Characterization of the mechanical properties of wood of *Araucaria angustifolia* (Bertol.) Kuntze

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This study characterized the wood of *Araucaria angustifolia* by its mechanical and physical properties. The characterization was made through the study of the modulus of elasticity (MOE), modulus of rupture (MOR) and density at 12% moisture (MAE 12%), which are the main parameters for checking the quality of wood. From the bending tests performed in accordance with ASTM 143 – 94, was observed average values of 97636 kgf/cm² and 643 kgf/cm² respectively for MOE and MOR. These values are presented below when confronted with the results of Beltrame (2010), which MOE and MOR in the lower stratum phytosociological (10.5 m height) represents 99642 kgf/cm² and 707 kgf/cm² respectively. Otherwise, the average value of 0.45 g/cm³ density 12% moisture is higher than that of the author, who found 0.44 g/cm³. Have been made even regression models from the MOE and MOR as a function of density at 12% moisture, according to Table 1.

Table 1 – Regression models for MOE and MOR as a function of MEA at 12% moisture

Specie	Equation	R^2_{adj} (%)	S_{yx}	F	P
Araucaria angustifolia	MOE= -67077+ 369644*MEA	55	15124	23	0,0002
	MOR= -498,507 + 2561,13*MEA	66	85	35	0,0001

Results were obtained with moderately strong correlations above R^2_{adj} = 50%. This way, according to Table 1, proves that there was a greater correlation between MOR and density at 12% moisture. This affirmation justifies the conclusion that the density can estimate along the radial distance and through regression models assembled the modulus of rupture and the modulus of elasticity of wood. However, the MOR is best represented by the density because it presents better correlation.

Keywords: static bending, wood quality, modulus of elasticity, bending strength.

[1] ASTM. American Society for Testing and Materials. Standard methods of testing small clear specimens of timber: ASTM D 143-94. Philadelphia, PA: 1995.

[2] Beltrame, R. et. al. Physical and mechanical properties of *Araucaria angustifolia* (Bertol.) wood for three stratum phytosociological. Ciência da Madeira, v. 01, n. 02, p. 54-69, 2010.

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