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Effect of Different length fiber on composite Epoxy resin and bamboo

[1]Kapileshwar Nerkar [2]Arif Mansuri [3]A.I.Ambesange [4]Manisha D patil

Kapileshwar Nerkar[1] P.G student Sandip University Nashik

Arif Mansuri[2] A.I.Ambesange[3] assistant professor Sandip University Nashik

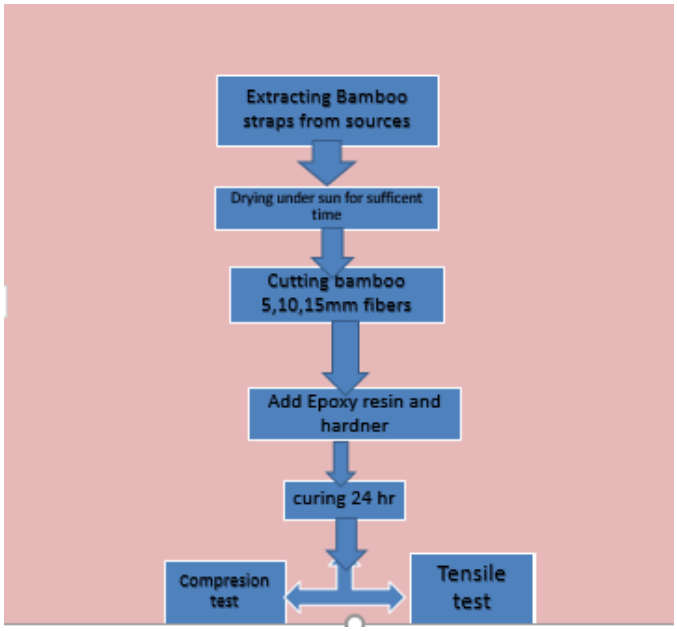
Manisha D patil[4] Assistant Professor HPT/RYK College Nashik

Abstract- This paper discusses with different length fiber of bamboo (5,10,15mm) with epoxy resin. The combination of 15%,30% and 45% with weight ration of epoxy resin and bamboo should be taken mould will be created by combination of wood and metal for fix size . Composite show different result should be check on universal testing machine and compression-testing machine.it is observed that some properties increase and for some fiber length and weight ration effect of length show the maximum variation for the performance of weight. This composite is very useful for boat, cycle and aero industry

Keywords:- Epoxy resin, hardener, tensile test, compression test

I. Introduction:- Due to continues development of world we need composite material is combination of two or more material with different chemical and physical properties with different densities when the combines the new material show some good properties material the good examples of reinforced concreate and masonry. Classification of composite of different two level the first classification based on binder(matrix) combination .the main composite organic matrix composite, metal matrix composite and ceramic matrix composite. Composite material are generally used for buildings, bridges and racing car. First composite best rust obtain during concreate mixture the reinforcement receives support from the matrix as the matrix surround the reinforcement and amanitas relative position. In India various natural material available such as bamboo, jute, banana etc. this natural fiber useful to create high strength material by making composite. The steps to economic development composted very helpful for development of world for proper investigation to get good strength material the main combination should be obtain by proper combination of wood and epoxy resin

II Methodology:- first step is extraction of bamboo straps from source the cutting of bamboo should be 5mm,10mm and 15mm this size should be maintain for taking the ring of bamboo of 5mm,10mm and 15mm then drying under sun light such way that the water percentage should minimum so that maximum combination obtain then add the epoxy resin with proper percentage of harder this helpful for proper combination of mixture of hardener then this mixture add on mould this mould size should be fix then curing it in 24hr then take universal testing and compression test .the result should be plot on graph paper then we calculate the value of the result then we decide the best result



2.1 methodology

III Material use 1) Epoxy resin
2) Hardener
3) Bamboo fiber

3.1 Epoxy resin: - Araldite AW106 IN this epoxy resin is use for this process. Epoxy resin also known as polyepoxides are class of reactive prepolymers and polymers, which contain epoxide groups. Epoxy resins may be reacted either with themselves through cataltstic homopolmerisatoin

3.1 Epoxy resin

3.2 **Hardener** :- Hardener HV 953 IN is use for the test the hardener is component of certain type of mixture is used simply to increase the resilience of the mixture once it sets. A hardener may be also be known as accelerator

