

Mechanical Properties and Microstructural Analyzes of Epoxy Resins Reinforced with Satin Tissue

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Abstract : Although the volumes of fibre reinforced polymer composites (FRPs) used for aircraft applications is a relatively small percentage of total use, the materials often find their most sophisticated applications in this industry. In aerospace, the performance criteria placed upon materials can be far greater than in other areas – key aspects are light-weight, high-strength, high-stiffness, and good fatigue resistance. Composites were first used by the military before the technology was applied to commercial planes. Nowadays, composites are widely used, and this has been the result of a gradual direct substitution of metal components followed by the development of integrated composite designs as confidence in FRPs has increased. The airplane uses a range of components made from composites, including the fin and tailplane. In the last years, composite materials are increasingly used in automotive applications due to the improvement of material properties. In the aerospace and automotive sector, the fuel consumption is proportional to the weight of the body of the vehicle. A minimum of 20% of the cost can be saved if it used polymer composites in place of the metal structures and the operating and maintenance costs are also very low. Glass fiber-epoxy composites are widely used in the making of aircraft and automobile body parts and are not only limited to these fields but also used in ship building, structural applications in civil engineering, pipes for the transport of liquids, electrical insulators in reactors. This article was establish the high-performance of composite material, a type glass-epoxy used in automotive and aeronautic domains, concerning the tensile and flexural tests and SEM analyzes.

Keywords : glass-epoxy composite, traction and flexion tests, SEM analysis, acoustic emission (AE) signals

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