

THE EFFECT OF COMPRESSION STRENGTH ON WOODEN BEAM LAMINATION FROM SAGO PEEL WASTE

Name : Muhammad Febriansyah
Student ID : 4103221451
Supervisor : Juli Ardita Pribadi R, ST., M.Eng

ABSTRACT

The scarcity of high-quality wood due to deforestation has encouraged the utilization of waste materials as alternative construction resources. One such underutilized waste is sago bark. This study aims to determine the effect of pressing pressure on the physical and mechanical properties of laminated beams made from sago bark waste, as well as to analyze the resulting values of Modulus of Rupture (MoR) and Modulus of Elasticity (MoE) under different pressing pressures. The variations of pressing pressure used were 0.4 MPa, 0.6 MPa, and 0.8 MPa, with Polyvinyl Acetate (PVAc) as the adhesive. Tests were conducted on moisture content, specific gravity, density, tensile strength, shear strength, compressive strength, and flexural strength according to SNI standards. The results showed that the physical properties of the laminated wood, including an average moisture content of 13.89%, a basic specific gravity of 1.61 gr/cm³, and a density of 1.73 gr/cm³, fall into the category of strength class I wood. In terms of mechanical properties, the average tensile strength was 113.47 MPa, compressive strength was 32.63 MPa, and shear strength was 12.46 MPa. The highest MoR and MoE values were obtained at a pressing pressure of 0.6 MPa, with MoR of 36.27 N/mm² and MoE of 19,757.35 N/mm². These results indicate that a pressing pressure of 0.6 MPa is optimal for producing sago bark laminated beams with the best flexural strength and stiffness. This research demonstrates that sago bark waste has strong potential as an environmentally friendly alternative material for construction applications.

Keywords: Flexural strength, Laminated beam, MoR, MoE, Pressing pressure, Sago bark.