

## Mechanical Properties of Aspen Wood of Structural Dimensions

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**Abstract :** The paper investigates the mechanical properties of European aspen (*Populus tremula* L.) as a potential replacement for load-bearing elements in historical structures. One of the main aims of the research has been the quantification of mechanical properties via destructive testing and the subsequent calculation of characteristic values of these properties. The research encompasses experimental testing of wood specimens for the determination of dynamic modulus of elasticity (MOEdyn), modulus of elasticity (MOE), modulus of rupture (MOR), and density. The results were analyzed and compared to established standards for structural timber. The results confirmed statistically significant dependence between MOR and MOEdyn. The correlation between the MOR and the dynamic MOEdyn enabled non-destructive strength grading using the Sylvatest Duo® system. The findings of this research contribute to the potential use of European aspen as a structural timber, which could have implications for the sustainable use of this abundant and renewable resource in the construction industry. They also show the usability of European aspen in the reconstruction of historical buildings.

**Keywords :** populus tremula, MOE, MOR, sylvatest Duo®.

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