

PENGARUH JENIS PEREKAT DAN BERAT LABUR TERHADAP SIFAT PAPAN LAMINASI KAYU JABON MERAH (*Neolamarckia macrophylla*

(Roxb.) Bosser) DAN BALSA (*Ochroma pyramidale*)

Galih Rahmat Ibrahim¹, Ragil Widyorini², Sri Sunarti³

INTISARI

Perkembangan industri olahan kayu dan permintaan pasar yang tinggi mendorong peningkatan produksi kayu dari tahun ke tahun. Produk rekayasa kayu seperti papan laminasi menjadi suatu kebutuhan penting untuk meningkatkan performa kayu dan memperoleh komponen berdimensi besar. Kayu balsa (*Ochroma pyramidale*) merupakan salah satu jenis kayu berkerapatan rendah yang potensial dijadikan produk laminasi dengan mengombinasikan kayu berkerapatan lebih tinggi sebagai lapisan permukaan, seperti kayu jabon merah (*Neolamarckia macrophylla* (Roxb.) Bosser). Kualitas papan laminasi sangat dipengaruhi oleh kombinasi jenis kayu, jenis perekat, berat labur, dan metode pengempaan. Penelitian ini bertujuan untuk mengetahui pengaruh interaksi jenis perekat dan berat labur terhadap sifat fisika dan mekanika papan laminasi.

Bahan baku penelitian ini adalah kayu jabon merah dan kayu balsa. Papan laminasi dibuat tiga lapis dengan lapisan permukaan menggunakan kayu jabon merah. Metode yang digunakan pada penelitian ini adalah Rancangan Acak Lengkap (RAL) faktorial dengan dua faktor, yaitu jenis perekat (poliuretan dan polivinil asetat) dan berat labur (160, 200, dan 240 g/m²) dengan tiga ulangan. Sifat fisika yang diuji meliputi kadar air, kerapatan, dan delaminasi, sedangkan sifat mekanika meliputi kekuatan lengkung statis, keteguhan geser rekat, dan persentase kerusakan kayu. Hasil yang diperoleh dianalisis menggunakan analisis varians dua arah (ANOVA) dan dilanjutkan dengan uji *Tukey Honestly Significant Different* (HSD).

Hasil penelitian menunjukkan bahwa tidak terdapat interaksi antara jenis perekat dan berat labur. Jenis perekat berpengaruh signifikan terhadap nilai kadar air dan delaminasi, sedangkan berat labur berpengaruh signifikan terhadap nilai delaminasi dan persentase kerusakan kayu. Kombinasi perekat poliuretan dengan berat labur 200 g/m² menghasilkan performa laminasi jabon merah dan balsa terbaik dengan nilai kadar air 11,03%, kerapatan 0,36 g/cm³, delaminasi 17,32%, keteguhan geser rekat 3,19 MPa, kerusakan kayu 96,98%, MoE 12,19 GPa, dan MoR 47,16 MPa.

Kata Kunci: kayu jabon merah, kayu balsa, papan laminasi, perekat PVAc, perekat poliuretan, berat labur

¹ Mahasiswa Departemen Teknologi Hasil Hutan, Fakultas Kehutanan, UGM

² Dosen Departemen Teknologi Hasil Hutan, Fakultas Kehutanan, UGM

³ Peneliti Badan Riset dan Inovasi Nasional, Indonesia

**THE EFFECT OF ADHESIVE TYPE AND GLUE SPREAD TO THE
PROPERTIES OF RED JABON (*Neolamarckia macrophylla* (Roxb.) Bosser)
BALSAM (*Ochroma pyramidale*) LAMINATED BOARD**

Galih Rahmat Ibrahim¹, Ragil Widyorini², Sri Sunarti³

ABSTRACT

The development of the wood processing industry and high market demand have resulted in a year-on-year growth in wood production. Engineered wood products, including laminated boards, have become essential for enhancing wood performance and acquiring large-dimension components. Balsa wood (*Ochroma pyramidale*) is a low-density wood that has the potential to be used in laminated products by combining it with higher-density wood as a surface layer, such as red jabon wood (*Neolamarckia macrophylla* (Roxb.) Bosser). The quality of laminated boards is greatly influenced by the combination of wood species, adhesive type, coating weight, and pressing method. This study aims to determine the effect of the interaction between adhesive type and coating weight on the physical and mechanical properties of laminated boards.

The materials used in this study were red jabon wood and balsa wood. Laminated boards were made in three layers with red jabon wood used for the surface layer. The method used in this study was a complete randomized design (CRD) factorial with two factors, namely adhesive type (polyurethane and polyvinyl acetate) and glue spread (160, 200, and 240 g/m²) with three replicates. The physical properties tested included moisture content, density, and delamination, while the mechanical properties included bending properties, shear strength, and percentage of wood failure. The results obtained were analysed using two-way analysis of variances (ANOVA) and followed by Tukey's Honestly Significant Difference (HSD) test.

The results showed that there was no interaction between the adhesive type and the glue spread. The type of adhesive had a significant effect on the moisture content and delamination, glue spread had a significant effect on the delamination and percentage of wood failure. The combination of polyurethane adhesive with a glue spread of 200 g/m² produced the best red jabon and balsa laminate performance with moisture content 11.03%, density 0.36 g/cm³, delamination 17.32%, shear strength 3.19 MPa, wood failure 96.98%, modulus of elasticity (MoE) 12.19 GPa, and modulus of rupture (MoR) 47.16 MPa.

Keywords: *red jabon wood, balsa wood, laminated board, PVAc, polyurethane, glue spread*

¹ Student of Forest Products Technology Department, Faculty of Forestry, UGM

² Lecturer of Forest Products Technology Department, Faculty of Forestry, UGM

³ Researcher of National Research and Innovation Agency, Indonesia