Development and pilot production of sustainable bio binder systems for wood-based panels - SusBind project

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Keywords: *Sustainable bio-economy, Bio-based chemicals, Industrial by-products, Vegetable oils, Sugars, Hydroxymethylfurfural, Epoxidized lipids, Resins, Binder ingredients, Boards, Furniture, LCA analysis, Biobased industries joint-undertaking*

INTRODUCTION

Currently, wood boards such as Particle Board (PB) and Medium Density Fibreboard (MDF) rely on the use of fossil-based binders, mainly formaldehyde-based binders. Although there has been a great deal of investigation into potential alternatives, to date none of the bio-based alternatives have performed satisfactorily on an industrial scale.

RESULTS AND DISCUSSION

By bringing together twelve partners (**Fig 1**) with an extensive research and technological background built up in recent years, the SUSBIND project (https://susbind.eu) aims to successfully produce and test bio-based binders as alternative to fossil-based binders. It will identify adequate feedstocks for production; develop new and greener production techniques including sugar-based binders and novel epoxidizing enzymes for lipid based binder ingredients. In addition, it will produce and validate binders for PB and MDF with leading manufacturers.

The SUSBIND resulting binder system will prove better performance in PB and MDF in terms of reduction of emissions than current fossil-based wood boards. The active participation of industry and a consumer brand owner secures post-project scale up into existing plants. On the basis of cost analyses performed, an economically viable and better performing precursor will increase the marketability of bio-based furniture products.

The results of SUSBIND will not only benefit consumer health and help mitigate climate change, but also strengthen the European furniture industry by providing cost efficient

bio-based binders. Surplus feedstock sourced from existing European biorefineries will be used for the production of binders and intermediates.

Fig 1. SusBind partners (from top to bottom, and left to right): Cargill (www.cargill.com); CE Delft (www.ce.nl); CIB (www.cib.csic.es); Egger (www.egger.com/shop/de_AT); Fraunhofer (www.igb.fraunhofer.de); IKEA (www.ikea.com); IRNAS (www.irnas.csic.es); JenaBios (www.jenabios.de); RTDS (www.rtds-group.com); TU Dresden (http://tu-dresden.de); Valbopan (www.investwood.pt); and WoodK+ (www.wood-kplus.at).

SUSBIND aims at producing and validating these biobased binders with leading wood board manufacturers for two product types: PB (P2) and MDF. Therefore, the SUSBIND project covers the full value chain from feedstocks through to pilot production and validation by relevant research, industry and SME partners. Driven by the mass consumption needs, it includes leading furniture manufacturers and retailers.

ACKNOWLEDGMENTS

This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 792063.

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