Third National Congress of Recycling and Reuse of Renewable Organic Resources in Agriculture
Islamic Azad University, Khorasgan Branch (Isfahan)
Agricultural Faculty, Waste and Wastewater Research Center
13-15 May 2008

Utilization of malus pruning wastes in particleboard manufacturing and application of layering technique with poplar

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Investigation of pruning bark effect on applied properties of particleboard and also, application of layering technique for elimination of it were the scopes of this research. In order to evaluate pruning bark effect, two kinds of boards with 15% of bark and without it, under two press times (5 and 7 min) were made. It was observed that, the effect of bark on all of the properties was negative and significant (α=0.01). For extermination of negative bark effect, layering technique with Poplar and two levels of shell ratio (25% and 50%)were used and three layer particleboards under the above press times were made. Results showed that, physical and mechanical properties of boards increased significantly by layering technique with Poplar. This technique caused remarkable increase (37%) in internal bonding strength of boards. There was no significant difference among the strengths of three layer boards and dropping effect of press time was significant only about mechanical strengths. Finally, under the situations of using 10% resin and 180oC press temperature, with respect to board characteristics and yield production, 5 min was determined as the best press time. Also the shell ratio of three layer boards can be selected based on availability of raw material in different region.

Keywords: Malus pruning, Poplar, Particleboard, Layering technique, Mechanical strength, Physical properties

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