VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELGAUM

A Project Report on

"Experimental Study on Mechanical Characterization of Glass Aramid Polymer Composite"

(Approved by KSCST, Bengaluru)

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Bachelor of Engineering

IN

Mechanical Engineering

By

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ABSTRACT

Rapid growth in the use of polymeric composites in aerospace industry has taken place in the past few years. State of the art military aircraft containing a significant amount of composite in their secondary and primary structures.

The increasing use of composite materials is mainly due to the achievement of substantial weight savings resulting from the composite superior strength to weight and stiffness to weight ratio, when compared with conventional aircraft materials such as aluminum alloys. Other advantages of using composite include a high resistance to damage by fatigue loading, an ability to tailor properties with fiber direction and immunity to corrosion.

Several commercial systems with modified polyester epoxy resins and fiber reinforcements are now available which shows significant improvements in composite properties. In the present work the hybrid polymer composite has been prepared by using Hand-lay up method. This method involves placing the glass and aramid fiber mats alternatively using polyester as the resin (Matrix) material. The study of mechanical characterization of the glass aramid fiber reinforced Polyester material has been carried out

The main objective of our work is to characterization of hybrid polymer composite by conducting different experiments like Tensile, Impact, Flexural bending,3 point Bending Test, 3 body abrasion and Thermal stability tests i.e., HDT and VICAT softening temperature tests.

The primary objective of above tests is to investigate if there exists any fundamental benefits in combining reinforcements that serve different functions such as better process ability, tensile, impact and flexural and wear properties, toughness, and thermal stability, and barrier performance in a composite.