

Mechanical Tests and Analyzes of Behaviors of High-Performance of Polyester Resins Reinforced With Unifilo Fiberglass

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Abstract : In the last years, composite materials are increasingly used in automotive, aeronautic, aerospace, construction applications. Composite materials have been used in aerospace in applications such as engine blades, brackets, interiors, nacelles, propellers/rotors, single aisle wings, wide body wings. The fields of use of composite materials have multiplied with the improvement of material properties, such as stability and adaptation to the environment, mechanical tests, wear resistance, moisture resistance, etc. The composite materials are classified concerning type of matrix materials, as metallic, polymeric and ceramic based composites and are grouped according to the reinforcement type as fibre, obtaining particulate and laminate composites. Production of a better material is made more likely by combining two or more materials with complementary properties. The best combination of strength and ductility may be accomplished in solids that consist of fibres embedded in a host material. Polyester is a suitable component for composite materials, as it adheres so readily to the particles, sheets, or fibres of the other components. The important properties of the reinforcing fibres are their high strength and high modulus of elasticity. For applications, as in automotive or in aeronautical domain, in which a high strength-to-weight ratio is important, non-metallic fibres such as fiberglass have a distinct advantage because of their low density. In general, the glass fibres content varied between 9 to 33% wt. in the composites. In this article, high-performance types of composite materials glass-epoxy and glass-polyester used in automotive domain will be analyzed, performing tensile and flexural tests and SEM analyzes.

Keywords : glass-polyester composite, glass fibre, traction and flexion tests, SEM analyzes

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