

Potential of Borneo *Acacia* wood in fully biodegradable bio-composites' commercial production and application

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Abstract This review paper explores the potential of commercial production and application of *Acacia* wood—polylactic acid (PLA), and *Acacia* wood—polyhydroxyalkanoates (PHA) bio-composites. The factors affecting the mechanical and physical properties of these materials were identified and deliberated. It was found that *Acacia* wood has the prospective to be efficiently produced and used in Borneo. It can be used in a variety of applications, including but not limited to: fire breaker, timber resource, furniture production, soil re-conditioning, and as reinforced materials. Since, today, there is heightened awareness regarding sustainability, manufacturers are driven towards producing completely biodegradable products that are created using PLA and PHA bio-composites. This review provides an overview on the performance of the existing composites and bio-composites, and their implementation and utilization, while focusing on the Borneo region.

Introduction

Acacia mangium and *Acacia auriculiformis* are the *Mimosoideae* sub-family species of leguminous tree. *Acacia mangium* is also considered as *Fabaceae*, pea flowering tree family species. Back in 1967, the species of *Acacia* was introduced as a firebreak

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