

**PENGARUH RASIO LAPISAN MUKA - INTI DAN UKURAN PARTIKEL TERHADAP SIFAT FISIKA MEKANIKA PAPAN PARTIKEL DARI PELEPAH SALAK (*Salacca sp.*)**

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**INTISARI**

Penelitian ini bertujuan untuk mengetahui interaksi rasio lapisan muka - inti dan ukuran partikel pada lapisan muka terhadap sifat fisika dan mekanika papan partikel pelepah salak tiga lapis. Penelitian ini menggunakan rancangan acak lengkap dengan dua faktor yang berbeda, yaitu faktor rasio lapisan muka - inti (20%:80% (g/g), 50%:50% (g/g), dan 66,7%:33,3% (g/g)) serta faktor ukuran partikel lapisan muka (lolos 20 tertahan 40 mesh dan lolos 40 tertahan 60 mesh). Papan partikel pelepah salak tiga lapis dibuat dalam ukuran 25 cm x 25 cm x 1 cm dengan target kerapatan 0,8 g/cm<sup>3</sup> dan dikempa pada suhu 180°C selama 10 menit. Pengujian sifat fisika dan mekanika papan partikel dilakukan berdasarkan standar JIS A 5908. Hasil penelitian menunjukkan bahwa interaksi faktor rasio lapisan muka - inti dan faktor ukuran partikel lapisan muka pada papan partikel pelepah salak tiga lapis berpengaruh nyata terhadap kekasaran permukaan. Faktor rasio lapisan muka - inti berpengaruh nyata terhadap pengembangan tebal, kekasaran permukaan, modulus patah, dan keteguhan rekat internal, sedangkan faktor ukuran partikel lapisan muka berpengaruh nyata terhadap kekasaran permukaan dan pengembangan tebal. Sifat papan partikel pelepah salak tiga lapis terbaik dihasilkan dari papan dengan rasio lapisan muka - inti 66,7%:33,3% (g/g) dan ukuran partikel lapisan muka lolos 40 tertahan 60 mesh dengan hasil rata-rata kerapatan 0,707 g/cm<sup>3</sup>, kadar air 7,59%, pengembangan tebal 8,01%, penyerapan air 61,53%, kekasaran permukaan 7,06 µm, modulus patah 8,24 MPa, dan modulus elastisitas 2,32 GPa, keteguhan rekat internal 0,326 MPa.

Kata kunci : asam sitrat, papan partikel, pelepah salak, rasio lapisan muka - inti, ukuran partikel.

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## INFLUENCE OF FACE-TO-CORE LAYER RATIO AND PARTICLE SIZE ON PHYSICAL MECHANICAL PROPERTIES OF PARTICLEBOARD FROM SALACCA (*Salacca sp.*) FROND

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### ABSTRACT

This study aimed to know the interaction between face-to-core layer ratio and particle size of face layer on physical mechanical properties of three-layers particleboard from salacca frond. This research used completely random design with two factorials, i.e. face-to-core layer ratio (20%:80% (g/g), 50%:50% (g/g), dan 66.7%:33.3% (g/g)) and particle size of face layer (passed through a 20 mesh retained on a 40 mesh and passed through a 40 mesh retained on a 60 mesh). The dimension of salacca frond three-layers particleboard was 25 cm x 25 cm x 1 cm with the target density was 0.8 g/cm<sup>3</sup> and pressed at temperature 180°C for 10 minutes. Physical and mechanical properties test were performed according to JIS A 5908. The result showed that interaction of face-to-core layer ratio and particle size of face layer of three-layers particleboard from salacca frond affected significantly on surface roughness. Face-to-core layer ratio affected significantly on thickness swelling, surface roughness, modulus of rupture, and internal bond strength, whereas particle size of face layer affected significantly on surface roughness and thickness swelling. The optimum properties of three-layers particleboard was produced at face-to-core layer ratio of 66.7%:33.3% (g/g) and particle size of face layer that passed through a 40 mesh retained on a 60 mesh which the value of density 0.707 g/cm<sup>3</sup>, moisture content 7.59%, thickness swelling 8.01%, water absorption 61.53%, surface roughness 7.06 µm, modulus of rupture 8.24 MPa, modulus of elasticity 2.32 GPa, and internal bond strength 0.326 MPa.

Keyword : citric acid, particleboard, salacca frond, face-to-core layer ratio, particle size.

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