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Journal of Forest Science

The influence of particle composition in a three-layer particleboard on its physical and mechanical properties

J. Hrázský, P. Král

J. For. Sci., 49 (2003): 83-93

[fulltext]

The paper deals with results of research aimed at the problem of the maximum possible amount of added sawdust to standard particles into surface and central layers of three-layer particleboards in order that the physical and mechanical properties of particleboards will comply with the CSN 49 2614 Standard. Waste from wood processing is widely used for the production of particleboards. For that purpose, three-layer particleboards with computed density of 740 kg/m3 at seven versions A-G with 0–30% sawdust addition to standard particles were manufactured in a laboratory. Five particleboards $500 \times 500 \times 16$ mm were made for each version. These air-conditioned particleboards were cut into specimens in which physical and mechanical properties such as moisture, density, swelling, perpendicular tensile strength and bending strength were determined. It is obvious from the results of physical and mechanical properties that during the production of particleboards sawdust at a quantity of max. 25% can be added to standard particles when all values of physical and mechanical properties are in accordance with the CSN 49 2614 Standard.

Keywords:

particleboard; physical and mechanical properties; density; moisture; bending strength; tensile strength; swelling; statistical analysis; sawdust

[fulltext]