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EFFECT OF FREQUENCY VARIATION ON DMA ANALYSIS OF CURAUA/GLASS LAMINATES

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In this study, the response of curaua/glass laminated composites to frequency variation under dynamic mechanical analysis (DMA) was studied. The frequencies used were: 1, 3, 10 and 30 Hz. The overall volume fraction used was 30 vol.% and the ratio between curaua (C) and glass (G) volume fraction was 50/50. The unsaturated polyester composites were hot compression molded using the following stacking sequences: [C]_{4s}, [C₂, G₂]_s, [G₂, C₂]_s, [G, C]_{2s}, [C, G]_{2s} and [G]_{4s}. Distinct curves were obtained depending on the stacking sequence used. The storage modulus does not show an increase up higher frequencies for some composites studied. The tan delta curves shifted to higher temperatures for higher frequencies, but no particular trend could be noticed regarding peak height and peak width at half-height. In addition, the Arrhenius equation was used to calculate the activation energy of the laminated composites and, as expected, higher values were obtained for the composite containing only glass fibers. The hybrid laminates showed intermediate values in comparison with the pure glass and the pure curaua fiber composites.