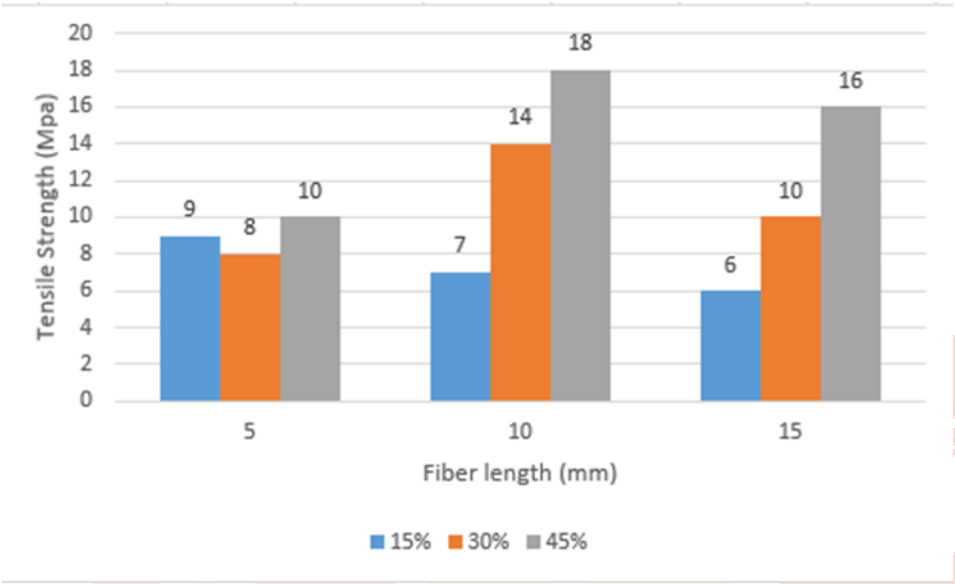
3.2 Hardner

3.3 Combination

Composites	Composition
A-1	Epoxy(85wt%)+Short bamboo fiber of length 5mm (15wt%)
A-2	Epoxy(70wt%)+Short bamboo fiber of length 5mm (30wt%)
A-3	Epoxy(55wt%)+Short bamboo fiber of length 5mm (45wt%)
A-4	Epoxy(85wt%)+Short bamboo fiber of length 10mm (15wt%)
A-5	Epoxy(70wt%)+Short bamboo fiber of length 10mm (30wt%)
A-6	Epoxy(55wt%)+Short bamboo fiber of length 10mm (45wt%)
A-7	Epoxy(85wt%)+Short bamboo fiber of length 15mm (15wt%)
A-8	Epoxy(70wt%)+Short bamboo fiber of length 15mm (30wt%)
A-9	Epoxy(55wt%)+Short bamboo fiber of length 15mm (45wt%)

IV Testing

Tensile test:- tensile test carried out on universal test machine test performed that a material is gripped at both ends by an apparatus which slowly pulls lengthwise

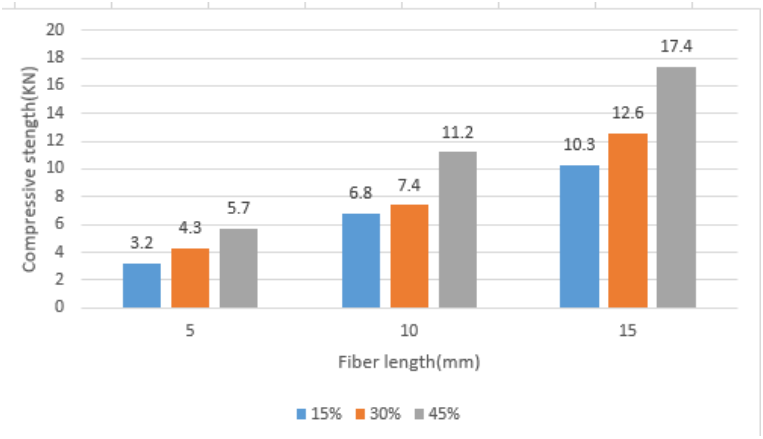


4.1 Tensile Test

Tensile strength in this case varies with varying composition and it is found that the strength goes on increasing with increasing percentage of fiber in the composite for each length of fiber. The tensile properties measured in the present work are well compared with various earlier investigators , though the method of extraction of bamboo fiber is different. The tensile modulus indicates the relative stiffness of a material and can thus be obtained from stress strain diagram . Optimum value of tensile strength for the composite is found to be at 30% fiber loading for each length of fiber. The highest value for tensile strength is for 30% fiber loading for a fiber length of 10 mm.

4.2 Compression test :- compression tests are conducted by loading the test specimen between two plates and then applying a force to the specimens by moving the crossheads together. During the test the specimen is compressed and deformation verses the applied load is recorded

4.2 Compression Test



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V Conclusions

It was observed that composite of epoxy resin and bamboo can easily fabricated due to this tensile testing it is observed that when fiber length is 10mm and epoxy resin is 30% is good result obtain. Similarly during compression test it is observed that when fiber length is 15mm and epoxy resin is 45% is good result obtain.

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