

Estimation of mechanical properties of wood of *Araucaria angustifolia*

A. L. Missio¹, M. Weiler¹, D. A. Gatto¹, D. M. Stangerlin², L. Calegari³, C. R. Haselein⁴ and R. Trevisan⁴

¹ Universidade Federal de Pelotas, Centro de Engenharias, RS, Brasil

² Universidade Federal do Mato Grosso, Campus Sinop, MT, Brasil

³ Universidade Federal de Campo Grande, Centro de Saúde e Tecnologia Rural, PB, Brasil

⁴ Universidade Federal de Santa Maria, Santa Maria, RS, Brasil.

The aim of this study was to estimate the modulus of elasticity (MOE) and the modulus of rupture (MOR) of the *Araucaria angustifolia* wood through the number of growing rings per inch. For both tests, it was randomly collected 5 trees from homogeneous plantation from ARAUPEL S. A., which is located in Quedas do Iguaçu, in the state of Paraná. From this material, were prepared logs of 2.5 m long, and, subsequently, from those logs, were prepared central planks of 8cm thick. The samples were prepared with 2.5 x 2.5 x 40cm (width, thickness, length) according to ASTM D 143 – 95 standard (1995). Those samples were placed in the chamber (20°C and 65% of humidity) until its stabilization. The universal testing machine *Wolpert-Amsler* was calibrated to a deformation speed of 1.3 mm min⁻¹ and the gap was set at 360mm for doing the static bending test. So, the samples were weighed and in its centers were measured the height and basis. In addition, the number of rings per inch was counted. After the mechanical tests were made, regression equations were selected through statistical package. Thus, the selected equations were: MOE= 60906.6+10338.6*N°A (R²_{aj.} =16%), MOR= 292.123 + 101.702*N°A (R²_{aj.} =28%). These show an increase in modulus of rupture and in modulus of elasticity at increasing the number of growing rings per inch. It could be concluded that when the number of growing rings per inch is bigger or equal to four, more satisfactory will be the mechanical properties.

Keywords: modulus of elasticity, modulus of rupture, growing rings

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

missio08@gmail.com, Rua Professor Doutor Araújo 2149, bl B/403, centro, CEP-96020-360