

Effect of chemical treatment on the tensile properties of single oil palm empty fruit bunch (OPEFB) fibre

ABSTRACT

A study on effect of chemical treatment on the tensile modulus and strength of single oil palm empty fruit bunch (OPEFB) fibre is presented in this paper. The fibres were treated with alkaline treatment using sodium hydroxide of 5% concentration. Tensile test were conducted in accordance to the ASTM C1557. Results revealed that the tensile modulus of the treated fibres decreases by around 55% as compared to the untreated fibres. Tensile strength on the other hand increases by around 25% with the alkaline treatment. The tensile strength was found to be dependent on the fibre diameter where the strength decreases with the increases in fiber diameter at fracture. SEM revealed higher porosity at larger fibre diameter which contributed to the degradation of the fibre tensile strength. No significant impact by the alkaline treatment was observed to the tensile strain of the fibre.

Keyword: OPEFB fibre; Natural fibre; Tensile strength OPEFB fibre; Tensile modulus OPEFB fibre