

## **SIFAT BALOK LAMINASI SILANG KAYU SENGON DAN TREMBESI DENGAN TIGA JENIS PEREKAT**

Oleh :

**Alfian Mahathir Muhhamad<sup>1</sup> dan Tibertius Agus Prayitno<sup>2</sup>**

### **INTISARI**

Hutan rakyat menghasilkan kayu sengon dan penghijauan nasional menghasilkan kayu trembesi. Kedua jenis kayu tersebut belum banyak dimanfaatkan sebagai bahan konstruksi. Balok laminasi silang merupakan produk laminasi berbentuk balok dengan arah serat yang bersilangan antar laminanya. Pembuatan balok laminasi silang merupakan upaya guna meningkatkan kualitas pemanfaatan kayu sengon dan trembesi. Tujuan penelitian ini adalah untuk mengetahui pengaruh jenis kayu dan jenis perekat terhadap sifat balok laminasi silang.

Penelitian ini menggunakan rancangan acak lengkap dengan dua faktor yaitu jenis kayu (Sengon dan Trembesi) dan jenis perekat (Kloropen, Isosianat, dan PVAc) dengan tiga kali ulangan. Balok laminasi silang diuji mengikuti prosedur ASTM D 143-94 dan ASTM D 905-03 dengan parameter sifat fisika (kadar air dan berat jenis) dan sifat mekanika (modulus elastisitas (MOE), modulus patah (MOR), keteguhan geser rekat, dan persentase kerusakan kayu). Data hasil pengujian dianalisis menggunakan software SPSS, dan pemisahan rata-rata (uji lanjut) menggunakan HSD (Honestly Significant Difference) pada taraf 0,5.

Hasil pengujian menunjukkan interaksi faktor jenis kayu dan jenis perekat berpengaruh nyata terhadap MOR, keteguhan geser dan persentase kerusakan kayu. Faktor jenis kayu berpengaruh nyata terhadap berat jenis. Faktor jenis perekat berpengaruh nyata pada kadar air, dan MOE. Balok laminasi silang terbaik dihasilkan balok laminasi silang jenis kayu trembesi dengan perekat PVAc dengan nilai kadar air 12,816%, berat jenis 0,422, MOE 9956,450 kg/cm<sup>2</sup>, MOR 257,162 kg/cm<sup>2</sup>, keteguhan geser 20,441 kg/cm<sup>2</sup>, dan persentase rusak kayu 26,88%.

Kata kunci : sengon, trembesi, balok laminasi silang

---

<sup>1</sup>Mahasiswa Fakultas Kehutanan UGM

<sup>2</sup>Staf Pengajar Fakultas Kehutanan UGM

## **MECHANICAL PROPERTIES OF CROSS LAMINATED BEAM MADE OF SENGON AND TREMBESI WOOD WITH THREE TYPES OF ADHESIVE**

**By:**

**Alfian Mahathir Muhhamad<sup>1</sup> dan Tibertius Agus Prayitno<sup>2</sup>**

### **ABSTRACT**

Community forest was producing sengon wood and national reforestation was producing trembesi wood. Both of them were not much used as construction materials. Cross-laminated beam was a wood lamination product made by arranging lamina perpendicular to each other lamina. Production cross-laminated beam of the two wood species was an effort to improve utilization quality. This study aimed to determine the influence of wood species and type of adhesive on their properties of cross-laminated beam.

In this study, a completely randomized design was used with two factors, namely wood species (Sengon and Trembesi) and type of adhesive (Chloropen, Isocyanate, and PVAc) with three replications. Cross-laminated beam testing by following the ASTM D 143-94 and ASTM D 905-03 procedures with parameters of physical properties (moisture content and specific gravity) and mechanical properties (modulus of elasticity (MOE), modulus of rupture (MOR), shear bond strength, and percentage of wood failure). The test data was analyzed using SPSS software, and the mean separation (advanced test) used HSD (Honestly Significant Difference) at a level of 0.5.

The results showed that the interaction of wood species and adhesive type had a significant effect on MOR, shear bond strength and percentage of wood failure. Wood species factor had a significant effect on the specific gravity. Type of adhesive had a significant effect on the moisture content and MOE. The best cross laminated beams was produced by trembesi wood cross laminated beam with PVAc adhesive with a moisture content 12.816%, specific gravity 0.422, MOE 9956.450 kg/cm<sup>2</sup>, MOR 257.162 kg/cm<sup>2</sup>, shear bond strength 20.441 kg/cm<sup>2</sup>, and the percentage of wood failure 26.88%.

**Keywords** : sengon, trembesi wood, cross laminated beam

---

<sup>1</sup>Student of Faculty of Forestry UGM

<sup>2</sup>Lecturer of Faculty of Forestry UGM