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Title: Development of wood plastic composite with optimized inertia

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ABSTRACT: Regarding wood processing industry in Hungary the most of the companies are SMEs. Typical wastes are for such solid wood based production sanding dust, saw dust and shavings. These materials should be considered as by-products or secondary raw materials, which could be useful in other production processes. Wastes of plastic processing industry could be also considered as secondary raw materials for a new product. Combining these two types of by-product new wood-plastic products were developed for furniture and packaging industry. The main goal of this research (supported by European Union, European Social Funds, TÁMOP 4.2.1.B-09/1/KONV-2010-0006 and WPC_TECH BAROSS-ND07-ND_INRG5_07-2008-0087) was to find an easy production technology to process both wastes (by-products) into a lightweight product with high bending properties. First finite element simulations were done to determine optimal inertia for the product structure. Also optimal mixing ratio and particle size were determined to produce a suitable wood plastic compound. Finally aluminum press plates were produced to be able to produce the inertia optimized experimental products.
Major findings are: polypropylene - wood compounds were made with 60% of wood. Wood was applied in two different forms: saw dust (micro particles) and sanding dust (wood flour). Advantages of inertia optimized products are: production is based on by-products (formerly considered as wastes), simple production technology (dry blending also available besides compounding), low specific density compared to “clean” plastics, high strength, various utilization.