

PENGARUH METODE DAN WAKTU PERLAKUAN PANAS TERHADAP SIFAT PEREKATAN KAYU JATI (*Tectona grandis* L. f.) MUDA

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INTISARI

Jati (*Tectona grandis* L.f.) merupakan jenis kayu yang memiliki nilai komersial tinggi di pasar. Pengusahaan jati di Perum Perhutani tidak hanya diperoleh dari tebangan akhir daur, tetapi juga diperoleh dari tebangan penjarangan. Jati muda mengandung porsi kayu juvenil yang besar. Menurut Pandhit (2004), jati dari KU I memiliki 88,5% kayu juvenil dan 22,14% pada KU IV. Karakteristik kayu juvenil diantaranya memiliki kestabilan dimensi, kekuatan, keawetan yang rendah dibanding kayu dewasa. Perlakuan panas diketahui dapat meningkatkan kekurangan tersebut, dimana perlakuan panas dapat menurunkan kadar air seimbang (KAS), mengurangi emisi dari *volatile organic compound* (VOC), meningkatkan stabilitas dimensi, ketahanan terhadap jamur, dan homogenisasi warna. Tujuan dari penelitian ini adalah menganalisis pengaruh perlakuan panas terhadap sifat fisika, mekanika, dan perekatan kayu jati muda.

Penelitian ini menggunakan rancangan acak lengkap dengan dua faktor yaitu metode (oven dan kukus) dan waktu perlakuan panas (1,5 jam, 3 jam, dan 4,5 jam) dengan suhu $100 \pm 3^\circ\text{C}$ dengan 3 ulangan. Bahan baku kayu jati berbentuk papan (*flatsawn*) yang berasal dari tebangan penjarangan KU II umur 15 tahun. Sifat kayu jati perlakuan panas yang diuji adalah kadar air, berat jenis, wetabilitas, warna, modulus patah (MOR), modulus elastisitas (MOE), keteguhan rekat geser, dan persentase kerusakan kayu.

Hasil penelitian menunjukkan bahwa interaksi metode dan waktu perlakuan panas memberikan pengaruh sangat nyata terhadap wetabilitas. Faktor metode perlakuan panas memberikan pengaruh nyata terhadap kadar air, perubahan tingkat kekuningan (Δb^*), dan MOR kayu jati. Waktu perlakuan panas memberikan pengaruh sangat nyata terhadap perubahan kecerahan (ΔL^*). Penurunan kadar air, wetabilitas, dan tingkat kecerahan menurun seiring bertambahnya waktu. Hasil sifat fisika, mekanika, dan perekatan terbaik diperoleh dari perlakuan oven selama 3 jam, yaitu kadar air 11,48%, berat jenis 0,61, wetabilitas 402,45 mm, MOR 928,41 kg/cm², MOE 89.564 kg/cm², keteguhan rekat geser 88,89 kg/cm², dan persentase kerusakan kayu 94,73%.

Kata kunci : jati muda, perlakuan panas, perlakuan oven, perlakuan kukus

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THE EFFECT OF METHOD AND HEAT TREATMENT TIME ON
YOUNG TEAK (*Tectona grandis* L. f) ADHESION CHARACTERISTIC

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ABSTRACT

Teak (*Tectona grandis* L. f) is high commercial value wood in the market. Teak wood in Perum Perhutani not only get from final cutting but also from thinning cutting. Young teak wood contains a large portion of juvenile wood. According to Pandhit (2004), teak wood from KU I has juvenile wood 88.5% and 22.14% at KU IV. Juvenile wood has lower characteristic of dimensional stability, strength, and durability compared with mature wood. Those properties could be improved by heat treatment. Generally, heat treatment can reduces the equilibrium moisture content, improves dimensional stability, rot resistance, homogenize colour, reduce emission from volatile organic compound and also darkens the wood (Esteves et al., 2007). The objective of this research is to study the effect of heat treatment on physical, mechanical, and adhesion properties of young teak.

This study was conducted by using the completely randomized design with two factor : method (oven and steaming) and time (1.5 hours, 3 hours, and 4.5 hours) in temperature $100\pm 3^{\circ}\text{C}$. The material of teak wood is flatsawn board from thinning cutting KU II (15 years old). The heat treated young teak then tested to find out physical properties (moisture content, specific gravity, wettability, and wood colour), mechanical properties (modulus of rupture and modulus of elasticity), and adhesion properties (shear strength of glue joint and percentage of wood failure).

The result showed that interaction of method and time heat treatment affected significantly on wettability. Heat treatment method affected on moisture content, yellow-hue (Δb^*), and MOR of young teak wood. Heat treatment time affected on lightness change (ΔL^*). Moisture content, wettability, and lightness decreased with increasing of time. The best properties of heat treated young teak were obtained from oven method at 3 hours treatment with value of moisture content 11.48%, specific gravity 0.61, wettability 402.45 mm, MOR 928.41 kg/cm^2 , MOE 89564 kg/cm^2 , shear strength of glue joint 88.89 kg/cm^2 and percentage of wood failure 94.73%.

Keyword : young teak, heat treatment, oven method, steam method

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