

THE DEVELOPMENT OF BASED PANEL PRODUCTS ASSOCIATED WITH SAWMILLING

-waste particle produced during machining of wood in particleboard technology

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INTRODUCTION



Deficit of raw wood material is increasing. For this reason, research related with the alternative sources of wood raw material for the production of particle boards is gaining importance. Also industrial wood wastes have an increasing share in raw material for the production of boards. Dependent on its origin waste particles produced during machining of wood have different geometry comparing to industrial particles what may affect the sizing process. As a consequence the use of these particles can lead to deterioration in properties of boards.

Therefore the present study was conducted to determine the potential amount of waste particles produced during machining of wood, which can be introduced into core layer boards without significant deterioration of their properties.

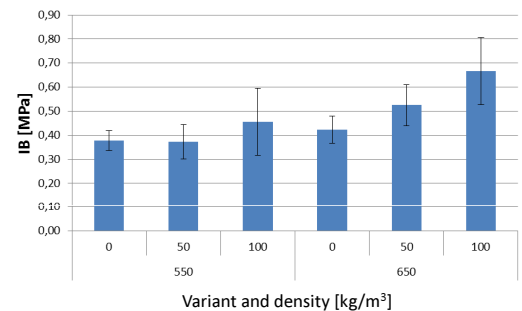
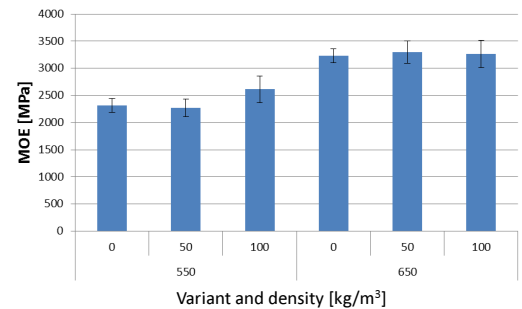
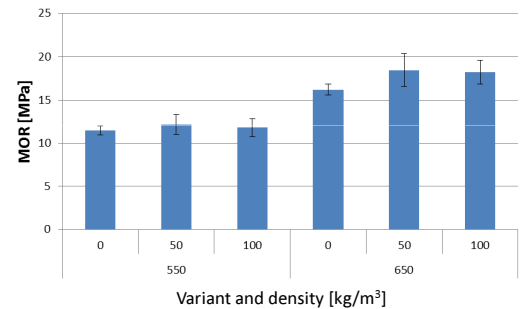
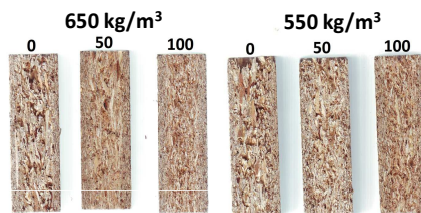
MATERIALS AND METHODS

As part of the research, three-layer particleboard with a thickness of 16 mm were made. In two variants of density 650 kg/m³ and 550 kg/m³. The surface layers were made in all variants from standard particles used in industry. In the case of the core layer, three variants of the wood particles were made:

- 100% standard particles (variant 0),
- 50% standard particles /50% waste particles produced during machining of wood (variant 50),
- 100% waste particles produced during machining of wood (variant 100)

Manufacturing parameters

- Unit pressure – 2,5MPa
- Pressing temp. – 180°C
- Pressing time – 254s



RESULTS

Density kg/m ³	contribution [%]	MOR		MOE		IB	
		Avg. [MPa]	SD	Avg. [MPa]	SD	Avg. [MPa]	SD
550	0	11,49 ^a	0,52	2318 ^a	126	0,38 ^a	0,04
	50	12,22 ^a	1,20	2272 ^a	159	0,37 ^a	0,07
	100	11,83 ^a	1,11	2613 ^b	249	0,45 ^{ab}	0,13
650	0	16,25 ^b	0,61	3233 ^c	126	0,42 ^{ab}	0,06
	50	18,23 ^c	1,89	3299 ^c	206	0,53 ^b	0,09
	100	18,46 ^c	1,34	3267 ^c	249	0,67 ^c	0,13

SD – standard deviation

a,b,c - homogeneous groups by Tukey test

CONCLUSION

The following conclusions can be drawn from these studies:

- The impact of the share of waste particles produced during machining of wood into the core layer of a three-layer particleboard with a density of 550 kg/m³ is statistically insignificant.
- The share of waste particles produced during machining of wood caused a statistically significant increase in the strength parameters of the produced particleboard with a density of 650 kg/m³.