2GAR: Second Generation Amino Resins

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ABSTRACT

Project 2GAR is promoted by Euroresinas (Sonae Indústria), involving as partners Faculdade de Engenharia da Universidade do Porto, Instituto Politécnico de Viseu and Associação Rede de Competência e Polímeros. The project aims to introduce novel properties in the formaldehyde-based resins ("amino resins") produced by the company. This allows Euroresinas to assume a more competitive position in existing markets and to penetrate into new markets, both national and international.

The project assumes three fundamental objectives: a) provide amino resins with higher storage stability, so as to allow transportation by boat to international costumers; b) provide the resins with the necessary resilience and elasticity for producing flexible panels based on cork granulate; c) incorporate a significant amount of nature-based raw materials in amino resins. The project is based on a strong interaction between all partners along all its execution phases, taking advantage of both the individual competences and the synergies generated by joint work, as already demonstrated in previous projects. It is intended to end the project with the production of new formulations in industrial reactor, followed by application, by final clients, in production of wood and cork composite panels (wood-based panels and composition cork). The main achievements attained so far are:

a) The incorporation of blocker additives during resin synthesis enabled to stop the viscosity increase during storage, permitting to obtain resins with good stability at 40 ºC; b) The incorporation of flexible long chain alcohols in UF synthesis gave good results in terms of cork panels flexibility assessed by the mandrel test method;

c) The incorporation of 20% of hydroxymethylated lignin (HL) during UF synthesis permitted to obtain particleboards with good mechanical properties and low formaldehyde emissions.

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