

## PENYEMPURNAAN SIFAT PAPAN SERAT BERKERAPATAN TINGGI DARI CAMPURAN RUMPUT GELAGAH, TANDAN KOSONG KELAPA SAWIT, DAN BAMBU

*(Properties Improvement of Hardboard Made of Mixed Fibrous Materials:  
Saccharum spontaneum Grasses, Empty Oil-palm Bunches, and Bamboo)*

Dian Anggraini Indrawan<sup>1</sup>, Han Roliadi<sup>1</sup>, Rossi Margareth Tampubolon<sup>1</sup>,  
Gustan Pari<sup>1</sup>, Adi Santoso<sup>1</sup>, & Mohamad Iqbal<sup>2</sup>

<sup>1</sup> Pusat Penelitian dan Pengembangan Hasil Hutan

Jl. Gunung Batu No. 5, Bogor 16610, Telp. 0251-8633378, Fax. 0251-8633413

<sup>2</sup>Pusat Penelitian dan Pengembangan Sosial, Ekonomi, Kebijakan dan Perubahan Iklim

Jl. Gunung Batu 5, Bogor 16610, Tlp. (0251) 86339, Fax. (0251) 8634924

E-mail: elisabeth\_dian@yahoo.com

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### ABSTRACT

Laboratory-scale manufactured hardboard made of *Saccharum Spontaneoun Grasses (SSG)*, *Empty Oil-palm Bunches (EOPB)*, and *andong bamboo* is potentially developed. However, initial experiment shows the hardboard did not meet *Japanese Industrial Standard (JIS)* and *International Standard Organization (ISO)* for hardboard. This paper observes modification of the hardboard to satisfy the standards. Modification includes adding alkali concentration during pulp cooking and changing the additives composition. Result shows modification can enhance the hardboard quality to satisfy *JIS* and *ISO* requirements. Fiber mixture of *SSG pulp* and *andong/betung bamboo pulp* was cooked in 10.5% alkali concentration; and 12% alkali concentration for *EOPB pulp*. Additives composition used were *tannin-resorcinol-formaldehyde/TRF adhesive*, *alum*, and *activated charcoal*; without wax emulsion. The mixture of *SSG pulp (50%) + EOPB pulp (50%)* was the most prospective for hardboard, followed by *SSG pulp (100%)* solely; *SSG pulp (50%) + andong bamboo pulp (50%)*; and *SSG pulp (50%) + betung bamboo pulp (50%)* as the lowest prospects. The least-prospective fibrous material (*betung bamboo*) are expectedly be improved by using more *TRF adhesive*, *nano-size activated charcoal* and *cross-linking agents*.

*Keywords: Hardboard, Saccharum Spontaneoun Grasses (SSG), Empty Oil-palm Bunches (EOPB), bamboo, modification*

### ABSTRAK

Papan serat *hardboard* (HB) dari campuran Rumput Gelagah (RG), Tandan Kosong Kelapa Sawit (TKKS) dan bambu andong berpotensi untuk dikembangkan. Namun, percobaan pendahuluan menunjukkan HB tersebut tidak memenuhi persyaratan produk HB dari *Japanese Industrial Standard (JIS)* dan *International Standard Organization (ISO)*. Tulisan ini mempelajari modifikasi pembuatan HB agar memenuhi standar produk tersebut. Modifikasi yang dilakukan meliputi penambahan konsentrasi alkali dalam pemasakan pulp dan merubah komposisi perekat. Hasil penelitian menunjukkan kualitas HB modifikasi meningkat dan mampu memenuhi persyaratan standar *JIS* dan *ISO*. Campuran serat pulp RG dan bambu andong/betung dimasak dengan konsentrasi alkali 10,5% dan 12% untuk serat dari TKKS. Campuran perekat yang digunakan adalah *tannin-resorsinol-formaldehida (TRF)*, *alum* (tawas) dan emulsi lilin. Campuran serat yang paling banyak memenuhi standar adalah RG pulp (50%) + TKKS pulp (50%), diikuti RG pulp (100%), TKKS pulp (50%) + pulp bambu andong (50%), RG pulp (50%) + pulp bambu betung (50%). Serat yang masih kurang prospektif (bambu betung) diharapkan dapat

diperbaiki melalui penggunaan perekat TRF dalam jumlah lebih banyak, arang aktif berukuran nano dan *cross-linking agent*.

Kata kunci: *Hardboard*, Rumput Glagah (RG), Tandan Kosong Kelapa Sawit (TKKS), bambu, modifikasi