Wood Adhesives 1995

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PREFACE

The manuscripts in this book are based on presentations from the symposium *Wood Adhesives 1995* held in Portland, Oregon, June 29-30, 1995. This is the sixth in a series of symposia organized by the Wood Adhesives Science and Technology Work Unit at the Forest Products Laboratory and held every five years. The symposia are dedicated to the exchange of information and ideas about research on wood adhesives, adhesion to wood, and new bonded wood products. We hope that these proceedings will further stimulate the exchange of needs, ideas, and information on research and development of wood adhesives among researchers, producers, and consumers,

The symposium was organized into sessions: The Customer in Global Markets, Surface Chemistry and Modifications for Enhanced Adhesion, Greening of Bonded Wood Products—VOCs, and New Developments in Conventional and Renewable Adhesive Systems. In addition to the oral presentations devoted to these topics, a number of presentations were given in a poster format. Both the oral and the poster presentations have been included in these proceedings. With the exception of the papers from the first session, because the subjects did not lend themselves to independent assessment, the papers were reviewed before acceptance into the proceedings.

The Planning Committee thanks all the authors for their work in preparing their oral presentations and posters; the success of the symposium was due to their thorough preparations and excellent presentations. We also greatly appreciate the scientists who reviewed the papers, thus providing guidance in achieving the quality seen in this book. We thank Art Brauner, Susan Rutter, Julie Lang, Ann Messing, and Doris Robertson of the Forest Products Society for making the site arrangements, and Susan Stamm for final editing and preparation of this typeset copy of the proceedings, We thank the Session Chairs who guided these sessions: Michael Hoag, Alan L, Lambuth (now deceased), Richard W. Hemingway, and Cynthia D. West.

Expanded Research and Development of Soybean-Based Wood Adhesives

Deland J. Myers, Anthony H. Conner, Larson B. Dunn, Jr., Chris F. Edwardson, Milford A. Hanna, Navam S. Hettiarachchy, and Khee C. Rhee

Wood adhesives produce from soy proteins have been in existence since the 1920s. Adhesives produced primarily from petroleum and natural gas replaced these adhesives primarily because of their "better performance" in wood adhesive applications. These performance characteristics include water resistance and bond strength. There is a renewed interest in wood adhesives formulated with soy proteins due to: 1) the potential abundance of relatively inexpensive soy meal in the United States; 2) the inevitable increase in petrochemical prices resulting from a disruption in the availability of petroleum caused by dwindling supplies and/or political instability; and 3) increased emphasis on environmental "friendliness" in the production and use of wood adhesives and wood products. This research project takes a multidisciplinary, multifaceted approach to the development of soy protein in wood adhesive formulations. The key steps in the research project are to identify properties of the adhesive(s) that are required to meet the needs of a variety of wood products, i.e., bond strength, water resistance, cost, processing variables, environmental advantages etc., and optimizing or developing adhesive formulations to meet the needs of the identified wood product market(s). Technologies employed in this effort include protein modification and modified wood products processing techniques. Ties with the wood products industry have been established to develop adhesives that meet their needs and to transfer any advances in soy adhesive technology

(full paper not available)

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