

LIGNIN BASED BINDERS: AN INDUSTRIAL REALITY, LATEST DEVELOPMENTS

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ABSTRACT

Phenolic resins are widely used in various applications related to wood products, e.g. as plywood/OSB binders or as impregnation resins for shuttering films. In an ongoing effort to reduce cost of said resins while at the same time improving sustainability, UPM has engaged and succeeded in an effort developing a technology in-order to utilize softwood kraft-lignin as a renewable substitute for fossil fuel derived phenol. This subject is not new to the scientific community, but finally the industry is enjoying this possibility in a wide variety of binders for various applications. In this presentation, a summary of the latest technological achievements is included. Lignin-based phenolic resin systems have been developed and validated, which exceed phenol substitution rates of 75%. We show a range of case studies, highlighting the versatility of the technology and critical aspects of implementation. From lab tests to pilot testing and full-scale production campaigns, the upscaling procedure and its challenges are discussed. Applications of focus such as High Pressure laminates (HPL) and Compact Laminates (CL) along with softwood, hardwood and mixed plywood and OSB are described in detail. Finally a forecast of the future of lignin and production of lignin based binders is presented together with the promise to continuously searching for binders richer in renewable content and free of toxic chemicals.

KEYWORDS: lignin, binder, wood panel