

Effect of Accelerated Weathering on the Mechanical Properties of Oil Palm Empty Fruit Bunch Filled UPVC Composites

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Received 5 October 2004; accepted 1 June 2005

ABSTRACT

Accelerated ultraviolet weathering of unplasticized poly(vinyl chloride) (UPVC) filled composites with different filler contents of oil palm empty fruit bunch (EFB) was studied. The unfilled and filled composites samples were manufactured by dry-blending PVC, EFB fillers and other additives in a heavy-duty laboratory mixer. The dry-blended compounds were then two-roll milled and hot pressed into samples. The composites samples were exposed to cyclic ultraviolet fluorescent lamps/condensation for 504 h of accelerated weathering. Each assessment consisted of SEM analysis, impact and flexural testing, visual inspection and FTIR analysis. The experimental results indicated that EFB fillers accelerated photo-oxidative degradation of the UPVC matrix. Although filled composites exhibited greater discolouration than unfilled composites, their impact and flexural properties changed only slightly after accelerated weathering.

Key Words:

accelerated ultraviolet weathering; poly (vinyl chloride); oil palm empty fruit bunch filler; composite; Fourier transform infrared spectroscopy.

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