

SUCCESS STORY

Wood K plus WOOD: Transition to a sustainable bioeconomy

Programme: COMET – Competence Centers for Excellent Technologies

Programme line: COMET-Center (K1)

Type of project: Processes for a changing bio-resource availability, 2023-2026, multi-firm



ALL-WOOD PANELS BASED ON WOOD DUST

NOVEL 100% BIO-BASED WOOD DUST BOARD, PRODUCED WITHOUT THE ADDITION OF WATER AND USING CONVENTIONAL MANUFACTURING PROCESSES

When wood is processed, wood dust is almost always produced. Today, wood dust is largely used as a resource for energy production. Traditional liquid binder systems used in wood industry can only be used to a limited extent to produce materials from wood dust, as the hygroscopic and capillary effects of the material make it difficult to distribute the glue homogeneously.

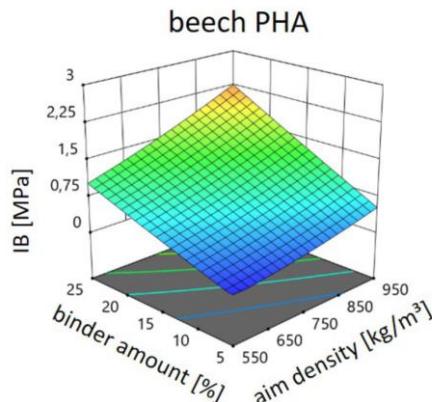
The focus of this project is therefore on sustainable board material based on wood dust and bio-based, biodegradable, toxicologically harmless and thermoplastic binders in powder form (e.g. lignin, bioplastics).



100% bio-based panel materials based on 90% beech wood dust (left) or 90% oak wood dust (right) and 10% polyhydroxyalkanoate (© Photo: Wood K plus)

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In the course of the project activities, panels were produced with both dry softwood and hardwood dust. The precise achievement of target densities in the range of 550 to 950 kg/m³ is particularly noteworthy.



Internal Bond (IB) according to EN 319 for beech wood dust panels with varying polyhydroxyalkanoate (PHA) contents and varying target densities (© Photo: Wood K plus)

After a large number of successful production trials on a laboratory scale, the scalability to large industrial plants was also demonstrated. The results of the physical and mechanical tests on the boards illustrate the potential for material utilisation of sawmill by-products using established manufacturing processes. It was not only possible to achieve the key performance indicators of comparable panel materials, but in some cases even surpass them. These findings ultimately led to a successful patent application (AT526970A1).

Effects and impacts

In addition to the outstanding properties of the panels produced, the focus is primarily on the upcycling potential of sawmill by-products, in particular wood dust, which was demonstrated as part of the project. To date, this has largely been thermally utilised. The results underpin the concept of cascading utilisation of wood resources and, in any case, show utilisation paths that could be relevant for the entire wood industry. This could not only increase added value, but also contribute to carbon sequestration.

Project coordination (Story)

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- Fritz Egger GmbH & Co OG, Austria
- Stora Enso Wood Products GmbH, Finland
- Scheucher Holzindustrie GmbH, Austria
- Weitzer Wood Solutions GmbH, Austria
- Dynea AS, Norway
- Henkel & Cie. AG, Germany

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