UNIVERSITI TEKNOLOGI MARA

BANANA TRUNK / POLYVINYL ALCOHOL COMPOSITE: THE EFFECT OF FILLER LOADING AND GULT PALMITATE SALT AS COUPLING AGENT

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AUTHOR'S DECLARATION

This Final Year Project entitled "**Banana Trunk / Polyvinyl Alcohol Composite: The Effect of Filler Loading and Glut Palmitate Salt as Coupling Agent**" was submitted by Muhammad Syafiq bin Mohd Suhkri, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Polymer Technology, in the faculty of Applied Sciences and was approved by

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ABSTRACT

A Poly (vinyl alcohol) filled with banana trunk fibre (PVA/BT) film was prepared by solution casting technique. The glut Palmitate Salt (GP) as a coupling agent was added in the PVA/BT. The prepared films were studied for mechanical properties of tensile strength, Young's Modulus and percentage of elongation at break. Then, the thermal behavior of the film was also studied and determined by using Differential Scanning Calorimetry (DSC). The result of melting temperature (Tm) and glass transition temperature (Tg) are recorded. The characteristic of PVA, BT, PVA/BT/GP was conducted by using Fourier Transform Infrared (FTIR) Spectroscopy Analysis. In addition, the prepared film was studied for physical properties by using density and water absorption test. The comparison between PVA/BT and PVA/BT/GP were made and it was found that the addition of GP has improved the tensile strength and Young's Modulus due to GP improved the adhesion and interfacial bonding between matrix and fibers. For DSC analysis, the Tm was decreased by addition of BT due to the uneven intermolecular bonding between matrix and fibre. The study on percentage water absorption of the PVA/BT and PVA/BT/GP which by addition of GP was decreased the percentage due to the good adhesion between filler and matrix. The result showed that the increased in density value as the fibre loading increase. This is due to the increased in weight of banana trunk fibre in the film.