

## VARIASI SIFAT FISIKA DAN MEKANIKA KAYU HIBRID AKASIA (*Acacia mangium* × *Acacia auriculiformis*) PADA ARAH RADIAL DARI TIGA KLON YANG BERBEDA

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### INTISARI

Hibrid akasia merupakan hasil persilangan antara *Acacia mangium* dengan *Acacia auriculiformis*. Informasi mengenai sifat-sifat kayu di Indonesia masih sangat terbatas sehingga menyebabkan penggunaan kayu solid hibrid akasia belum banyak diketahui. Studi variasi sifat fisika dan mekanika pada tiga sampel klon pada kedudukan radial dilakukan untuk klon 16, 25 dan 44. Sampel diambil dari Kawasan Hutan Dengan Tujuan Khusus (KHDTK) Wonogiri. Pengujian dilakukan menggunakan metode *British Standard* nomor 373 tahun 1957, sedangkan persentase kayu teras menggunakan metode dalam Tenorio dkk. (2016). Hasil penelitian menunjukkan rerata kadar air segar dan kering udara berturut-turut sebesar 83,86% dan 14,59%, sedangkan berat jenis volume segar, kering udara dan kering tanur 0,630; 0,643 dan 0,686. Penyusutan radial, tangensial, dan longitudinal dari segar ke kering udara secara berurutan adalah 0,62%; 1,99%; dan 0,24%; serta dari segar ke kering tanur adalah 1,65%; 6,24%; dan 0,65%. Rasio T/R hasil penyusutan dari segar ke kering udara dan ke kering tanur adalah 3,31 dan 3,90. Persentase kayu teras sebesar 65,44%. Keteguhan lengkung statik pada batas proporsi, MoE, dan MoR secara berurutan 410,55 kg/cm<sup>2</sup>; 85,29 × 10<sup>3</sup> kg/cm<sup>2</sup>; dan 843,56 kg/cm<sup>2</sup>. Keteguhan tekan sejajar serat dan tegak lurus serat secara berurutan 472,98 kg/cm<sup>2</sup> dan 294,93 kg/cm<sup>2</sup>. Hasil analisis menunjukkan bahwa klon berpengaruh nyata terhadap kadar air segar, berat jenis, penyusutan tangensial dari kondisi segar ke kering udara maupun ke kering tanur. Klon juga berpengaruh nyata pada penyusutan longitudinal dari kondisi segar ke kering tanur, keteguhan lengkung statik pada batas proporsi, MoE dan MoR, dan keteguhan tekan tegak lurus serat. Kedudukan radial berpengaruh pada kadar air segar, berat jenis dan keteguhan lengkung statik pada batas proporsi, MoE dan MoR. Hasil penelitian ini menunjukkan bahwa klon 16 dan bagian dekat kulit memiliki sifat fisika dan mekanika yang lebih baik dibanding dengan 2 klon dan kedudukan radial yang lain.

**Kata kunci:** hibrid akasia, sifat fisika, sifat mekanika, klon, kedudukan radial.

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## VARIATION OF PHYSICAL AND MECHANICAL TRAITS ACACIA HYBRID (*Acacia mangium* × *Acacia auriculiformis*) WOOD IN RADIAL DIRECTION OF THREE DIFFERENT CLONES

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### ABSTRACT

Acacia hybrid is the result of hybridization between *Acacia mangium* and *Acacia auriculiformis*. The information about the wood properties in Indonesia is still limited which causes little use of acacia hybrid solid wood. The study of physical and mechanical properties' variation in three clone samples on the radial position was conducted for clones 16, 25, and 44. The samples were taken from *Kawasan Hutan Dengan Tujuan Khusus* (KHDTK) Wonogiri. The tests were conducted using British Standard method number 373 in 1957, while the percentage of terrace wood used method in Tenorio et al. (2016). The research results showed that the average value of green and air dried moisture contain were 83.86% and 14.59% respectively, while the value of green, air dried and kiln dried specific gravity were 0.630; 0.643 and 0.686. Radial, tangential and longitudinal shrinkage from green to air dried condition consecutively were 0.62%; 1.99%; and 0.24%; and from green to kiln dried condition were 1.65%; 6.24%; and 0.65%. The T/R ratio of shrinkage result from green to air dried and kiln dried condition were 3.31 and 3.90. The percentage of terrace wood was in the amount of 65.44%. The static bending at the proportion limit, MoE, and MoR consecutively were 410.55 kg/cm<sup>2</sup>; 85.29 × 10<sup>3</sup> kg/cm<sup>2</sup>; and 843.56 kg/cm<sup>2</sup>. The compressive strength parallel to grain and perpendicular to grain were consecutively 472.98 kg/cm<sup>2</sup> and 294.93 kg/cm<sup>2</sup>. The analysis result showed that clones significantly affected the green moisture contain, specific gravity, tangential shrinkage and the condition from green to air dried and also to kiln dried condition. The clones also significantly affected the longitudinal shrinkage from green to kiln dried condition, the static bending at the proportion limit, MoE and MoR, and the compressive strength perpendicular to grain. The radial position affected on the green moisture contain, specific gravity, and the static bending at the proportion limit, MoE and MoR. This research results show that clones 16 and the part which is near of bark have better physical and mechanical properties than 2 clones and other radial positions.

**Keywords:** acacia hybrid, physical property, mechanical property, clones, radial position

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