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DYNAMIC MECHANICAL ANALYSIS OF CURAUA/GLASS LAMINATE COMPOSITES

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In this study, the dynamic mechanical behavior of curaua/glass unsaturated polyester laminated composites was studied aiming to report the influence of different stacking sequences. The overall volume fraction used was 30 vol.%, the ratio between curaua (C) and glass (G) volume fraction was 50/50 and the analyses were carried out at 1 Hz. Different stacking sequences were studied, namely: $[C]_{4s}$, $[C_2, G_2]_s$, $[G_2, C_2]_s$, $[G, C]_{2s}$, $[C, G]_{2s}$ and $[G]_{4s}$. Storage modulus, loss modulus and tan delta curves were obtained. The highest storage modulus values were obtained for the pure glass composites, followed by $[G_2, C_2]_s$, being pure curaua the lowest, as expected. Higher dissipation energy was found for the $[G_2, C_2]_s$ composite, with four curaua layers grouped near the mid-plane. Regarding the tan delta curves, the largest peak height and peak width at half-height was found for $[G]_{4s}$. However, the curaua composites did not show the smallest height as could be expected. In addition, the glass transition temperature and the activation energy were higher for the pure glass composite, showing that more energy is required to begin cooperative segmental motion.