

MECHANICAL BEHAVIOUR OF E-GLASS, EPOXY REINFORCED WITH FILLER MATERIALS (E- WASTE) COMPOSITE

ABSTRACT

Now-a-days, the natural fibres 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 fibres. Among various fibres, jute is most widely used natural fibre due to its advantages like easy availability, low density, low production cost and satisfactory mechanical properties. For a composite material, its mechanical behaviour depends on many factors such as fibre content, orientation, types, length etc. Attempts have been made in this research work to study the effect of fibre loading and percentage on the physical and mechanical behaviour of e-glass fibre reinforced epoxy based composites. A hybrid composite is a combination of two or more different types of fibre in which one type of fibre balance the deficiency of another fibre.

Composites of various compositions with three different filler material orientation as 0 , 5 ,10, 15, percentage are fabricated using simple hand lay-up technique. It has been observed that there is a significant effect of fibre loading and orientation on the performance of e-glass fibre reinforced epoxy based hybrid composites. The developed hybrid composites undergo different kinds of tests. The result shows hybrid composites having good strength and stiffness compared to natural hybrid composites.

Keywords: Renewable, Mechanical Properties, filler material ratios.

INTRODUCTION

Mankind has been aware composite materials since several hundred years before Christ and applied innovation to improve the quality of life. Although it is not clear how Man understood the fact that mud bricks made sturdier houses if lined with straw, he used them to make buildings that lasted. Ancient Pharaohs made their slaves use bricks with straw to enhance the structural integrity of their buildings, some of which testify to wisdom of the dead civilization even today. Contemporary composites results from research and innovation from past few decades have progressed from glass fibre for automobile bodies to particulate composites for aerospace and a range other applications.

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