Applications

Three case studies will validate the durability of the 3 water and oil-repellent PFAS-free novel coatings for:

- **Textile**
- **Food trays packaging**
- **Cosmetic glass packaging**



Tools & Methodology

Coating development methodology

- Thermoplastic bio-based organic powder coatings
- Hybrid coatings from sol-gel technology

SSbD methodology

- Safe by Material Design (SbMD)
- Safe by Process Design (SbPD)

Computational modelling methodology

- Physics-based simulation to describe transport and fate processes
- Data-driven approaches to evaluate the safety of the new coatings

Learn more about the **BIO-SUSHY project** by visiting the website and following the social media pages.

www.bio-sushy.eu | info@bio-sushy.eu

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BIO-SUSHY

SUSTAINABLE SURFACE PROTECTION BY GLASS-LIKE HYBRID AND BIOMATERIALS COATINGS

1 January 2023 - 31 December 2026 **(4 years)**

EU contribution **€ 4.8 Millions**

GA number: **101091464**

Funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency (HaDEA). Neither the European Union nor the granting authority can be held responsible for them.

Objectives

Process and method standardization

Prepare a roadmap for the **complete standardization** of its PFAS-free materials. **Integrate existing standards** and link with ongoing standardization work in areas such as plastics, packaging, biobased products, and textiles.

Social acceptance

Enhance the social acceptance of the new developed materials by compiling evidence-based data on **consumer attitudes** towards and **willingness to pay** for products that are less harmful to the environment and sustainable.

Impact maximization and commercial business plan strategies

Spread awareness and communicate its results, protect its intellectual property, evaluate market opportunities, and **develop new business plans** for its innovative coatings.

Safe and sustainable by Design (SSbD) strategy

Integrate sustainability and safety into the coating formulations using a multidisciplinary approach of **computational tools,** predictive models, and data-driven simulations.
The focus is to **minimize toxicity and environmental impact** while addressing sustainability criteria such as climate change and resource use.

Develop integrated approaches for effective data management

Develop a data management infrastructure using the BIO-SUSHY HUB to integrate experimental and computational data into the bio-based hybrid coating SSbD, following FAIR data guidance principles.

Develop 3 innovative SSbD repellent organic and hybrid

Create eco-friendly repellent coatings as an alternative to polluting PFAS. The coatings will be made from partially **bio-based materials** leading to 25% of reduction of environmental impact and <20% of production cost increase and in favor for recyclability or compostability.

Forever chemical in coatings: A health problem

A large share of the organic coatings market contains harmful, persistent man-made pollutants known as PFAS (per- and polyfluoroalkyl substances).

PFAS can guarantee excellent water and oil-repellent properties, but they are linked to health problems like cancer and decreased fertility as well as environmental damage.

BIO-SUSHY SOLUTION

BIO-SUSHY
AIMS TO DEVELOP
3 PFAS-FREE COATING MATERIALS, PARTIALLY OR FULLY BIO-BASED,
TO BE VALIDATED IN 3 CASE STUDIES
(TEXTILE, FOOD TRAYS, GLASS PACKAGING)

THIS WILL ALLOW MEETING THE POLICY AMBITION OF THE EU'S CHEMICAL STRATEGY FOR SUSTAINABILITY TOWARD A TOXIC-FREE ENVIRONMENT AND A HEALTHIER SOCIETY.