PENGARUH KOMPOSISI DAN JUMLAH PEREKAT SUKROSA-AMONIUM DIHIDROGEN FOSFAT TERHADAP SIFAT FISIKA MEKANIKA PAPAN UNTAI BAMBU APUS

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INTISARI

Bambu apus sebagai substitusi kayu adalah salah satu material lignoselulosa dalam pembuatan papan partikel. Penggunaan sukrosa sebagai perekat alami diduga dapat menggantikan perekat konvensional berbasis formaldehida. Sifat sukrosa yang mudah menyerap air diduga dapat diperbaiki dengan penambahan amonium dihidrogen fosfat (ADF). Oleh karena itu Penelitian ini bertujuan untuk mengetahui interaksi komposisi dan jumlah perekat sukrosa-ADF terhadap sifat fisika dan mekanika papan partikel bambu apus.

Penelitian ini menggunakan rancangan acak lengkap (RAL) dengan dua faktor yaitu komposisi perekat (95:5, 90:10, dan 85:15) dan jumlah perekat (7,5%, 10%, dan 12,5%). Dimensi papan partikel dibuat 25 cm x 25 cm x 1 cm dengan target kerapatan 0,8 g/cm^3. Pengempaan papan dilakukan dalam suhu 200 ºC selama 10 menit dengan tekanan kempa 3 Mpa. Metode pengempaan menggunakan siklus tiga tahap. Standar pengujian yang digunakan mengacu *Japan Industrial Standard* A 5908 2003. Data hasil pengujian dianalisis menggunakan analisis varians (ANOVA) dan pengujian lanjut *Honestly Significant Difference* (HSD).

Hasil analisis menunjukkan interaksi komposisi sukrosa-ADF dan jumlah perekat berpengaruh nyata terhadap nilai keteguhan perekat internal, sedangkan faktor komposisi perekat berpengaruh nyata terhadap nilai kerapatan. Sifat papan partikel optimal diperoleh papan partikel bambu apus dengan perlakuan komposisi sukrosa-ADF 90:10 dan jumlah perekat 7,5% dengan nilai kerapatan 0,70 g/cm^3, kadar air 10,10%, pengembangan tebal 3,18%, penyerapan air 2 8,21%, keteguhan rekat internal 0,41 MPa, modulus patah 24,65 MPa, dan modulus elastisitas 5,6 GPa. Sifat papan partikel tersebut memenuhi standar JIS A5908 2003 tipe 18.

Kata Kunci: papan untai, bambu apus, komposisi, perekat, sukrosa, amoniumdihidrogen fosfat.

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THE EFFECT OF COMPOSITION AND ADHESIVE CONTENT SUCROSE-AMMONIUM DIHYDROGEN PHOSPHATE ON PHYSICAL AND MECHANICAL PROPERTIES OF APUS BAMBOO STRAND BOARD

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ABSTRACT

Apus bamboo as a substitute for wood is one of the lignocellulosic materials in the manufacture of particleboard. The use of sucrose as a natural adhesive is thought to replace conventional formaldehyde-based adhesives. Sucrose's easy to absorb water is thought to be improved by the addition of ammonium dihydrogen phosphate (ADP). Therefore, this study aimed to determine the interaction of composition and adhesive content sucrose-ADP on the physical and mechanical properties of apus bamboo particle board.

This research used a completely randomized design (CRD) with two factors, the adhesive composition (95:5, 90:10, and 85:15) and adhesive content (7.5%, 10%, and 12.5%). The dimensions of the particleboard are made of 25 cm x 25 cm x 1 cm and the density target is 0.8 g/cm^3. The board was compressed at 200ºC for 10 minutes and the compression pressure is 3 MPa. Compression method used three-stage cycles. Standard testing refers to Japan Industrial Standard A 5908 2003. The data results were analyzed using analysis of variance (ANOVA) and further testing Honestly Significant Difference (HSD).

The results showed that the interaction of the composition and the adhesive content has a significant effect on the value of the internal bonding strength, while the adhesive composition factor has a significant effect on the density value. Optimal particleboard properties were obtained from apus bamboo particleboard with the variation treatments composition of sucrose-ADP 90:10 and the adhesive content was 7,5%, with a density value of 0.70 g/cm^3, moisture content 10.10%, thickness swelling 3.18%, water absorption 28.21%, internal bonding 0.41 MPa, modulus of rupture 24.65 MPa, and modulus of elasticity 5.6 GPa. The properties of the particle board is qualified as the JIS A 5908 2003 type 18.

Keywords: strandboard, apus bamboo, composition, amount, sucrose, ammoniumdihydrogen phosphate.

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