

Effects of Impregnation Pressure on Physical and Tensile Properties of Impregnated Sugar Palm (*Arenga pinnata*) Fibres

ABSTRACT

The aim of this study is to investigate the effect of impregnation pressure on physical and tensile properties of sugar palm (*Arenga pinnata*) fibres. The fibre was impregnated with phenol formaldehyde (PF) and unsaturated polyester (UP) with different impregnation pressures (1000, 900, 800, 700, 600 and 500 mmHg) at constant impregnation time of 5 min. Significant improvement in physical properties was observed due to reduction of moisture content (MC) and water absorption (WA) after being impregnated from 1000 to 500 mmHg while PF-impregnated fibre was showing more superior. Improvement in mechanical properties was also observed after being impregnated where much better tensile properties and toughness were found at UP-impregnated fibres while PF-impregnated fibres were found to be very much lower in toughness. This study concluded that in order to obtain a high toughness and better physical properties of sugar palm fibre, the fibre should be impregnated with UP resin with impregnation pressure of 600 mmHg.

Keyword: Sugar palm fibre; Vacuum resin impregnation; Impregnation pressure; *Arenga pinnata*