










## Experimental investigation of tensile properties in banana fibre composites

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### Abstract

This paper proposed the methodology for investigating the tensile properties of banana fibre. For the high **tensile strength**, and good heat resistance capacity the banana fibre is preferred in garments and making yarn. The epoxy resin and extracted banana fibre were selected as the matrix and reinforced materials. The composites were produced with the various ratios of epoxy and banana fibre. The present work spotlighted the study of mechanical properties of banana fibre/epoxy resin composite at 30%, 40% and 50% volume fractions of banana fibre and different fibre directions 00, 450 & 900. The mechanical property like tensile strength is experimentally evaluated. The results indicate the high tensile strength was achieved due to the proper ratio selection of banana fibre and epoxy resin.

### Introduction

The world's attention is now focused on environmentally friendly and recyclable resources. Due to growing environmental concerns, a bio-composite made of standard fibre and polymeric resin is one of the most recent breakthroughs in the industry and establishes the current scope of experimental activity. In engineering applications, the use of composite materials is gradually growing. The matrix and fibre are the two primary segments of the composite. The availability of high-quality fibre and ease of assembly has prompted inventors worldwide to test regionally accessible low-cost yarn and determine their ability to protect grit and how much they can perform the thankful facts of greatly reinforced polymer composites intended for structural use. Fibre-reinforced polymer compounds have everyday preferences, requiring less effort to create, being easier to create, and having a higher quality disparity than perfect polymer. Composite materials are primarily developed in response to technological needs. Natural fibres have recently piqued the interest of scientists and technologists due to the advantages they offer over traditional reinforcement materials, and the creation of bio fibre composites has been a hot topic in recent years. The advantage of composite materials over traditional materials seem largely from their superior specific strength, stiffness and fatigue characteristics. By definition, composite consists of two or more ingredients in discrete stages. Composites have strong weight carrying material (known as reinforcement) surrounded by fragile substances (known as matrix). Reinforcement gives strength and stiffness to composite [1], [2]. The matrix upholds the position and direction of the fibre. Significantly, components of the composites keep their individual, physical and chemical properties [3], [4]. The strengthening of composite is due to layers, particles or fibres, which improve mechanical properties such as rigidity, strength and durability of the material. Long fibres are found suitable for good loading [5], [6]. Aluminium is an easily available material and is also used to produce more automobile components [7], [8]. Alumina, Titanium and Zr ceramic particles are used as reinforcement materials by more researchers, for their good strength and corrosion resistance [9], [10].

### Section snippets

Manufacturing of banana fibre composite material



  
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