



Deliverable 4.5

**Report on test results of an adhesive prototype based on specific application requirements of a customer**

**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*

## About GreenSolRes

The goal to establish economic and sustainable large-scale operations for the conversion of renewable resources to chemical building blocks is becoming increasingly important 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 lignocellulosic waste and residues originating from forestry and agricultural sector. Further, the conversion of LVA into industry relevant building blocks  $\gamma$ -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.

### Project Coordinator



### Project Office



### Consortium

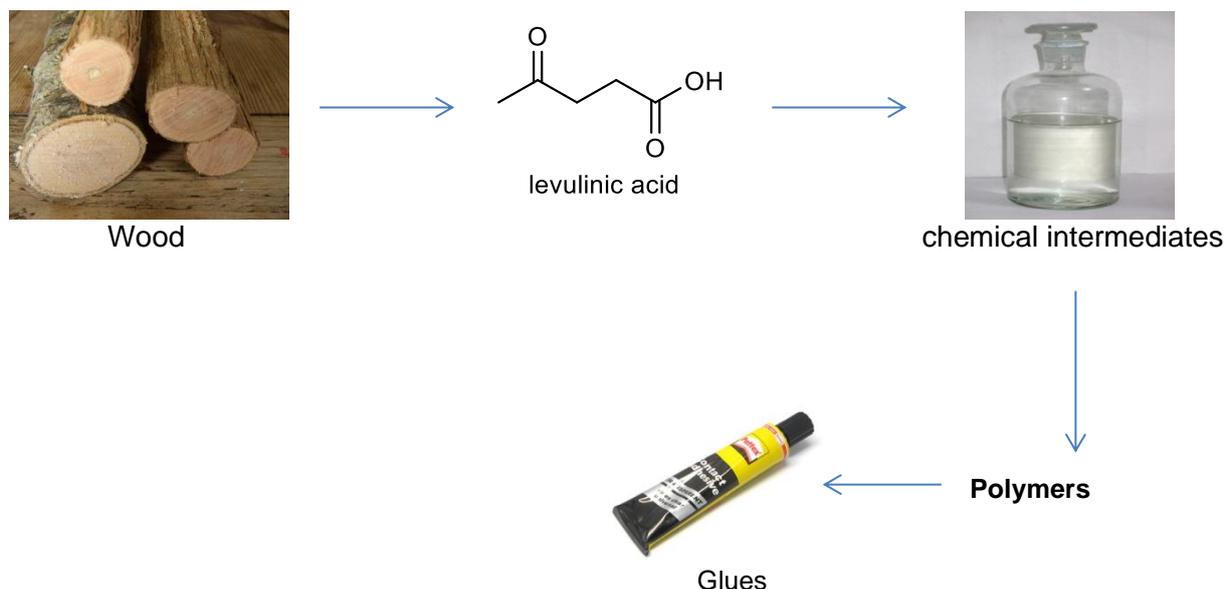


## About this document

Deliverable N°:	4.5	
Title	Report on test results of an adhesive prototype based on specific application requirements of a customer	
Work package:	Task 4.2	
Responsible beneficiary:	HENKEL	
Author:	Adrian Brandt, Horst Beck	
Reviewers:	BASF -Dorothea Starck	
Version:	1	
Due date of deliverable:	30.10.2021	
Version date:	08.10.2021	
Nature:	Report	
Review status	WP leader accepted	06/10/2021
	Reviewer accepted	06/10/2021
	SC accepted	22/10/2021
	Coordinator submitted	22/10/2021

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

## Public Summary



**Scheme 1.** General scheme available for public.

The production of levulinic acid from wood, as well as the synthesis of chemicals from levulinic acid are one of the major goals of the GreenSolRes project (first 2 steps in the scheme above). One target of this project is to prepare polymers from these intermediates, which could be used for production of adhesives. MeBDO was used as a building block for fully bio-based polyesters. One MeBDO polyester was used as raw material in a 80% bio-based reactive polyurethane (PUR) hotmelt adhesive prototype. A complete test series, specific to customer requirements in the electronics industry, of this novel adhesive has been carried out and prepared as deliverable 4.5. Hence, we could demonstrate a potential use case for MeBDO-based polyesters in the adhesive market. The performance of such an adhesive is similar and in some relevant criteria even better compared to existing grades. It could be shown that MeBDO is a value adding building block for the next generation bio-based adhesives with high bio content and an even improved technical performance by meeting all relevant industrial standards. This type of adhesive typically can be used for furniture, automotive interior lamination, shoe adhesives and for electronics. MeBDO based polymers serve as promising building blocks for a bio-based polyurethane chemistry in adhesives but also for other applications.