

## Manufacturing of Composite Material

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**Abstract :** *Now-a-days, the natural fibers from renewable natural resources offer the potential to act as a reinforcing material for polymer composites alternative to the use of glass, carbon and other man-made fibers. Among various fibers, jute is most widely used natural fiber due to its advantages like easy availability, low density, low production cost and satisfactory mechanical properties. A hybrid composite is a combination of two or more different types of fiber in which one type of fiber balance the deficiency of another fiber. As fiber reinforced laminated composite materials offer high specific strength and stiffness, they are greatly used in aircraft and wind turbine industries. The mechanical and thermal properties of the laminated composites vary based on the orientation of fibers and hence, they are treated as anisotropic materials. The mechanical and thermal properties of the anisotropic laminated composites can further be improved by optimizing the material system. The laminated composites are usually made into thin plates and shells, as they are subjected to in-plane compressive loads. After next 5yrs these composites will create harmful effect on earth's environment, due to its non-disposable quality. So, to overcome this future problem we have to reduce the use of this composite. for this purpose, we have to use natural fiber with synthetic fiber for industrial purpose. We introduced double sandwich pattern for high strength automobile and industry application*

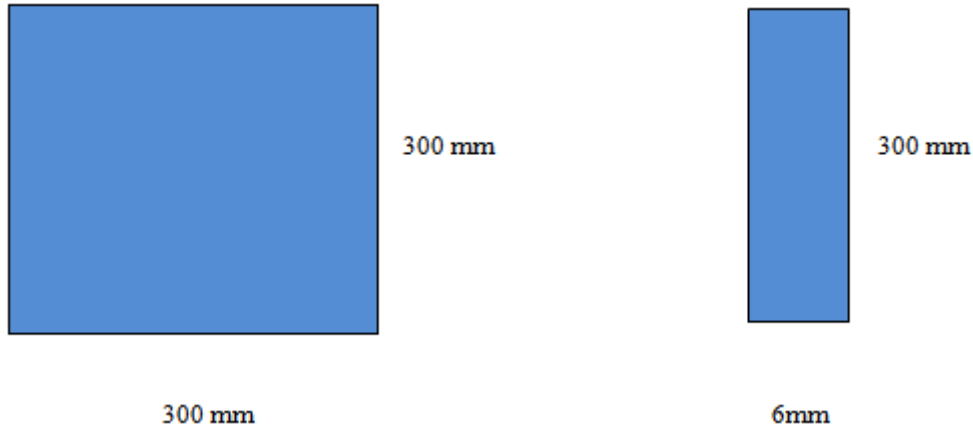
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### I. Introduction

Composite is nothing but mixture of two more component/material. Composite divided into two types Fiber and Reinforcement There are two type of composite fiber Natural Composite fiber and Synthetic Composite fiber Among all reinforcing fibers, natural fibers have gained great significance as reinforcements in polymer matrix composites. The main advantages of natural fibers are their availability, biodegradable, renewable, environmental friendly, low cost, low density, high specific properties, good thermal properties and enhanced the energy recovery, low energy consumption, on-abrasive nature and low cost. When two or more materials with different properties are combined together, they form a composite material. Composite material comprises of strong load carrying material known as reinforcement. imbedded with weaker materials known as matrix. The primary functions of the matrix are to transfer stresses between the reinforcing fibers and to protect them from mechanical and environmental damage whereas the presence of fibers in a composite improves its mechanical properties like tensile strength, flexural strength, impact strength, stiffness etc. And with synthetic fiber its improve the strength and toughness of material. Synthetic Composite are non-disposable, and Nonrenewable. After next 5yrs these composites will create harmful effect on earths environment, due to its non-disposable quality. So, to overcome this future problem we have to reduce the use of this composite. for this purpose, we have to use natural fiber with synthetic fiber for industrial purpose. We will make a hybrid material with sandwich pattern. We use jute and glass fiber for hybrid composite material as these materials has varied use in industries and easy availability And we study on their structural combination i.e. the sandwich structure. Natural fibers can be subdivided into vegetable, animal, and mineral fibers. Mineral fibers are no longer or only in very small amounts applied in new technical developments because of their carcinogenic effect. Fibers of animal origin consist of proteins (e.g. hair, silk, wool etc). Natural fibers of vegetable origin are constituted of cellulose (a natural polymeric substance made from glucose molecules), lignin and associated with varying amounts of other natural materials. Vegetable fibers (also known as cellulose or bast or plant fibers) are conveniently classified according to the part of the plant where they occur and from which they are extracted (Encyclopedia of composite materials and components, 1983). Bast fibers are extracted from bast tissue or bark of the plant stem. They include flax, jute, hemp, ramie, kenaf, etc. Leaf fibers are extracted from leaves of the plants. They include sisal, pineapple, banana etc, and Seed or fruit fibers are extracted from seed or fruits. They include coir, cotton, oil palm etc. Bast fibers represent the vast majority of natural fibers with potential for composites usage

## II. Methodology

First, we have to fix the plastic seal then we have to apply the hi-temp mould release wax after that prepare two pieces of jute fiber then prepare four pieces of glass fiber frame the fiber with double tape for sealing. And prepare the epoxy the we have to stir the epoxy steadily and apply the first layer of epoxy after that using heater dry and remove the bubble and then gently put the glass fiber on it then apply layer of epoxy and then again use the heater to dry the reduced the bubble the process is repeated for further layer apply the wax on another plastic seal put it on first layer on epoxy place the glass on top of composite place the some weight on top to compressed it waiting for next 24 hrs the material is ready



Manufacturing method of composite material

### Step 1 : Making of mould



### Step 2: Apply the layers of Jute fiber and glass fiber



### Step3. Keep for curing of material



### Step4. Remove the composite from Mo



## III. Conclusion

Hence, In this way we manufacture the jute fiber and glass fiber composite by hand layup method

## Refrances

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