

FEM ANALYSIS OF DEFORMATIONS AND STRESSES OF UPHOLSTERED FURNITURE SKELETON MADE OF SCOTS PINE AND OSB

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ABSTRACT

*A 3D geometric model of one-seat skeleton for upholstered furniture was created by CAD system. A linear static analysis was carried out with CAE system Autodesk Simulation Mechanical[®] by the method of finite elements (FEM) simulating the loading of skeleton. The orthotropic material characteristics of pine solid wood (*Pinus sylvestris L.*) for the rails and OSB for the side plates are considered in the analysis. Two variants of corner joints in the skeleton (model A – staples and PVA; model B - staples, PVA and strengthening elements) were considered. FEA was performed with regard to laboratory determined and calculated coefficients of rotational stiffness of used staple corner joints. As results, the distribution of stresses (von Mises and principal), displacements and equivalent strains in the 3D model of upholstered furniture skeleton with staple corner joints are presented and analysed.*

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