

SIFAT PAPAN KOMPOSIT PELEPAH PINANG (*Areca sp*) DENGAN PEREKAT BERBASIS ASAM SITRAT

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INTISARI

Pelelah pinang merupakan salah satu bahan baku non-kayu yang berpotensi untuk dijadikan sebagai bahan baku papan komposit yang ramah lingkungan. Penggunaan partikel pelelah pinang disertai penambahan serat pelelah pinang diduga dapat meningkatkan sifat fisika dan mekanika papan yang dihasilkan. Penelitian ini bertujuan untuk mengevaluasi pengaruh komposisi bahan dan jumlah asam sitrat terhadap sifat fisika dan mekanika papan komposit. Bahan yang digunakan, yaitu partikel pelelah pinang dan serat pelelah pinang dengan perekat asam sitrat 10%, 15%, dan 20%. Papan komposit dengan ukuran 25,5x25,5x1 cm³ dan target kerapatan 0,8 g/cm³, dibuat dengan komposisi partikel:serat pelelah pinang 100:0, 90:10, 80:20, dan 70:30 g/g%. Pengempaan dilakukan pada suhu 180°C selama 10 menit dengan tekanan spesifik 3 MPa. Pengujian sifat fisika dan mekanika papan berdasarkan standar JIS A 5908-2003. Hasil penelitian menunjukkan komposisi bahan berpengaruh nyata pada tarah uji 0,01 terhadap kerapatan, keteguhan rekat internal, modulus patah dan modulus elastisitas, sedangkan jumlah asam sitrat berpengaruh nyata terhadap tarah uji 0,01 terhadap kadar air, pengembangan tebal dan penyerapan air.

Kata kunci : asam sitrat, komposisi, partikel pelelah pinang, serat pelelah pinang, sifat papan komposit

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PROPERTIES OF ARECA PALM FRONDS (*Areca sp*) COMPOSITE BOARD BONDED WITH CITRIC ACID BASED ADHESIVE

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ABSTRACT

Areca palm frond is a potential non-wood raw material for producing environmentally friendly composite boards. The addition of areca palm frond fiber is hypothesized to enhance the resulting physical and mechanical properties of composite board. This study aimed to evaluate the effects of material composition and citric acid content on the physical and mechanical properties of the composite board made from areca palm frond. The materials used were areca palm fronds particles and fibers, bonded with citric acid at adhesive content of 10%, 15%, and 20%. Composite boards were manufactured with dimensions of $25.5 \times 25.5 \times 1 \text{ cm}^3$ and a target density of 0.8 g/cm^3 , using particle to fiber compositions of 100:0, 90:10, 80:20, and 70:30 (g/g%). Hot pressing was performed at 180°C for 10 minutes under a specific pressure of 3 MPa. Physical and mechanical properties of the board were evaluated based on the Japanese Industrial Standar (JIS) A 5908-2003, covering density, moisture content, thickness swelling, water absorption, surface roughness, internal bonding strength, modulus of rupture, and modulus of elasticity. The results showed that the composition of the material had a significant effect on density, internal bonding strength, modulus of rupture, and modulus of elasticity at the test level of 0.01, while citric acid content had a significant effect on water content, thickness swelling, and water absorption at the test level of 0.01.

Keywords : citric acid, compositions, areca palm fornd particle, areca palm frond fiber, properties composite board

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