

# USE OF AGRO WASTES AND FORESTRY MATERIALS IN THE PRODUCTION OF PARTICLEBOARDS

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## Abstract

In MOBILE FLIP project, CHIMAR HELLAS S.A. evaluated various agricultural materials and forestry residues as alternatives to virgin wood in the production of particleboards. The materials tested were Scots Pine bark, Forestry residues, Reed canary grass, Salix, Corn Cobs and Sunflower seeds. All materials were provided by SLU in the form of chips. CHIMAR tested all of them separately and in mixtures in order to find their optimum use. Two fractions of them were evaluated (1-7mm long and 7-15mm long) as well as the effect of the storage life of Salix to the properties of particleboards. The particleboards were produced at pilot scale and had dimensions 50x50cm while their target density was 650kg/m<sup>3</sup>. They were manufactured following a simulation of the industrial practice using a typical Urea-Formaldehyde (UF) resin as bonding material. For control, typical panels were prepared with chips from virgin wood of pine, poplar and beech. The produced panels were tested and evaluated according to European standards as per their mechanical properties like internal bond, modulus of rupture and modulus of elasticity as well as thickness swelling. Their formaldehyde content was determined with the perforator method. It was found that amongst the materials tested Salix gave panels with the best mechanical properties while Forestry residues improved the thickness swelling. The formaldehyde content of these experimental panels were at levels close to that of typical panel produced with chips from pine wood. The dimensions of chips had not significant effect to the comparison of materials. Hence, Salix and Forestry residues may be considered as wood substitutes for particleboards suitable for interior applications.

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