



- 1 *Bio-based resin in a round-bottomed flask.*
- 2 *5-layer Okoumé plywood glued with a bio-based polyester polyacrylate resin.*

ECOPRESSWOOD FORMALDEHYDE FREE BIO-BASED THERMOSETTING RESINS FOR WOOD PRESSED PRODUCTS

Pressed wood panels are composed of chopped or cut wood that is glued together using adhesives. Most of these resins are petroleum based products containing a hazardous chemical: formaldehyde. The acceptable levels of formaldehyde in wood pressed products have been reduced over the past decades due to increased public awareness on its effects on health and the consequent consumer demand for non-hazardous products. The current situation in Europe is that the Committee for Risk Assessment of the European Chemical Agency has reclassified formaldehyde from category 2 "probably carcinogenic to humans" to category 1B "substance which is presumed to have carcinogenic potential for humans". This reclassification has an impact on EU standards with regards to formaldehyde emissions from wood panels. In turn, this affects the competitiveness of the European wood-based products industry who is forced to reduce, or even

eliminate, the use of formaldehyde resins in wood panels. The development of efficient renewable resins to substitute petroleum or formaldehyde based adhesives is one of the biggest challenges for the wood-based panel industry.

The aim of the ECOPRESSWOOD project is to develop a formaldehyde-free thermo-setting bio-based resin (pre-polymer) for wood-based panels. A polymerization reaction between polyol monomers and different types of cross-linking agents are utilized. Both monomers and cross-linkers are synthesized from biodiesel waste. Also, the effect of different oxide ceramic nanoparticles and nanocellulose on the resins and wood-based panels bonded therewith will be studied. The main objective is to develop bio-based resins with improved properties, which will be proofed for their use in wood-based panels like particleboard, fibreboard and plywood.

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Project consortium

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- Chimar Hellas S.A., Greece
- Croatian Chamber of Economy, Croatia
- Federlegno Arredo, Italy
- Fraunhofer WKI, Germany
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