

## Study on Mechanical Properties of Alkali Treated Plain Woven Banana Fabric Reinforced Biodegradable Composites

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### Abstract

Raising environmental concerns and pollution level has prompted for the need for biodegradable materials which have least negative effect on nature. Keeping such issues in mind, the present research work is focused on the development of banana fabric reinforced polyvinyl alcohol composites. The plain woven banana fabric is subjected to alkali treatment with different % of NaOH and its effect on mechanical properties like tensile, impact and flexural are studied and compared with that of untreated one. The mechanical and flexural tests were conducted as according to ASTM D638 and D790 standards. In addition to this dynamic mechanical analysis was carried out in the temperature range of 30°C-140°C and 10Hz frequency to study visco-elastic behaviour. The fracture analysis after tensile testing was conducted using scanning electron microscopy. Overall the mechanical properties and dynamic mechanical behavior of alkali treated composites were better than that of untreated composite.

**Keywords:** Natural fibers, Chemical treatment, Polymer matrix composites, Tensile properties, Fracture behaviour.

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