MALAYSIA NATURAL FIBRES FOR DIVERSED BIO-BASED APPLICATION

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Polylactic Acid Bio-Composite For Food Packaging

Mohammad Rejaul Kaiser and Hazleen Anuar

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Summary

Kenaf fibre reinforced PLA can lead to considerable improvements in mechanical properties, specifically the strength, stiffness and toughness These properties are increased with fibre content, while the impact properties that are already low for PLA are further reduced. The problem can be overcome by using trace amount of plasticizer with sacrificing a small amount of strength and stiffness The same goes to strength and stiffness of PLA-KF-clay bio-composite where it increased with clay content, toughness however remains almost steadily with clay

Introduction

Petroleum-based polymer composites have limitations due to hazardous environmental effect and continual depletion of natural resources compared to renewable bio-composites. By using eco-friendly renewable sources it is possible to overcome these problems and can widen the application of natural fibre composites An alternative composite material which is a mixture of bio-fibre and bio-polymer matrix is known as bio-composite has become a state of the art in composite research and development arena Recently, research work has been started with different combinations of natural fibre and bio-polymer for the application of secondary structure in automotive industry, packaging, aerospace, sports and others. The availability of natural or bio-fibre (such as kenaf fibre) in Malaysia makes the bio-composite competitively lower cost and feasible to be produced industrially for a wide range of applications especially in the food packaging industry

Primary, secondary and tertiary packaging is the main three categories that used in food industry For different food products conventional packaging does not provide optimal conditions for product storages (Petersen and Neilsen, 1999) and for this a number of approaches are used to design packages for specific products Such product-specific packaging includes applying edible films and coatings, active packaging, modified atmosphere packaging (MAP) and using combination of packaging materials

Primary, secondary and tertiary packaging

Those materials which are directly contact with food are primary packaging materials Their