

# Review on Investigation of Mechanical Properties of Reinforced Plastic Composite using Glass Wool & Fly Ash

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**Abstract**— Composite materials are having great potential for engineering application. For new product development it is very much important to select suitable material high strength and low density which could possible only in composite materials. Natural fiber composite materials play an important role in engineering applications because of their recyclability, light weight, low density and corrosion resistance. This paper discuss on review of different composite materials. In this work, includes preparing a matrix of glass wool, fly ash with epoxy resin.

**Key words:** Investigation of Mechanical Properties of Reinforced Plastic Composite, Glass Wool, Fly Ash

## I. INTRODUCTION

A composite material is also called as composition material. It is material which is made up of two or more constituent materials with their different physical or chemical properties. When these materials combined, they produce a material with characteristics different from the individual components.

Composite materials are distributed in two phases: the matrix and other is reinforcing phase. Epoxy resins are mostly used as matrix in many fiber reinforced composites. It is a class of thermo set materials. They provide a unique balance of chemical and mechanical properties combined with wide processing versatility.

Within reinforcing materials, glass fibers are the most frequently used in structural constructions because of their specific strength properties. The mechanical behavior of glass fiber is depend on the fiber strength and modulus, the chemical stability, matrix strength and the interface bonding between the fiber or matrix to enable stress transfer. It has higher stiffness than aluminum and the specific gravity war one quarter of steel.

The reinforcing material with epoxy resin is fly ash. Ash residues are waste of coal fired plants and the produced at the boiler outlets of plants. It is an light weight material. In fiber epoxy composites, the addition of fly ash led to a reduction of the density and increase in modulus of composites. Fly ash is thermosetting resins.

Fly ash is used as a filler material. It is a combustion byproduct and it accumulates due to electrostatic precipitation of the flue gases in thermal power plant. The constituents of fly ash particles are obtained from coal in Britain are Silica (59.5%), Alumina (20.3%), FeO/Fe<sub>2</sub>O<sub>3</sub> (6.5%), remaining being FeO, MgO and unburnt coal etc.

To reducing material costs, to improving mechanical properties, to some extent and in some cases to improving process ability by using filler material.

## II. LITERATURE REVIEW

Reshmi Basak et al. concluded that bleaching treatment with hydrogen peroxide improves physical appearance of natural

fibers. They are also concluded that bleaching action does not significantly enhance the mechanical properties of jute fibers.

D. Senthilnathan et al. investigated that coconut coir reinforced plastics having maximum tensile load capacity and human hair, coconut coir hybrid composite shows considerable impact strength values comparing to other composites.

TD Jagannatha et al. concluded that the inclusion of carbon fiber reinforced polymeric composites significantly enhanced the ultimate tensile strength and peak load of the composites. The ductility of carbon fiber reinforced composite is higher than the other composites.

Dr. B. Stalin et al research on composite and modified polyester resin and human hair fiber. Hair is plastic and it is capable of regaining its original position on the removal of the deformation load. They compared the experimental value with FEA based ANSYS workbench. They are found that maximum tensile strength of the composite material is obtained at 20% of fiber content.

The maximum value obtained from the experimental values are compared with static structural analysis by using FEA based ANSYS workbench.

Elanchezhian et al. reported that hair may be included in the composites to reduce the overall cost of the silk. They were used silk fibers for biomedical application and the result proved that it has the capacity to be used as reinforcement material. They were compared the cost aspect of the material as hair fibers are very much cheaper than the silk fiber and it has properties very similar to that silk. Hence hair may be included to reduce the cost of the material.

Rahul Kumar et al. concluded that successful fabrication of sundi wood reinforced epoxy composites is possible and that sundi wood dust possess good filler characteristics as it improves the tensile and flexural properties of the polymeric resin.

## III. METHODOLOGY

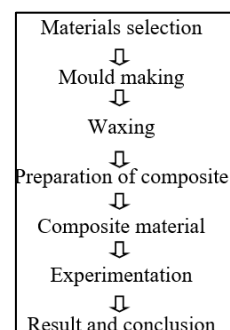


Fig. 1: Methodology

## IV. OBJECTIVES

The main objectives behind this work are to check the properties of composite materials. Following are major objectives of present work.

- 1) Preparation of specimen reinforced plastic composite using glass wool, fly ash.
- 2) Investigating properties of specimen.

#### V. CONCLUSION

While working on this area, it is observed that there are lot of thing that can be done over composite material. As it has wide scope in new product development. The work in composite material quite interesting as these materials has great recyclability, light weight, low density with high strength and because of these advantages it is widely used in industry.

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