

## Engineered Biopolymers as Novel Sustainable Resin Binder for Wood Composites

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**Abstract :** Over the last few years, advancements have been made around improving sustainability for wood composite boards. One of the last and most challenging sustainability hurdles is finding a viable alternative to petroleum-based resin binders. In today's market, no longer is formaldehyde emission control sufficient to meet the requirements of many architects and end-use consumers. Even the use of highly reactive isocyanates is considered by many as not sustainable enough since these chemicals are manufactured from classical fossil fuel sources. The emergence of biopolymers specifically engineered for usage as wood composite binders has been successfully demonstrated in this paper as a viable option towards a truly renewable wood composite board. Recent technology advancements driven by EcoSynthetix and CHIMAR have exploited the advantages of using an engineered biopolymer. The evidence shows that this renewable technology has the potential to be used as a partial up to full replacement of classical formaldehyde technologies. Numerous trials, both in the lab and at industrial scale, have shown that a renewable binder of the proposed technology can produce a commercially viable board in a traditional industrial setting. The ultimate goal of this work is to provide evidence that a sustainable binder alternative can be used to make a commercial board while at the same time improving the total cost of manufacturing.

**Keywords :** no added formaldehyde, renewable, biopolymers, sustainable wood composites, engineered biopolymers

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