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INTISARI

Luas areal tanaman kelapa sawit di Indonesia sampai saat ini diperkirakan sebesar 1,4 juta hektar, tetapi pemanfaatan limbah batang kelapa sawit pada waktu peremajaan belum dikerjakan. Untuk itu perlu penelitian pemanfaatan kayu kelapa sawit ini sebagai bahan baku papan partikel, dengan demikian akan menambah nilai guna kayu kelapa sawit.

Penelitian mengenai pengaruh ekstraksi dan cara pengawetan terhadap sifat papan partikel kayu kelapa sawit, bertujuan:

1. mengetahui pengaruh ekstraksi terhadap sifat papan partikel kayu kelapa sawit.
2. Mengetahui pengaruh cara pengawetan terhadap sifat papan partikel kayu kelapa sawit.

Penelitian ini menggunakan lima pohon kelapa sawit (*Elaeis guineensis* Jacq) dari varietas Dura yang berasal dari perkebunan kelapa sawit di Lampung. Tinggi pohon kurang lebih 10 m dengan kisaran diameter 40-60 cm dengan perkiraan umur 25 tahun. Perlakuan ekstraksi air dingin selama 1 hari, 3 hari, 5 hari, 7 hari dan 9 hari, serta ekstraksi air panas selama 2 jam, 4 jam, 6 jam, 8 jam dan 10 jam. Cara pengawetan terdiri dari tiga aras yaitu pengawetan partikel, penambahan bahan pengawet pada perekat dan pengawetan papan partikel. Pengujian sifat-sifat fisik dan mekanik papan partikel yang digunakan mengikuti ASTM D 1037-64.

Hasil penelitian menunjukkan bahwa faktor ekstraksi berpengaruh terhadap kadar air papan partikel sebesar 13,2 %. pengembangan tebal selama 2 jam, 4 jam dan 24 jam masing-masing sebesar 12,2 %, 13,7 % dan 17,6 % dan modulus patah sebesar 120,2 Kg/cm². Faktor cara pengawetan berpengaruh terhadap berat jenis papan partikel sebesar 0,592, penyerapan air selama 2 jam, 4 jam dan 24 jam masing-masing sebesar 64,7 %, 69,3 % dan 87,0 %, pengembangan tebal selama 2 jam, 4 jam dan 24 jam masing-masing sebesar 10,5 %, 11,8 % dan 14,8 %. Modulus elastisitas sebesar 14184 Kg/cm², modulus patah sebesar 116,0 Kg/cm² dan keteguhan tekan sejajar permukaan sebesar 70,0 Kg/cm². Interaksi antara faktor ekstraksi dan cara pengawetan berpengaruh terhadap kadar air sebesar 14,2 %, penyerapan air selama 24 jam sebesar 95,1 %, pengembangan tebal papan selama 2 jam, 4 jam dan 24 jam masing-masing sebesar 13,6 %, 15,4 % dan 19,3 %, modulus patah sebesar 136,4 Kg/cm².

Papan partikel dengan perlakuan ekstraksi air dingin selama 7 hari (E₄) dan ekstraksi air panas selama 2 jam (E₆) memberikan sifat fisik dan mekanik yang paling baik. Faktor cara pengawetan yang memberikan sifat fisik dan mekanik yang lebih baik terdapat pada perlakuan penambahan bahan pengawet pada perekat (P₂).

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ABSTRACT

Oil Palm area in Indonesia is estimated at the present time to be 1.4 million hectares. That huge oil palm stem waste of replanting is not utilized yet. For that reason it needs some research on that waste such as for raw materials for particleboard production. This would increase an added value to the plantation.

An experiment on the effect of extraction and preservation methods on the properties of oil palm particleboard has a couple objectives of:

1. finding out the effect of extraction methods on the properties of oil palm particleboard,
2. finding out the effect of preservation methods on the properties of oil palm particleboard.

The experiment used five oil palm (*Elaeis guineensis* Jacq) trees of Dura species obtained from an oil palm plantation in Lampung. The trees were approximately 10 m in height with stem diameter ranged from 40 to 60 cm, and were estimated of 25 years old. Cool water extraction methods was done for 1, 3, 5, 7 and 9 days, while hot water extraction was done for 2, 4, 6, 8 and 10 hours. Preservation was done by either applying preservative to the particles, mixing preservative to the glue, and applying preservative to the particleboard. Physical and mechanical properties tests of the particleboard were done following ASTM D 1037-64.

The results indicated that extraction methods affected particleboard moisture content by as much as 13.2%, thickness swelling after 2, 4 and 24 hours by respectively 12.2%, 13.7% and 17.6%, respectively and modulus of rupture by 120.2 kg/cm². Preservation methods influenced particleboard specific gravity by as much as 0.592, water absorption after 2, 4 and 24 hours by 64.7%, 69.3% and 87.0%, respectively thickness swelling after 2, 4 and 24 hours by 10.5%, 11.8% and 14.8% respectively, modulus of elasticity by 14.184 kg/cm², modulus of rupture by 116.0 kg/cm² and surface parallel compression strength by 70.0 kg/cm². Extraction methods interacted with preservation method with respect to moisture content by as much as 14.2%, 24 hours water absorption by 95.1%, thickness swelling after 2, 4 and 24 hours by 13.6%, 15.4% and 19.3% respectively, and modulus of rupture by 136.4 kg/cm².

Particleboard produced using cool water extraction for 7 days (E_4) and hot water extraction for 2 hours (E_6) showed physical and mechanical properties. With the best respect to preservation method, mixing preservative with glue (P_2) would produce particleboard having good mechanical and physical properties.

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