

EDITORS

ERRY YULIAN TRIBLAS ADESTA

MOHAMMAD YEAKUB ALI

AKM NURUL AMIN

DESIGN FOR MANUFACTURE

Towards Improved Manufacturability



IIUM Press

DESIGN FOR MANUFACTURE

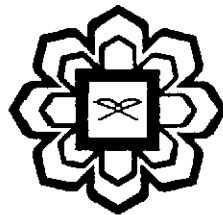
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Pultrusion of Pineapple Leaf Fibre (PALF)-reinforced Vinyl Ester Composites: Water Absorption Property

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1. Introduction

For a few decades there has been a lot of interest on natural fiber-reinforced composites. Numerous natural fibers have been studied as composite reinforcement due to their abundant availability all over the globe. Researchers have been much attracted to the characteristic of renewability, biodegradability and ability for carbon dioxide sequestration [1].

Among the natural fibers studied, pineapple leaf fibers (PALF) show promising potential due to their physical and mechanical properties [2]. Malaysia has been one of the top producers of pineapple fruits and food products based on pineapple [3]. The plantation area and industry importance have been increasing. However, there has been little use of excellent fibers extractable from the abundant pineapple leaves generated by the plantations [4]. One possible use of PALF is as composite reinforcement to make natural fiber-reinforced composites (NFRC). PALF have been studied as reinforcement in polyester [5] and epoxy-based composites [6]. There has been few studies if any on using PALF to reinforce vinyl ester resin (VER).

In majority of the studies on natural fiber-reinforced composites, hand lay-up method was used to fabricate the composites. Arib *et al.* [7] suggested that other composite processes were used to produce NFRCs. Simple pultrusion using glass tubes was used by Ray *et al.* [8] to produce jute-reinforced polyester composites. This technique is thought to be an effective and as well as inexpensive method to produce composite specimens while varying a number important variables in the study. Additionally, not many previous works were found to utilize factorial experimentation to study important parameters leading to good quality NFRCs.