ASSESSMENT OF THE FINAL QUALITY OF THE SANDED SURFACES IN CASE OF BIRCH WOOD

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Abstract:
The objective of the experimental research presented in this paper was to analyze the roughness parameters characterizing the final quality of the birch wood surfaces, industrially sanded with three successive grit sizes, namely 100, 120 and 150. Sets of samples were analyzed for each sanding direction, parallel and perpendicular to the wood grains, respectively. The variables of the processing parameters were considered to be the feed speed and the cutting depth. The roughness was measured on a standard optical profilometer type FRT MicroProf for the two cases of wetting and no wetting the measured area. Three roughness parameters were determined: Ra, Rk and Rpk. The assessment of the quality of the sanded surfaces was carried out by comparing these parameters, depending on the applied processing parameters. The experimental results were analyzed with ANOVA test of variance with two factors for each sanding technology and direction of processing, at the same feed speed and various cutting depths, for both dry and wet sanding.

It was found that the quality of the pre-wetting surfaces was very close to that of the dry sanded surfaces, fact that recommends the use of dry sanding, thus eliminating additional labor costs. The final sanding parallel to the wood grains recorded best results for the dry process with 150 grit size. ANOVA conclusions have shown that the parallel sanding operation with low speeds is significantly influenced by the cutting depth and also, that the influence disappears at high feed speeds. When sanding perpendicular to the wood grains, on the other hand, the cutting depth has a significant influence when feed speeds are higher. The results of the present research go into recommendations of some sanding technologies for birch wood surfaces, in the idea of introducing birch wood as timber raw material for furniture production also in Romania, too.

Key words: roughness; birch wood; sanding; processing direction; roughness parameters.

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