Optimizing processing parameters for hybridized kenaf/PALF reinforced HDPE composite

ABSTRACT

This work is aimed at achieving optimum processing parameters for Kenaf/PALF/HDPE. Processing parameters like temperature, speed of rotor and duration of composite mixing in an internal mixer were examined. Oven conditioned and unconditioned specimen were prepared and tested. The best tensile strength and tensile modulus were obtained at an optimum processing parameters of 190°C, 40rpm, and 15min for temperature of processing, speed of rotor and duration of mixing respectively, while 190°C, 40rpm and 20min gave the best flexural strength and 190°C, 40rpm and 25min for flexural modulus. Conditioning of composite tends to reduce its tensile modulus while increasing its strength and flexural modulus. All samples were produced at only 10w% (mass) of fibre in the composite at 1:1 and less than 0.3mm fibre ratio and length respectively. Utilization of these parameters according to end requirement can help in achieving optimum mechanical properties on hybridized composites.

Keyword: Hybrid; Processing; Mixing; Fibre; Parameters; Reinforced; Conditioned