

PENGARUH UKURAN PARTIKEL DAN *COMPACTION RATIO* TERHADAP SIFAT PAPAN PARTIKEL PELEPAH SALAK (*Salacca sp*)

Oleh :
Yuni Fitriastuti⁻¹ dan T.A. Prayitno⁻²

INTISARI

Alternatif pengganti bahan baku pembuatan papan partikel perlu dikembangkan untuk menutupi kekurangan kayu bulat. Limbah perkebunan berupa pelepah salak merupakan sumber bahan berlignoselulosa yang dapat dimanfaatkan sebagai bahan baku papan partikel. Penelitian ini bertujuan untuk mengetahui pengaruh interaksi antara ukuran partikel pelepah salak dengan *compaction ratio* terhadap sifat papan partikel pelepah salak.

Bahan baku penelitian ini adalah pelepah salak yang diperoleh dari Agro Wisata Kecamatan Turi, Kabupaten Sleman. Ukuran partikel yang digunakan adalah lolos saringan kawat ukuran 0,2 cm x 0,2 cm, lolos saringan kawat ukuran 0,5 cm x 0,5 cm dan tertahan dengan saringan kawat 0,2 cm x 0,2 cm dengan, lolos saringan kawat ukuran 1,5 cm x 1,5 cm dan tertahan dengan saringan kawat 0,5 cm x 0,5 cm. *Compaction ratio* 1,5;2 dan 2,5. Penelitian ini menggunakan percobaan faktorial dengan Rancangan Acak Lengkap (*Completely Randomized Design*). Analisis yang dipakai merupakan analisis keragaman (*Analysis of Varians*) dengan factor ukuran partikel dan *compaction ratio*. Uji lanjut menggunakan uji HSD (*Honestly Significant Difference*). Pengujian sifat fisika dan mekanika papan serat menggunakan standar ASTM D 1037-99 (*Standar Test Method for Evaluating Properties of Wood-Based Fiber and Particle Panel Materials*). Kadar air, kerapatan, pengembangan tebal, penyerapan air, keteguhan lengkung statik dan keteguhan tarik tegak lurus permukaan (*internal bonding*).

Hasil penelitian menunjukkan bahwa interaksi antara faktor *compaction ratio* dan faktor ukuran partikel hanya berpengaruh nyata terhadap penyerapan air. Semakin tinggi *compaction ratio* maka kerapatan papan cenderung meningkat. Persen penyerapan air cenderung menurun dengan bertambahnya nilai *compaction ratio*, *internal bonding* cenderung menurun dari 1,853 kg/cm² ke 1,013 kg/cm², faktor ukuran partikel berpengaruh nyata terhadap kadar air partikel, *internal bonding* dan berpengaruh sangat nyata terhadap modulus patah. Kadar air meningkat dari 7,132% ke 12,128%, keteguhan *internal bonding* menurun dari 1,796 kg/cm² ke 1,149 kg/cm². Sifat fisika papan partikel pelepah salak sebagian besar memenuhi standar FAO (1958) dan Anonim (1974) sedangkan sifat mekanika sebagian tidak memenuhi standar.

Kata kunci : ukuran partikel, *compaction ratio*, papan partikel, pelepah salak

¹Mahasiswa Jurusan Teknologi Hasil Hutan Fakultas Kehutanan UGM

²Staf Pengajar Jurusan Teknologi Hasil Hutan Fakultas Kehutanan UGM

THE EFFECT OF PARTICLE SIZE AND COMPACTION RATIO TO THE PROPERTIES OF PARTICLEBOARD (*Salacca* sp)

By
Yuni Fitriastuti¹ dan T.A. Prayitno²

ABSTRACT

The alternative substitution of raw material to produce particleboard should be developed to close over lacking off the log. Plantation waste in the form of salak frond is source of lignocellulose material which can available for exploited as particleboard component. The objective of this research is to know the interaction between particle size and compaction ratio on the physical and mechanical properties of particleboard.

The research material was fronds of salak taken from Agro Wisata, Turi district, Sleman district, Jogjakarta. The particle size which applied were pass through measure wire mesh of 0,2 cm x 0,2 cm, pass through measure wire mesh of 0,5 cm x 0,5 cm and retain with wire mesh of 0,2 cm x 0,2 cm by, pass through wire mesh ukuran 1,5 cm x 1,5 cm and retain with wire mesh of 0,5 cm x 0,5 cm and The compaction ratio which applied were 1,5; 2 dan 2,5. The research design was in a completely randomized design arranged in factorial experiment, with two factors. The first factor was particle size and the second factor was compaction ratio and used analysis of variants as statistical analysis. Post hoc test used honestly significant difference. The test of physical and mechanical properties particleboard used ASTM 1037-99 (Standard Test Method for Evaluating Properties of Wood-Based Fiber and Particle Panel Materials) which including moisture content, density, water adsorption, thickness swelling, static bending, and tensile strength perpendicular of surface (internal bonding).

The result of research showed that interaction between particle size and compaction ratio significantly affected to the water adsorption. Higher compaction ratio causing higher density. Percent of water adsorption tend to decline, internal bonding tend to decline from 1,853 kg/cm² to 1,013 kg/cm², particle size significantly affected the moisture content, internal bonding, and very significantly affected the modulus of rupture. Moisture content increase from 13,2% to 12,128%, Internal bonding decline from 1,796 kg/cm² to 1,149 kg/cm². Physical properties of particleboard has fulfilling FAO (1958) standard and Anonim (1974) standard, but just some of mechanical properties particleboard which fulfilling standard.

Key words : Particle size, compaction ratio, particleboard, frond of salak.

¹Student of Forest Product Technology Department of Forestry Faculty of GMU

²Lecture of Forest Product Technology Department of Forestry Faculty of GMU