

Study on abaca (*Musa textilis* Nee) fibre reinforced high impact polystyrene (HIPS) composites by thermogravimetric analysis (TGA)

ABSTRACT

In this research, thermogravimetric analysis (TGA) was used to measure the amount and rate of change in the weight (weight loss) of abaca fibre reinforced high impact polystyrene (HIPS) composites as a function of temperature. The function determined the composition of abaca fibre reinforced HIPS composites on predicting the thermal stability. The optimum composites designed with composition of abaca fibre 40 wt%; maleic anhydride 1 and 3 wt%, impact modifier 4 and 6 wt%, respectively. This paper studied the thermal characteristic of abaca fibre, reinforced HIPS composites as compared to the neat HIPS. The measurements were carried out in temperatures ranging from 25 to 600°C at heating rate 20°C min⁻¹ and nitrogen gas flow of 50 ml min⁻¹. The results from TGA analysis have shown that the combination among the coupling agent maleic anhydride, impact modifier and abaca fibre has improved the thermal stability of composites.

Keyword: Thermogravimetric analysis (TGA); Abaca fibre; Maleic anhydride (MAH); Impact modifier; High impact polystyrene