



DYNAMIC MECHANICAL ANALYSIS OF EPOXY COMPOSITES REINFORCED WITH SHORT GLASS FIBERS

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Abstract: The aim of this work was to investigate the reinforcement efficiency of short glass fibers in the mechanical properties of epoxy matrix composites. The composites were manufactured manually using hand lay-up and casting techniques. Glass fibers (VF) of 4 mm length were used in contents of 0.05, 0.15 and 0.25% v/v. Dynamic-mechanical analysis (DMA), performed at 6 different frequencies (1, 2.5, 5, 10 and 20 Hz), showed that storage modulus values (E') increased with the amount of FV, achieving an increase of 45% in E' at 1 Hz. The loss factor ($\tan \delta$) decreased down to the lowest VF content and increased with 0.15% v/v and 0.25% v/v VF, with a 9% increase in $\tan \delta$ for the highest content of FV at 1Hz. As the frequency increased, both the storage modulus and the loss factor increased.

Keywords: epoxy, glass fibers, dynamic mechanical analysis, reinforcement efficiency