THE EFFECT OF VOLUME FRACTION AND NaOH SOAKING ON THE MECHANICAL PROPERTIES OF BAMBOO AND SUGAR CANE FIBER HYBRID COMPOSITES WITH POLYESTER MATRIX

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ABSTRACT

Until now, composite development in Indonesia still uses synthetic fibers which cannot be renewed. Therefore, there must be developments in the use of renewable composite raw materials, such as using natural fibers. This research aims to determine the comparison of variations in volume fractions including (B13% and T27%), (B20% and T20%), (B27% and T13%) hybrid composites using bamboo fiber and sugarcane fiber without NaOH immersion and with 5% NaOH immersion. for 120 minutes on the mechanical properties to determine the tensile strength and impact strength of the hybrid composite specimen. The specimen making method used is hand lay-up. The results of the tensile testing of hybrid composite specimens show that the highest average tensile strength value is found in the volume fraction (B27% and T13%) of the fiber with 5% NaOH immersion for 120 minutes with a value of 85.35 N/mm^2, while the average value The lowest average tensile strength was found in the volume fraction (B20% and T20%) of fiber without NaOH immersion with a value of 57.08 N/mm^2. The results of impact testing of hybrid composite specimens show that the highest average value of impact strength is found in the volume fraction (B27% and T13%) of fibers without NaOH immersion with a value of 0.073 J/mm^2, while the lowest average value of impact strength is found in the fraction volume (B13% and T27%) of fiber without NaOH immersion with a value of 0.034 J/mm^2.

Keywords : *Hybrid composites, Bamboo Fiber, Sugarcane Fiber, Volume Fraction, NaOH, Tensile, Impact.*