

FORBIOPLAST summary

FORBIOPLAST research activity is focused on the use of wood by-products as raw materials for the production of polyurethane foams by innovative sustainable synthetic processes with reduced energy consumption and to the use of wood derived fibres as fillers in composite materials for application as automotive parts and in the packaging and agriculture fields.



Project meetings were regularly attended by the beneficiaries and members of the Industrial Advisory Board. Midterm meeting was also attended by the European officer Dr Eveline Lecoq.



Kick-off meeting, Pisa.



FORBIOPLAST logo.



12th Month Meeting Riga



24th Month Meeting Bucharest

FORBIOPLAST demonstrator were chosen: bumper, T-node in rigid foam, tomato yarn, trans-planting pots, and package boxes.



Examples of packages and automotive interiors.

The consortium has a very positive interaction among the members as attested by regularly reaching scheduled deadlines.

FORBIOPLAST website is on line: <http://www.forbioplast.eu> and was recently updated. It is divided into a public area and a restricted area for beneficiaries and selected members of the Industrial Advisory Board. Beneficiaries are satisfied with the restricted area and use it successfully to download files.

State of the art on forest materials and processing technologies as well market analysis and provider identification were accomplished.

All the beneficiaries were involved in the laboratory scale production of FORBIOPLAST targeted products and in planning the shift to industrial scale production.

CARTIF, LPRT and UNIPI were involved in acquirement, characterization and pre-treatment of fibres to improve compatibility with polymeric matrices.

Recycled polypropylene (rPP) was selected as the main matrix for composites in automotive. LPRT and PEMU were involved in the production of composites with rPP for automotive applications and optimization of coupling technology. UAL and LPRT were involved in the production of modified fibres, both by enzymatic and chemical pathway. Raw wood fibres as well as modified fibres were used by LPRT and UNIPI for the production of composites based on biodegradable polymers. UNIPI processed polylactic acid (PLA), Ecoflex, and polyhydroxybutyrate (PHB) with wood fibres, which were selected for agriculture and packaging applications, and LPRT developed coupling technology for PLA and wood fibres.

Activity was performed in strict interaction with industrial partners INCP (test on industrial scale) and RODAX (specific characterization), and inputs from end users NEOC and COS as well as agriculture expert UASVM and food packaging expert NORC. PU foams were produced from tall oil and lignin. Rigid polyurethane foams obtained from tall oil polyols and soft polyurethane foams modified by lignin produced and prototypes were prepared by industrial partner RIT in cooperation with CRF and IWC. Package prototypes (fish boxes) are planned in cooperation among IWC, RIT and NORC. Polyurethane will be filled with wood and cellulose fibres.

PU foam samples for automotive industry in moulds provided by CRF were obtained.



T-node for automotive production, sample obtained in cooperation of IWC and CRF, content of renewable material in ready PU foams 25%.

OWS stated biodegradability of wood fibres based composites also with a PLA copolymer produced by UNIPI as well as in composites based on PLA and PHB. UAL tested composites toxicity (absent), with microorganism and degradation in real scale compost plan. UASVM defined requirements for agriculture applications such fertilizer encapsulation. Hot spots of life cycle analysis (LCA) were defined, some calculations on energy consumption were already started. Economical analysis on raw materials and cost of targeted products will be continuously updated during the project.

The exploitation plan was defined. FORBIOPLAST is disseminated to research and industrial audiences as well as to general public. Announced activities were authorized, monitored, and documented by exploitation management of partner WIED. Market analysis was conducted by WIED in the areas of bio-based and biodegradable plastics and composites. Project management was performed continuously as attested by related deliverables.