عنوان مقاله:

Evaluation of Particleboard Properties Using Multivariate Regression Equations Based on Structural Factors

محل انتشار:

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خلاصه مقاله:

The application of stepwise multivariate-linear regression models for determination of particleboard properties based on structural factors was studied. Poplar (Populus alba), Beech (Fagus orientaleis) and Hornbeam wood (Carpinus betulus) with dry density of ۴۶۰, ۶۳۰ and ۷۹۰ kg/m۳,respectively, were used as raw materials. Three levels of boards target density (۵۲۰, ۶۲۰ and ۷۲۰ kg m-۳) and urea formaldehyde (UF) resin (۶, ۷, and ۸%) were compared. The variables were included in the regression equations of modulus of rupture (MOR), modulus of elasticity (MOE), shear strength, and thickness swell (TS) after ۲۴ hours immersion based on the degree of importance. In order to obtain the optimum board density and resin content for each species, contour plots were drawn by Minitab ۱۳ software. Regarding the results from contour plots, particleboards with density ranging from ۵۲۰ to ۶۲۰ kg m-۳ and ۶% resin had most of their mechanical properties within those required by the corresponding standards. Thickness swell values were higher than requirements. We suggest additional treatments such as using adequate amount of water resistant materials to improve TS after ۲۴ hours immersion.

کلمات کلیدی:

Board density, Particleboard, Regression models, Resin content, Wood density