

PENGARUH KOMPOSISI PARTIKEL DAN JUMLAH PEREKAT UREA FORMALDEHIDA TERHADAP SIFAT PAPAN PARTIKEL TIGA LAPIS KAYU AKASIA

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INTISARI

Areal hutan yang luas dan keanekaragaman jenis tumbuhan yang banyak menjadikan Indonesia sebagai salah satu negara penghasil kayu terbesar di dunia, sehingga sektor ini menjadi penghasil negara terbesar setelah migas. Keperluan bahan baku kayu di Indonesia pada umumnya adalah untuk bahan baku industri hulu kehutanan, pembangunan perumahan dan tujuan ekspor. Kerusakan hutan yang tinggi serta makin sempitnya lahan hutan akibat adanya konversi ke lahan penggunaan lain mengakibatkan pasokan bahan baku untuk industri pengolahan kayu mengalami penurunan. Data menunjukkan bahwa laju kerusakan hutan mencapai 3,8 juta hektar per tahun.

Penelitian ini menggunakan rancangan acak lengkap dengan percobaan factorial dengan melibatkan 2 faktor yaitu faktor komposisi partikel (K) dengan tiga lapis yaitu K1 (tepi:10% tengah:80% tepi:10%), K2 (tepi:20% tengah:60% tepi:20%), K3 (tepi:30% tengah:40% tepi:30%) dan faktor jumlah perekat terlabur (P) dengan tiga aras yaitu P1 (5%), P2 (10%) dan P3 (15%). Dari faktor tersebut diperoleh 9 kombinasi dengan tiga kali ulangan perlakuan. Parameter yang diukur pada penelitian ini meliputi kerapatan, kadar air, penyerapan air, pengembangan tebal, lengkung statis (MOE dan MOR) dan *internal bonding*. Hasil yang didapat dilakukan analisis varians dan uji Tukey.

Hasil penelitian menunjukkan bahwa Tidak terdapat interaksi antara faktor komposisi partikel dan faktor jumlah perekat terhadap sifat papan partikel pasahan kayu Akasia. Faktor komposisi partikel hanya berpengaruh nyata terhadap kadar air papan partikel, dimana komposisi partikel 10% 80% 10% (K1) memberikan nilai kadar air yang terkecil yaitu sebesar 8,694% dibandingkan dengan komposisi partikel 20% 60% 20% (K2) dan komposisi partikel 30% 40% 30% (K3). Faktor jumlah perekat berpengaruh sangat nyata terhadap kadar air, penyerapan air, modulus patah, *internal bonding* dan berpengaruh nyata terhadap kerapatan, pengembangan tebal, modulus elastisitas papan partikel kayu Akasia. Kadar air terendah terdapat pada P1 yaitu sebesar 8,596 %, penyerapan air terendah terdapat pada P3 yaitu sebesar 74,82 %, modulus patah tertinggi terdapat pada P3 yaitu sebesar 129,237 kg/cm², *internal bonding* tertinggi terdapat pada P3 yaitu sebesar 5,259 kg/cm², kerapatan tertinggi terdapat pada P3 yaitu sebesar 0,524 g/cm³, modulus elastisitas tertinggi terdapat pada P2 yaitu sebesar 21972,33 kg/cm² dan pengembangan tebal terendah terdapat pada P3 yaitu sebesar 16,80 %.

Kata Kunci: Papan Partikel, Kayu Akasia, Jumlah Perekat, Komposisi Partikel.

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THE EFFECT OF PARTICLE COMPOSITION AND QUANTITY OF THE UREA FORMALDEHIDE RESIN TO THE PROPERTIES OF THE THREE LAYERS PARTICLE BOARD OF ACACIA WOOD

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ABSTRACT

Indonesia has extensive forest area and high biodiversity. These reasons make Indonesia becomes as one of the biggest country all around the world which producing wood after gas and fuel. The necessity of wood raw material in common is for supplying raw material in forestry industrials, the development of building and export objective. The highly forest degradation and deforestation caused by conversion to another supply for industry of wood processing. The data show that the rate of forest degradation reach 3,8 million acre every year.

This research used Completely Randomized Design arranged factorial experiment comprised of two factors that was the particle composition factor (K) was contained three layers, which were K1 (face: 10%, core: 80%, face: 10%), K2 (face: 20%, core: 60%, face: 20%), K3 (face: 30%, core: 40%, face: 30%) and the quantity of resin factor (P) with three levels, which were P1 (5%), P2 (10%) and P3 (15%). From those factors, obtained 9 kinds of combination. The parameter which measured in this research comprised density, moisture content, water absorption, thickness swelling, static bending (MOE and MOR), and internal bonding. The result obtained by variance analysis and Tukey test.

The result of research showed that there were no interaction between the particle composition factor and the quantity of resin factor to the properties of Acacia shaving particle board. The particle composition factor only gave significant effect to the moisture content of particle board, which the particle composition 10 % 80 % 10 % (K1) gave the lowest moisture content, which was only 8,694 % if compared than particle composition 20 % 60 % 20 % (K2) and the particle composition 30 % 40 % 30 % (K3). The quantity of resin factor gave effect very significant to the moisture content, water absorption, modulus of rupture, internal bonding, and gave fair significant density, thickness swelling, modulus of elasticity of acacia particle board. The lowest moisture content was found at P1, which was 8.596%. The lowest water absorption was found at P3, which was 74.82%. The highest modulus of rupture was found at P3, which were 129.237 kg/cm². The highest internal bonding was found at P3, which were 5.259 kg/cm². The highest density was found at P3, which were 0.524 g/cm³. The highest modulus of elasticity was found at P2, which were 21972.33 kg/cm². The lowest thickness swelling was found at P3, which was 16.80%.

Keywords: particle board, acacia wood, quantity of resin, particle composition

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