



Variation of Tensile, Hardness, Impact and Natural Frequency in Jute/E-Glass Epoxy Composite For Varying Fiber Loading and Addition of Shear Thickening Fluid

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ABSTRACT

In the recent decade composite materials plays a significant role in the manufacturing sector of many industries contributing towards the social and economic development of a country. This is because of flexibility to combine different set of materials to bring out the desired properties in developed material. Many researchers performed experimental investigation on potential use of composite in various engineering application viz. structural components of automobile and aerospace application. In this regard current investigation is intended to tailor a hybrid fiber reinforced composite material constituting Jute, E – Glass and Epoxy matrix material. Traditional hand layup technique is adopted to cast the composite based on weight fraction. Thus casted composites are tested for Mechanical properties and vibration characteristics. Also the composites are tested for the effect of addition of Shear Thickening Fluid (STF). Scanning Electron Microscope (SEM) images were captured for the composites developed to validate the test results. Mechanical and dynamic test result indicates that addition of STF to composite improved the mechanical properties and vibration characteristics and has potential to be used in automobile application.

Keywords: Hybrid composites, Shear thickening fluid, Mechanical testing, Jute, E-glass, Epoxy

I. INTRODUCTION

Hybrid composite materials are those when two or more fibers combined together with the aid of a polymer resin [1]. The purpose for combining two or more fiber in composite is to develop the desired mechanical properties so as to be used in a specific application. In this regard many researchers performed research for the true worthiness of the developed composite. Also researcher tries many natural fibers as replacement for