

RELATIONSHIP BETWEEN WEIGHT OF SATURATED WOOD SAMPLES
SUBMERGED IN WATER AND THEIR DRY WEIGHT

José Carlos Duarte Pereira
Researcher in Wood Technology
CNPFFlorestas/EMBRAPA-Brazil

An alternative method to determine dry weight is examined. It is based on the complete saturation of wood and it does not include sample drying. The dry weight is calculated by using the submerged sample weight multiplied by 2.887. In order to compare this method with the conventional one, samples of sapwood and heartwood of Pinus elliotii, Pinus taeda, Eucalyptus grandis and Eucalyptus dunnii were impregnated with water up to a constant weight using centrifugation and vacuum. Afterwards, samples were dried and weighted according to the conventional procedure. Centrifugation was faster and more effective than vacuum. The sapwood samples achieved 99.7% of the maximum water content after 90 minutes of centrifugation. Under vacuum condition, nearly 20 hours were necessary to achieve similar level. Both methods were ineffective for heartwood samples. This shows that constant weight is not always a good indicator of complete saturation. The dry weight values obtained by the proposed method and by the conventional one were highly correlated for sapwood samples. Therefore, the method described in this paper is accurate and feasible for permeable wood. It is very fast for samples impregnated by centrifugation. In some cases, around 30 minutes were necessary to determine dry weight, water content and basic density of air dried samples. Nevertheless, experimental impregnation curves are needed to check if complete saturation is obtained.