Thermal and dynamic mechanical analysis of polyethylene modified with crude palm oil.

ABSTRACT

This paper is focuses on the study of the thermal and dynamic mechanical properties of polyethylene (PE) modified with crude palm oil (CPO). PE of grades LLDPE and HDPE were used in this study. Various compositions of CPO and PE compounds were prepared in a twin-screw extruder. Films of 0.2 mm thickness were produced by using blown film technique. LLDPE and HDPE with CPO samples show only one melting temperature peak in DSC results, indicating the existence of one type of crystal species on all PE matrices. Dynamic mechanical analysis (DMA) shows the decrease of storage modulus was effect of plasticing of CPO. The shifting of b transition peak was observed on both polymers with the addition of CPO indicating the CPO has a lubricating effect on both polymers.

Keyword: Thermal analysis; Thermoplastics; Polymer.