

Chemical Treatment And Experimental Setup For Preparation Of Natural Fiber Specimens

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ABSTRACT

In consideration of sustainable development, there has been growing awareness in the use of plant products as a substitute for components used in dash boards for automobiles. This chapter considers the manufacturing method that may allow the conversion of PALF (Pineapple Leaf Fiber) and avian fiber into useful products. The key constraints are the hydrophilic nature of the fibres and the temperature sensitivity of the fibres that limits the time at temperature during dispensation. A moisture elimination stage is considered an necessary element of the manufacturing cycle. The processes that are most normally used for engineered composites are compression mould for both thermoplastics, thermosets and resin transmit moulding or resin combination for thermosets.

INTRODUCTION

World wide consumption of chicken has generated billions of feather dissipate repeatedly. Feathers are keratin as like wool but the fibre surface area is much generously proportioned because the diameter of the fibre is much smaller. The sparkler arrangement of chicken feather fibres also makes them obviously stable and resilient. The seek of this research is to utilize the unobserved chicken feather fibre to develop compression mould compound for acoustic purpose and also to examine the effect of addition of pineapple leaf fibre with chicken feather fibre on mechanical properties by producing hybrid composite. Natural fibres are often used as strengthening for thermoplastic bio-composite products.

These products exhibit abundant advantages such as good mechanical property low compactness and biodegradability. Natural fibres are habitually toughened with thermoplastic resin using injection mould technology and partial research has been done on compression mould thermoplastic composite. So compression mould method has been chosen to prepare the composite board.

RAW MATERIAL

PALF (Pineapple Leaf Fiber) and Avian fiber that is CFF (Chicken Feather Fiber) has been collected from the near by area and the feathers has been collected from the poultry farm.

EXPERIMENTAL SETUP

There are two types of setup has been available one is the compression moulding and the another one is hand lay-up method. While comparing both the setup compression moulding will involve more cost than hand lay-up method.

Mostly compression moulding has been used widely because due to high pressure acting on it the void content will be neglected, while the air gaps has also been reduced gradually.

On the other hand, another setup i.e hand lay-up method has also been used. But in this method the presence of void content in the specimen will be greater than the compression moulded specimens.

While comparing the cost experimental setup for compression moulding will be higher than the hand lay-up method. Both the setup has been used for many times as possible it will not wear out.



Fig 1:Compression Moulding Machine



Fig 3: 10% NaOH Treated fiber



Fig 2:Hand Lay-up Method



Fig 3: 15% NaOH Treated fiber

CHEMICAL TREATMENT

Fibers has been treated with chemicals to remove the unwanted particles present in it.According to the fibers chemical treatment has also been varied.

Here the chossen fibers are PALF and AVIAN fiber.For the PALF(Pineapple Leaf Fiber) Sodium chloride 10% has been used by using this lignin,wax and hemicellulose content has been removed.

For CFF(Chicken Feather Fiber) the surface is more silky to neglect this phosphoric acid 1% has been used to change the smoother surface into a harder one.This has been done to improve the bonding strength between the two fibers.Alkaline treatment has also been widely used.

PREPARED SPECIMEN

Specimen has been prepared by the ratio of 2-8% of CFF i.e the Chicken Feather Fiber with the combination of PALF (Pineapple Leaf Fiber).



Fig 4:Prepared Specimen

RESULT AND DISCUSSION

The specimen which has been manufactured using the 10% of chemically treated pineapple leaf fibers gives more strength than the normal fiber. In addition to this avian fiber has also been added in some percentage so it will result in that the bonding strength has been greatly increased.

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