GreenSolRes

Deliverable 3.5

Industrial solvent based standard adhesive prototype including quality assessment and testing that is ready for scale up and commercialisation

Demonstration of solvent and resin production from lignocellulosic biomass via the platform chemical levulinic acid

The project leading to this application 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 720695

BBI JU

Bio-based Industries Consortium

Horizon 2020
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About GreenSolRes

The need to establish economic and sustainable large-scale operations for the conversion of renewable resources to chemical building blocks is becoming increasingly urgent in the context of climate change and depleting fossil fuel reservoirs. Pathways for manufacturing of bio-based fuels and chemicals have been developed but most of them rely on sugar and starch crops for feedstock. GreenSolRes aims at a sustainable and competitive industrial production of the platform chemical levulinic acid (LVA) from non-food lignocellulosic biomass. Further, the conversion of LVA and LVA esters into industry relevant building blocks γ-valerolactone (GVL), 1-methyl-1,4-butanediol (MeBDO) and 2-methyltetrahydrofuran (2-MTHF) will take place by new catalytic methods developed during the course of this project. Finally, these chemicals will be upgraded to solvents and resin monomers for the production of high added value adhesives and consumer products. This project was started in September 2016 and has a duration of five years.

Project Coordinator

Project Office

Consortium

About this document

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PU	Public	
CO	Confidential, only for members of the consortium (including the Commission Services)	X

Publishable Summary

Within the frame of GreenSolRes HENKEL developed a prototype adhesive based on 2-methyl tetrahydrofuran (2-MTHF) potentially manufactured from bio-based levulinic acid.

Figure 1: Pipe adhesive prototype containing potentially green solvent MTHF.

HENKEL has proven that 2-MTHF can be beneficially utilized as component in pipe adhesives also known as solvent cement for PVC (polyvinylchloride) and ABS (acrylonitrile butadiene styrene) pipes. First developments have proven similar performance compared to standard fossil-based alternatives. 2-MTHF itself is not a drop-in chemical and will provide new properties to adhesives. By replacing conventional solvents, like THF, the toxicology evaluation of 2-MTHF might lead to a less harmful assessment. Once proven and when fully commercialized and registered, 2-MTHF is seen as very valuable building block to expand the material toolbox based on renewable carbon. Combined with other renewable carbon-based raw materials, 2-MTHF can help adhesive manufacturers to gain additional market share and set the latest trends towards sustainability. Bio-based 2-MTHF can contribute to reduce the carbon footprint in adhesive formulations.