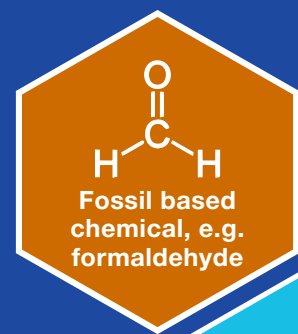


Advancing Bio-Based Coatings and Adhesives

Impact of formaldehyde- and PFAS-free alternatives on human health and safety



Most adhesives and coatings today are still made from fossil-based chemicals, such as formaldehyde, and some traditional formulations can release substances linked to health concerns. As regulations tighten and demand grows for safer, more sustainable materials, industries are accelerating the shift toward healthier, bio-based alternatives.



Formaldehyde is widely used in materials found in homes, workplaces, and everyday products, but exposure to higher levels has raised health concerns. Lower formaldehyde content leads directly to lower emissions, with a nearly one-to-one relationship between resin content and final product emissions.

ADHESIVES

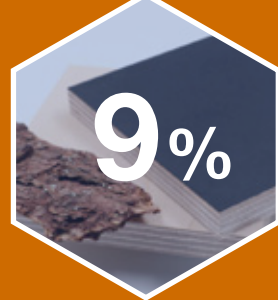
Bio-based wood adhesives can greatly reduce health and toxicity concerns compared with traditional synthetic resins, mainly by avoiding formaldehyde emissions and lowering overall human health impacts.



Tannin-based bio adhesives have about 50% lower human health impact than traditional formaldehyde-based resins.

Formaldehyde is contributing more than 50% of total human toxicity impacts.

All bio-based options stay below 9% toxicity contribution in the human toxicity cancer category.



In the long term, the replacement of formaldehyde in adhesives alone will have a health impact value calculated at up to 20 billion € in the EU.

COATINGS

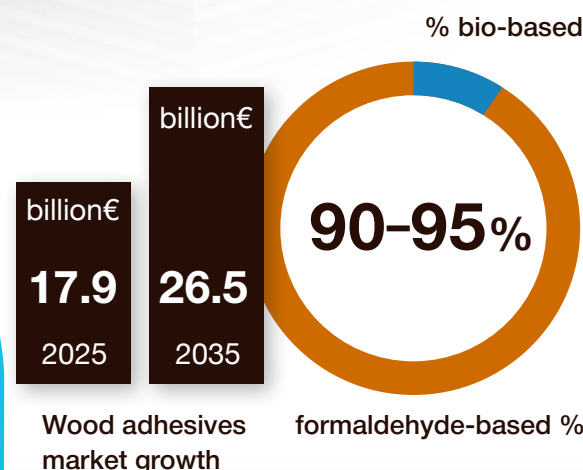
Bio-based wood coatings can significantly reduce health risks like respiratory problems, allergies, sick building syndrome, and increased cancer risk compared with conventional coatings that may emit formaldehyde and other harmful chemicals.



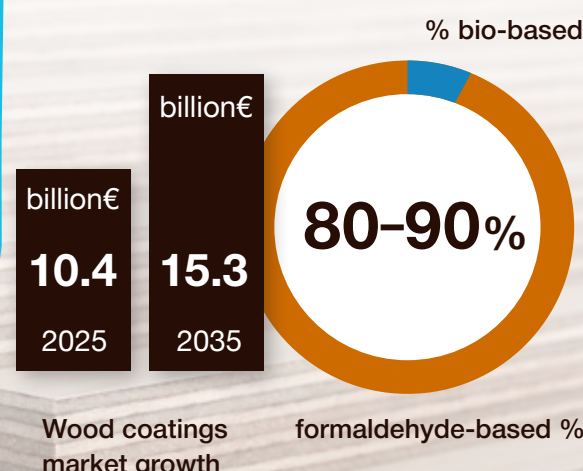
Bio-based coating alternatives can cut several human health impacts by more than 30%.

