PENGARUH KERAPATAN DAN JUMLAH PEREKAT UREA FORMALDEHIDA TERHADAP SIFAT PAPAN PARTIKEL KAYU JATI

Oleh :
Puput Wahyuning Dwiana[1] dan T. A. Prayitno[2]

INTISARI

Kebutuhan terhadap bahan baku kayu mengalami peningkatan yang sangat signifikan dengan semakin dinamisnya kehidupan. Bahan baku kayu tersebut tidak hanya berupa kayu bulat (log), akan tetapi dapat berupa limbah dari suatu proses produksi pengolahan kayu salah satunya serbuk gergaji kayu jati yang digunakan untuk pembuatan papan partikel. Penelitian ini bertujuan untuk mengetahui pengaruh interaksi kerapatan dan jumlah perekat urea formaldehida terhadap sifat papan partikel kayu jati agar diperoleh kombinasi perlakuan yang optimal.

Penelitian ini menggunakan rancangan acak lengkap dengan percobaan faktorial dengan dua faktor, yaitu faktor kerapatan papan yang terdiri dari 2 aras yaitu kerapatan 0,5 g/cm³ dan 0,8 g/cm³, serta faktor jumlah perekat dari berat partikel kering udara yang terdiri dari 3 aras yaitu 7%, 10% serta 13%. Hasil analisis varians yang memberikan perbedaan nyata diuji lanjut dengan *Metode Tukey HSD*. Pengujian sifat-sifat papan partikel serbuk gergaji meliputi kadar air, kerapatan, penyerapan air, pengembangan tebal, modulus elastisitas (MoE), modulus patah (MoR), keteguhan *internal bonding*. Pembuatan contoh uji dan pengujian mengikuti standar JIS A 5908 - 1994.

Penelitian ini menghasilkan nilai rata-rata untuk kadar air sebesar 10,71%, kerapatan aktual sebesar 0,4278 g/cm^3 (pada kerapatan 0,5 g/cm³) dan (0,6499 g/cm^3 pada kerapatan 0,8 g/cm³), penyerapan air sebesar 105%, pengembangan tebal sebesar 12,4%, modulus elastisitas (MoE) sebesar 3179 kg/cm^2, modulus patah (MoR) sebesar 34,12 kg/cm^{2}dan keteguhan *internal bonding* sebesar 1,266 kg/cm^2. Interaksi antara faktor kerapatan papan dan jumlah perekat, berpengaruh terhadap pengembangan tebal, modulus elastisitas (MoE), modulus patah (MoR), dan keteguhan *internal bonding* dengan nilai optimum berturut-turut sebesar 6,541%; 7194 kg/cm²; 78,69 kg/cm² dan 2,711 kg/cm². Faktor kerapatan papan berpengaruh kadar air, kerapatan aktual papan, penyerapan air dengan nilai optimum berturut-turut 9,965%; 0,6598 g/cm²; 58,77% dan berpengaruh pada modulus elastisitas (MoE), modulus patah (MoR), dan keteguhan *internal bonding*. Jumlah perekat berpengaruh pada kadar air, persen penyerapan air, pengembangan tebal modulus elastisitas (MoE), modulus patah (MoR), dan keteguhan *internal bonding.*

Kata kunci : papan partikel, serbuk kayu jati, kerapatan papan, jumlah perekat

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[1] Mahasiswa Fakultas Kehutanan Universitas Gadjah Mada
[2] Staf Pengajar Fakultas Kehutanan Universitas Gadjah Mada

THE EFFECT OF DENSITY AND GLUE SPREAD ON THE PROPERTIES OF TEAK WOOD PARTICLEBOARD BONDED WITH UREA FORMALDEHYDE

By :
Puput Wahyuning Dwiana[1] dan T. A. Prayitno[2]

ABSTRACT

The demand of wood material has been increasing significantly along with human's dynamic life. Wood material is not only in the form a log but glued wood products. The objective of this research is to find out the interaction between board density and amount of urea formaldehyde adhesive on the properties of teak particleboards.

The research was conducted using Completely Randomized Design and experiment of 2 x 3, that were board density and amount of urea formaldehyde adhesive. Density were 0,5 g/cm³ and 0,8 g/cm³, and amount of adhesive were 7%, 10%, and 13%. The data was analysis using Annova test then be tested by *Tukey HSD.* Standard JIS A 5908 was used for evaluating the properties of particle board that included density, moisture content, water absorption, thickness swelling, modulus of rupture, modulus of elasticity, and *internal bonding*.

The result showed that average value of water content was 10,71%,, actual density were 0,4278 g/cm^3 (on 0,5 g/cm³ density) and 0,6499 g/cm^3 (on density 0,8 g/cm³), water absorption was 105%, thickness swelling was 12,4%, modulus of elasticity (MoE) 3179 kg/cm², modulus of rupture (MoR) was 34,12 kg/cm² and *internal bonding* was 1,266 kg/cm^2. Interaction between board density and amount of urea formaldehyde was significantly different on thickness swelling, modulus elasticity (MoE), modulus of rupture (MoR), and *internal bonding* with optimum value were 6,541%; 7194 kg/cm²; 78,69 kg/cm² dan 2,711 kg/cm², respectively. The density affected on the water content, actual density, water absorption with optimum value were 9,965%; 0,6598 g/cm²; 58,77% and affected on modulus of elasticity (MoE), modulus of rupture and *internal bonding.*Amount of urea formaldehyde effected on water content, water absorption, thickness swelling, modulus of elasticity (MoE), modulus of rupture and *internal bonding.*

Keyword: particleboard, teak sawdust, density, amount of adhesive

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[1] Student of Forest Product Technology Departement, Faculty of Forestry-UGM
[2] Lecturer of Forest Product Technology Departement, Faculty of Forestry-UGM