VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Project Report

On

"MECHANICAL PROPERTIES OF NATURAL FIBRE REINFORCED POLYMER HYBRID-BIO-COMPOSITES"

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ABSTRACT

There is a growing interest in the use of natural fibers as reinforcing components for both thermoplastic and thermo set matrices, because of the ideal benefits offered by natural fibers such as convenient renewability, biodegradability and environmentally friendliness. Bio-composites which have natural fibers as reinforcements have increasingly attracted attention because they may be a promising material not only as a novel material for natural resource, eco-friendliness, sustainability, lightness, carbon dioxide reduction in nature and cost-effectiveness, but also as an alternative to conventional glass fiber polymer composites in many industrial and commodity applications.

The natural fibers have the potential to be used as a replacement for glass or other traditional reinforcement materials in composites. These fibers are abundant, cheap and renewable. Natural fiber reinforced composites have attracted the attention of research community mainly because they are turning out to be an alternate solution to the ever depleting petroleum sources.

Conventional and traditional fiber reinforced composite materials are composed of carbon fibers, glass fibers which are incorporated into Polymers, these composite materials have excellent mechanical properties but these materials cause environmental pollution due to the non-degradability of fibers. The uses of natural fibers as reinforcement has grown substantially in the past decade as they have low density and high specific strength, and are of utmost interest in applications striving for lightweight and high strength. In the past decade, natural fiber composites with thermoplastic and thermo set matrices have been used by European car manufacturers and suppliers for door panels, seat backs, headliners, package trays, dashboards, and interior parts of automotive.

Hybrid composites usually refer to more than one type of filler and /or more than one type of matrix. They are commonly used for improving the properties and or reducing the cost of conventional composites. The purpose of hybridization is to construct a new material that will retain the advantages of its constituents.

The aim of the present work is to prepare hybrid composites with different types of natural fibers such as Sisal, Coconut, Aracanut, Ridge gourd and Tamarind are reinforced in the Thermo set Matrix and evaluating the Mechanical Properties.