BIO-BASED SOLUTIONS REPRESENT A SMALL BUT GROWING SHARE OF THE MARKET

Wood Adhesives and Binders Market



Wood Coatings Market



PACKAGING

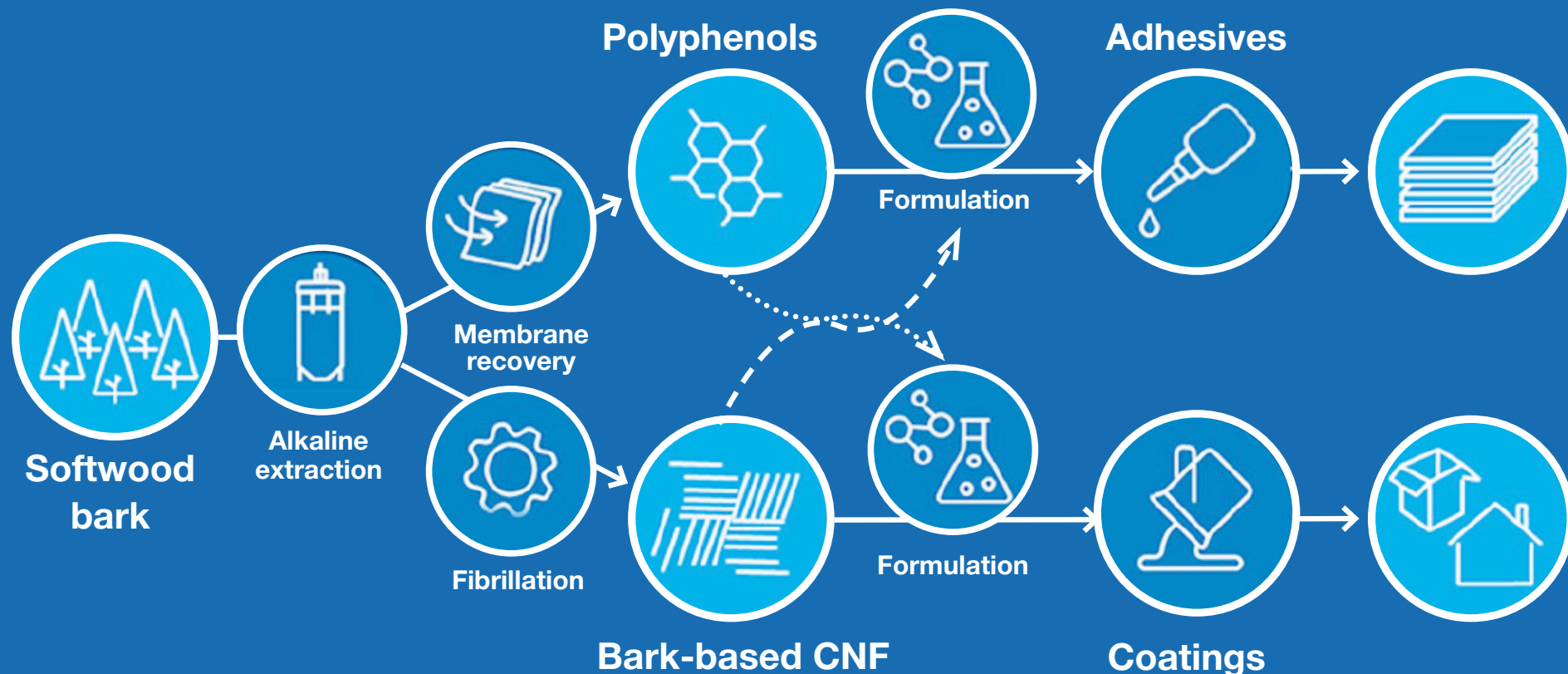
Bio-based coatings for paper packaging can improve food safety by reducing exposure to harmful chemicals, replacing plastic- and PFAS-based barriers, and helping protect food from moisture, oxygen, and grease. Many also use food-safe ingredients and can support recyclability or compostability, reducing long-term plastic and microplastic impacts.

Replacement of PFAS used in barrier packaging by bio-based coatings could have savings in health-related costs up to 84 billion € only in the EU.



The SuperBark project develops fossil-free adhesives and coatings derived from forest biomass

SuperBark is developing over 95% bio-based adhesives and coatings from softwood bark to replace formaldehyde-based adhesives, PFAS, and other hazardous chemicals used in everyday products. Funded by the Circular Bio-based Europe Joint Undertaking under Horizon Europe, the four year initiative (Sept 2023-Aug 2027) aims to improve consumer and worker safety, support healthier indoor environments, advance circular industry, and reduce long-term pollution from fossil-based microplastics and persistent chemicals.



Safe & Sustainable by Design principles guide development

Join us to accelerate the adoption of healthier and safer material solutions in Europe

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