formulators must consider how removing/replacing ingredients to lower VOCs can change the durability of the final coating product," she states.

Three additional sessions will cover the application and testing of performance products, designing for durability, and engineered wood composites. Each session has three tracks, one of which is related to architectural issues.

Dr. Rod Stirling, wood chemist with Forintek Canada Corp., will

POSITIVE OUTLOOK FOR THE WOOD COATINGS MARKET

Despite many challenges, the wood coatings market is expected to grow at a modest rate over the next five years. According to Dan Murad, president and CEO of The ChemQuest Group, the total volume of wood coatings in North America was estimated to reach 327 million dry lbs. in 2006. Kitchen cabinets account for the largest segment (36%) and are growing at 2% per year. Wood and composition flat stock has the fastest growth rate at 3.1% and makes up 28% of the wood coatings market. Traditional furniture accounts for 23% but is experiencing the slowest growth rate (1.3%). Office furniture is the smallest segment at 13% but is growing at a good rate (2.9%). Murad estimates that of the \$11.5 billion North American architectural coatings market, about 30-35% is applied to wood.

Typical resins used in wood coatings include thermoset and thermoplastic acrylics (catalyzed acrylics), urethanes, polyesters, and alkyds. Waterborne coatings are becoming increasingly popular in response to stricter VOC regulations. These systems for furniture and cabinet applications currently present an overspray problem, according to Murad, with a haze developing on wood products in the overspray area.

Repair has also become an issue for wood products coated with catalyzed acrylics. Older nitrocellulose-based coatings were not as durable but could easily be repaired in the field. Now if cabinets or other furniture products are damaged during shipment, fixing the damage is no longer a simple proposition.

Cabinet makers have the additional challenge of coatings that do not contain formaldehyde. New regulations require the elimination of formaldehyde completely. Coating formulators are working to develop alternative products that provide the same performance capabilities as the traditional ones containing formaldehyde.

Adhesion to wood composites, as mentioned earlier, is another issue that coatings formulators must overcome. The move to composites and flat stock is good for coating formulators, though, because more coatings are required for these materials as compared to regular wood surfaces.

Overall, the biggest challenge facing the wood furniture industry in North America has been the movement of furniture manufacturing to Asia.

talk about the use of a UV/Visible spectrophotometric method for measuring the effectiveness of additives in wood finishes that are designed to block damaging UV radiation. He is looking forward to learning about the latest advances in wood coatings research and networking with colleagues across the wood coating field.

Andreas Larsson, area manager, Coatings of YKL, the Institute for Surface Chemistry, is also hoping to learn about the latest trends and innovations in wood coatings and to meet people involved in different aspects of the industry. He will talk about the challenges of fighting mold and mildew. The challenge is that mold and mildew will have longer growth seasons due to warmer and more humid autumns, and at the same time lower levels of biocides will be required by environmental regulations. "Mold and mildew have good conditions for growing on coated wood, which reduces wood's aesthetic durability. New strategies must be developed to increase this durability," says Mr. Larsson.

The changing nature of exterior substrates is the subject of a presentation by Mr. Mall. The popularity of classic exterior substrates is changing, whether due to cost, availability, new technology, or legal or regulatory pressures. This shift has required a change in the paradigms and/or formulating approaches so coatings can continue to provide best solutions for overall substrate/coatings package durability. Dr. Scarborough adds that the symposium will specifically address issues related to new, imported materials like tropical hardwoods. "Gaining an understanding of the properties of these different woods and composites is important so that coatings can be designed with optimum performance," she notes.

Waterborne polyurethane coatings for wood floors will be discussed by Peter Schmitt of Bayer

MaterialScience LLC. The company has developed a new low-VOC resin based on an oxidative crosslinking technology that offers improved abrasion and chemical resistance in a variety of formulations. Ronald Obie, president of the Wood Coatings Research Group, will discuss novel formulating tools to help in the development of high performing low-VOC coating products.

The basic fundamentals of powder coating medium-density fiberboard will be the subject of a presentation by Jeff Hale, marketing and distribution manager with FIW Gema. "We hope to gain some understanding of the potential role that powder coatings can play in the wood market," he notes. "The symposium provides a great opportunity to get exposure for our technology and to meet other people that we might not normally interact with, but could have valuable ideas."

Kelly Williams of Inhance/Fluoro-Seal will discuss technology for improving paint adhesion to wood-plastic composites. Elemental fluorine-based reactive chemistries, such as fluoro-oxidation, have been proven to robustly produce a permanent, high energy surface for which any type of paint or coating can adhere with 100% adhesion. Mr. Williams will provide details on a reactive gas method for modifying the surface of wood-plastic composites with application of UV-curable coatings.

The symposium wraps up with a session on the global marketplace and looks at the current market trends and issues facing those involved in developing or working with coatings for wood and wood composites. Following the session, attendees will have the opportunity to visit local lumber mills to observe the manufacturing process directly.

As can be seen from the variety of presentations discussed in this article, there will be many relevant

topics available from which attendees may choose. Once the conference is concluded, attendees will have gained insight into the current dynamics of the market for wood and wood composites, increased their understanding of wood properties and how they affect coating performance, recognize the impact that architectural design can have on coatings performance, and understand better how to select appropriate coatings formulations for wood based materials.

"Performance of finishes and their interactions with the structure all start with an understanding of the wood substrate. Wood shrinks and swells with changes in moisture content, it can decay, it can be infected with insects, but it can also last for more than 1,000 years in properly designed and maintained structures," says Dr. Williams of Lignocellulose Materials and Surface Science. "It all depends on the choices made by architects, contractors, and the industries supplying materials for these structures. Attendees at this conference should leave with more tools in their toolbox to achieve long service life for finishes and the structures on which they are applied."

The symposium and the entire ACSeries of conferences have as their foundation the goal of educating FSCF members and others. "TSCT is endeavoring to provide more educational opportunities and increase its focus on educating formulators about the business of making paints and coatings," notes Dr. Scarborough. "This particular symposium is a good example of the holistic approach the association is taking to expand the knowledge base for its members. "Coatings manufacturers must be aware of the other elements that play a role in the performance of their products. This symposium provides the perfect opportunity for them to begin to accumulate some of that knowledge," she asserts. ■