

Building the Future of Sustainable Coatings

BIO4COAT develops bio-based coating solutions using renewable building blocks from biorefineries, designed to perform under extreme conditions

Coatings are essential across a wide range of industries, as they protect materials from wear, corrosion and degradation, whilst maintaining key properties such as strength and durability. However, the vast majority are produced from fossil fuels, which raises environmental concerns, poses risks to human health and creates challenges regarding their management at the end of their useful life.

The current challenge for industry and research is to develop sustainable alternatives that remain effective under demanding conditions of heat, humidity and chemical stress. In response to this need, the BIO4COAT project is committed to using biorefinery by-products to create bio-based coatings, thereby contributing to circular economy objectives and the replacement of non-renewable resources.

Partners

The BIO4COAT consortium covers disciplines such as **bio-based chemistry, surface engineering, materials science, sustainability assessment, market analysis and science communication**, bringing together manufacturers, research institutions and industry partners across seven European countries.

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Biobased Building Blocks from Biorefinery for Safe Diamond-like and Biopolyurethane Coating Solutions Under Extreme and Demanding Conditions of Use and End of Life

Overall budget: € 3 493 570,00

Duration: 48 months

Start date: 1 June 2025

End date: 31 May 2029



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Safe & Sustainable Coatings for Real Conditions

BIO4COAT will use bio-based building blocks – including 1,4-biobutanediol and long-chain dicarboxylic acids – to develop biopolyurethane and CVD surface coatings, validated at TRL5 under demanding conditions. The project follows the Safe and Sustainable by Design (SSbD) framework to ensure safe, scalable and replicable solutions across existing biorefinery infrastructures.

Targeting 8 industrial sectors



Objectives

BIO4COAT creates durable, safe and sustainable coatings. Using the **Safe and Sustainable by Design (SSbD) framework**, the project develops **innovative bio-based coating formulations**.



Replace fossil-based materials with renewable, bio-based alternatives.



Ensure durability under demanding conditions.



Foster circularity and resource efficiency across value chains.

