

***FLEXURAL STRENGTH TESTING OF LAMINATION BEAM USING SAGO
WOOD BARK WASTE AS BEAM WITH THE ADDITION OF DOWELS
USING NAILS***

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ABSTRACT

This study aims to evaluate the physical and mechanical properties of laminated beams made from sago bark waste reinforced with nail dowels. Three variations were applied: without dowels, dowels at 10 cm spacing, and dowels at 15 cm spacing using Efloor Crosslink adhesive. Physically, sago bark ranges from light to dark brown, with coarse fibrous texture; the outer part is harder while the inner part is softer, giving it distinctive characteristics and potential as an alternative material. The test results showed an average moisture content of 12.25% in accordance with SNI standards, a specific gravity of 0.32 (Class IV), and a density of 0.31 g/cm³ (Class IV). The average shear strength was 2.27 MPa (moderate category), compressive strength 4.18 MPa (Class IV), and tensile strength 108.89 MPa, indicating good tensile resistance. Meanwhile, the Modulus of Rupture (MoR) ranged from 23.04 to 36.18 MPa and the Modulus of Elasticity (MoE) from 6.08 to 7.83 MPa, classifying the material into Class V (low strength). Therefore, sago bark waste has potential to be utilized as an alternative non-structural construction material with proper processing.

Keywords: Efloor Crosslink adhesive, Laminated beam, Modulus of Rupture, Modulus of Elasticity.