MALAYSIA NATURAL FIBRES FOR DIVERSED BIO-BASED APPLICATION

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Lightweight Kenaf Fibre Composite for Automotive Component

Hazleen Anuar

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Summary

Natural fibres for instance kenaf fibre (KF) can be used as reinforcements in composites in competition with other synthetic fibres These fibres have excellent specific properties and have potential to be outstanding reinforcing fillers in polymers The only drawback of natural fibres is the poor adhesion between the fibre and the polymer This is due to dissimilar chemical nature, where natural fibre is hydrophilic in nature while polymer is generally hydrophobic In order to develop composites with better mechanical properties, it is necessary to introduce hydrophilicity to the polymer by suitable surface modifications for example by introducing maleic anhydride-grafted-polypropylene (MAPP) in the composite

Introduction

The emergence of thermoplastic elastomers (TPEs) is one of the most important developments in the area of polymer science and technology TPEs are a new class of materials that combine the properties of vulcanised rubbers with ease of process ability of thermoplastics (Abdullah and Dahlan 1998) Thermoplastic elastomer can be prepared via blending of thermoplastic and elastomer at high shear rate Thermoplastic for example polypropylene (PP), polyethylene (PE) and polystyrene (PS), while elastomer such as ethylene-propylene-diene-monomer (EPDM), natural rubber (NR), butyl rubber (BR) are among the materials used in thermoplastic elastomer blends

Reinforcement materials are added to improve the mechanical properties and to reduce cost of the polymers As a minor change in the processing parameters can influence the properties of polymers, they can be tailored according to the application by controlling the processing parameters (Folkes 1982) This flexibility makes plastics as the engineering materials for the future.

One of the factors that governed the performance of the reinforced composite is the type of fibre incorporated into thermoplastic matrix Czigany (2006) investigated on hybrid effect of basalt, glass, carbon and hemp fibres reinforced PP as a function of fibre content and