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Effects of Some Manufacturing Factors on the Properties of Particleboard Manufactured from Alder (Alnus glutinosa subsp. Barbata)

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Abstract: In this study, Alder (Alnus glutinosa subsp.Barbata) wood was used for particleboard manufacturing. The purpose of this study was to determine the effects of particle moisture content, shelling ratio and the addition of wood dust on the mechanical properties (static bending, modulus of elasticity and internal bond) and physical property (thickness swelling) of particleboard. The addition of 10% wood dust to particles decreased the thickness swelling, modulus of elasticity and bending strength, while increasing the internal bond. Particleboards manufactured from particles with 1% moisture content had lower internal bond, modulus of elasticity and bending strength and higher thickness swelling values than those produced from particles with 4% moisture content. Increasing face:core ratio from 30:70% to 45:55% improved the physical and mechanical properties of particleboards. Overall results showed that particleboards made from Alder exceed the EN standards for internal bond, modulus of elasticity and static bending. However, thickness swelling values were higher (poor) than requirements. For this reason, additional work needs to be done on improving the physical properties of particleboard produced from Alder.

Key Words: Particleboard, Alder (Alnus glutinosa subsp. Barbata), Static Bending, Modulus of Elasticity, Internal Bond, Thickness Swelling, Manufacturing Factors

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