

ANALISA PENGARUH SUSUNAN SERAT SAGU SEBAGAI BAHAN PENGUAT TERHADAP MATERIAL KOMPOSIT

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ABSTRACT

Composite materials are a combination of two or more materials with different properties to achieve improved mechanical characteristics. This study analyzes the effect of sago fiber arrangement variations on the tensile strength of polyvinyl acetate (PVAc)-based composite materials. The Taguchi method with an L27 orthogonal array was used to design treatment combinations: fiber arrangement (aligned, woven, random), number of layers (1, 2, and 3), and soaking time in 5% NaOH (1, 2, and 3 hours). Tensile tests were conducted following ASTM D3039 standards and analyzed using ANOVA and Signal-to-Noise (S/N) Ratio. The highest tensile strength of 12.13 MPa was achieved with aligned fiber, 3 layers, and 2 hours of soaking, while the lowest strength of 9.07 MPa occurred with random fiber, 1 layer, and 2 hours of soaking. Fiber arrangement had the most significant influence on tensile strength, followed by the number of layers, and lastly soaking time. Sago fiber has proven to be a promising reinforcement material for lightweight and environmentally friendly composites.

Keywords: *composite material, sago fiber, fiber arrangement, tensile test, Taguchi method, PVAc.*

