

Technical Session 4: Preservative Analysis and Performance

Sample Preparation Guidelines for X-Ray Fluorescence Analyzers

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ABSTRACT

The AWPAs P5 Committee Standard Reference Materials (SRM) Task Group has recently created a full set of standard reference materials to be used by the industry in the XRF calibration of copper. These SRM samples have been treated, ground, homogenized and distributed to ICP laboratories for the assignment of values and an A21 Precision and Bias study. Once the P&B study is complete, the reference sets will be ready for industry distribution. In expectation of third-party agencies and chemical manufacturers using these new SRM samples for XRF calibrations, the SRM Task Group requested information on sample preparation best practices for new Hitachi and Rigaku analyzers. Information provided to the SRM Task Group will be presented at the AWPAs Annual Meeting and will include information on the impact of wood type, particle size and sample volume on XRF analyzers.



Copper Naphthenate - Data and Capability Update

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ABSTRACT

The efficacy of the copper naphthenate against wood decay fungi and wood destroying organisms has been well documented from international field tests as well as decades of commercial service. The use of copper naphthenate has been dramatically expanded due to its proven performance, non-restricted use, minimal environmental impact, and superior end of life options. Extensive demand has also been driven by the future loss of pentachlorophenol in North America and of Creosote in Europe. This paper updates these developments as well as discusses latest field tests and data required for European registration and

Canadian application/label changes. The operational capabilities implemented to meet this increased demand have also been highlighted.



Research on Carrier Oils and their Contribution to Preservative Performance and Depletion of IPBC/Permethrin Formulation

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ABSTRACT

This paper summarizes the laboratory and field work that relates to carrier oils and their impact on the performance and depletion of IPBC/Permethrin formulation. Two types of carrier oils are investigated by this work, namely, Hydrocarbon Solvent Type A (HSA) and Hydrocarbon Solvent Type C (HSC). Laboratory methods of soil block test and accelerated water leaching test are conducted. Field exposure of L-joint test are also presented to analyze treatment and depletion of IPBC/Permethrin formulation in HSA vs. HSC carrier oils.



A Leaching Study of Coated Wood Pilings in Saltwater

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ABSTRACT

Chemically protected wooden pilings are commonly utilized in coastal regions as substructure for docks and piers. Historically, creosote has been the preservative of choice for these materials, but concerns have been raised about the potential for toxic effects on zooplankton populations and other aquatic communities. CCA, chromated copper arsenate, is another industrial wood treatment chemical frequently applied to pilings and may have an even greater potential for leaching harmful chemicals into the surrounding water than creosote. This leaching action may be reduced, however, by the application of polymer coatings. Two thicknesses of polymer coatings were tested by submersion in artificial saltwater,

with each piling being housed in its own 55-gallon drum. The water was agitated by 700-gpm aquarium pumps. A set of five uncoated, CCA-treated pilings were used as a control group. Water was sampled once per week for the first month, and then monthly for a total of six months. The water was analyzed for copper, chromium, and arsenic content by ICP-mass spectrometry at MSU's Hand Laboratory. An initial release of the components was found in all pilings, but the uncoated pilings experienced substantially greater levels of leaching than the coated pilings. The project is planned for six total months and will end in April 2022. It is anticipated that the initial release of the components will decrease over time, with the coated pilings experiencing overall much lower concentrations of the potentially harmful components.



AWPA and Zinc Borate

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ABSTRACT

Zinc Borate is somewhat of a unique preservative offering within the AWPAs Book of Standards. It is one of only three preservatives to have been standardized within the old Nonpressure Committee structure that existed in the AWPAs for several years during the late 1990s and early 2000s. To date, it is the only preservative within the AWPAs that is Standardized for the Nonpressure Preservative Treatment of Wood Composites. This talk will provide some history on this effort as well as highlighting the unique nature of certain wood composites and the treatment challenges they present, and how Zinc Borate is able to fit that need.



Long-term performance of ACQ and CCA treated radiata pine heartwood decking in a subtropical above-ground exposure

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ABSTRACT

Preservative treatment creates a barrier that protects any untreated wood beneath from potential fungal or insect attack. Extensive studies in Canada have shown that treatment depths as shallow as 5 mm can

protect softwood decking from decay for over 20 years and these data were used to support changes to the North American standards. However, there are no controlled studies of barrier treated decking under more several exposures such as those posed in sub-tropical applications. The performance of alkaline copper quaternary (ACQ) and chromated copper arsenate (CCA) treated radiata pine heartwood decking was evaluated at a site near Taree, NSW. Decks were exposed for 24 years in a number of configurations including with shade covers to increase humidity, on treated bearers to minimize upward movement of fungi from the soil or fully exposed on untreated bearers. Performance was compared with CCA or ACQ treated radiata pine sapwood. Ratings for CCA and ACQ treated sapwood decks were around 6/10 indicating that decay was present, but the decks were still serviceable. ACQ treated heartwood decks had slightly lower ratings (5/10) but a majority of the decks were serviceable. CCA treated heartwood decks had ratings similar to those for similarly treated sapwood. The results highlight the performance of barrier treatments on heartwood decking and support the temperate climate data. Further analysis of the many variables in this test are underway.



Durability of Pressure Treated Domestic Hardwood Trailer Decking in the Tropical Rainforest

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ABSTRACT

Tropical hardwoods have been extensively used as the decking material for open-bed trailers in the U.S.A. Those tropical hardwoods are from logging the trees in tropical rainforests and many species have become endangered. As the resources are diminishing at an alarming speed, finding sustainable wood products for trailer decking is critically needed. In this study, we tested the durability of full-size pressure-treated oak composite decking products in the tropical jungle. After 13 months of above ground exposure, the treated wood generally was rated above 9, but the weakened glue lines appeared to be the primary cause of failure during the rolling load test.