

ABSTRACT

Composite materials assume an imperative part in different sorts of uses utilized as a part of human everyday life. Particularly fiber strengthened polymer composites have been assuming a noteworthy overwhelming part due its high quality, modulus advertisement other dynamic practices. One of the inexhaustible sources and a new age of fortifications is normal fiber. The improvement of normal fiber composite materials or naturally neighborly composites has been a hotly debated issue as of late because of the expanding ecological mindfulness. Regular strands are one such capable material which replaces the manufactured materials and its related items for the less weight and vitality preservation applications. Natural fibers are provided by animals, geological process, and plants. Natural fibers are used as components in the composites. The properties of the composite materials are determined by the orientation of the fiber impacts. In the earlier human lives, wool, dyed flax, and plants are used for reinforcements due to low density, reduced skin irritation, and improved thermal insulation.

Natural fiber composites are getting more attention and importance over synthetic fibers in terms of their various advantages and applications. It is well known that electrical applications of natural fibers depend on the electrical conductivity of the composites. The electrical conductivity and mechanical properties of the natural fiber composites vary because of moisture absorption of the natural fiber based plastic composites. It is a major application of the natural fiber composite outdoor applications.

Natural fibers have more advantages like nonabrasive, less density, less cost, non-toxic and readily available in nature. Nowadays huge number of works is focused on manufacturing natural fibers as reinforcement for preparing various kinds of composites. Because of incompatibility among fibers and polymer, it is motivated to investigate the quality of composites by various

behaviors like electrical and mechanical of natural reinforced composites especially Akund fibers. The untreated matrix-material based composite exhibits high tensile strength, high flexural strength, and high impact strength. The mechanical and electrical properties of composites with treated fibers were compared from treated with untreated fiber composites. The quality of the composites depends on the ratio of the materials integration. From the above discussion, this research work is motivated to propose an experimental investigation on natural fiber reinforcement based composite fabrication and electrical and mechanical behaviors are analyzed. In this research work, it is motivated to choose best composite materials according to the composite behavior and the quality of the composite is investigated after chemical treatment.

The main objective of this research work is to investigate the electrical and mechanical behaviour of the Akund fibers during reinforcement. The entire research work is divided into two phases such as experimenting an investigating the electrical behaviour of the akund fibers and investigating the mechanical behaviour of the various natural fibers for selecting the best one for using in manufacturing natural composites. Both the stages are experimented and the results are verified. From the experimental result obtained in first phase, it is concluded that when the amount of reinforcement material increases then the electrical properties increases. Hence the percentage of reinforcement material can be decided based on the required electrical property. From the second phase, there are three different conclusions are made like the reinforced composites are costless and effective based on various behaviours, second the hybrid composites exhibited higher values of dielectric properties compared with jute/bamboo reinforced polypropylene hybrid composites and finally, the mechanical behavior of the natural fiber is good and effective for fabrication.