

**PEMBUATAN DAN KUALITAS KARTON DARI CAMPURAN
PULP TANDAN KOSONG KELAPA SAWIT DAN LIMBAH PADAT ORGANIK
INDUSTRI PULP**

(Manufacturing and Qualities of Paperboard from the Mixture of Empty Oil-Palm Fruit Bunches and Pulp-Mill Sludge)

Oleh / By:

Han Roliadi¹

Pusat Penelitian dan Pengembangan Hasil Hutan,
Jln. Gunung Batu No.5, Bogor, Telp. 0251- 8633378; Fax. 0251- 8633413
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ABSTRACT

Small-scale paperboard industries in Indonesia that use sludge are currently faced with difficulty in procurement continuity of additional fibrous raw materials (particularly pulp and waste paper) as the sludge mixture. On the other hand, empty oil-palm fruit bunches (EOPFB) as waste from palm-oil processing are abundantly potential offering lignocellulosic fiber stuffs, which have not been utilized effectively hence suggesting their potential use in those paperboard industries.

In relevance, EOPFB after being chipped was experimentally cooked into pulp for paperboard, using semi-chemical hot soda process in the semi-pilot scale closed (pressurized) digester designed by the Center for Forest Products Research Development Center, Bogor. The process afforded the EOPFB pulp yield at 60.17%. Further, paperboard sheet was formed in a small-scale paperboard industry from the mixture of 50% EOPFB pulp and 50% pulp-mill sludge; and from 100% EOPFB, each incorporating the additives (i.e. 5% clay filler, 2% alum retention-agent, 4% tapioca binder, and 2% rosin-soap size).

Physical and strength properties of the paperboard from 100% EOPFB and its mixture with pulp-mill sludge (50 : 50%, respectively) were better than those produced by the smallscale industry traditionally using the mixture of 50% sludge and 50% waste paper (but, without additives), and also satisfied the commercial-paperboard criteria. In addition, the surface of paperboard from EOPFB pulp mixed with sludge (50 : 50% proportion) provided interesting visual impression, rendering it suitable for fancy/art purposes (invitation card, book cover, decorative paperboard, attractive surface patterns, etc). This suggests the prospective use of manufacturing fancy paperboard from the mixture of EOPFB pulp mixed with pulp-mill sludge, as alternative/substitute raw material of the paperboard industry that uses the mixture of waste paper and paper-mill sludge.

Keywords: Small-scale paperboard industry, empty oil-palm fruit bunches, pulp-mill sludge, waste paper, small-scale paperboard industry

ABSTRAK

Industri karton skala kecil yang menggunakan bahan baku limbah padat organik industri pulp/kertas (sludge) saat ini mengalami kesulitan kontinuitas pasokan bahan serat lain sebagai campuran limbah padat organik tersebut (khususnya pulp dan kertas bekas). Di lain hal, limbah industri pengolahan minyak kelapa sawit dalam bentuk tandan kosong kelapa sawit (TKKS) sebagai bahan serat berligno-selulosa berlimpah jumlahnya dan belum banyak dimanfaatkan, sehingga berindikasi pemanfaatannya sebagai bahan baku industri karton.

Terkait dengan hal tersebut, TKKS sesudah dijadikan serpih, diolah menjadi pulp untuk karton menggunakan proses semi-kimia soda panas tertutup pada ketel pemasak skala semipilot hasil rekayasa hasil rekayasa Pusat Litbang Hasil Hutan (Bogor). Rata-rata rendemen pulp TKKS yang diperoleh 60,17%. Lembaran karton dibentuk di industri karton skala kecil, dari campuran pulp TKKS 50% dan limbah padat organik industri kertas 50%; dan dari pulp TKKS 100%, masing-masing dengan penambahan bahan aditif (kaolin 5%, alum 2%, tapioka 4%, dan sizing dari rosin 2%).

Sifat fisik dan kekuatan karton asal pulp TKKS 100% dan asal campurannya dengan limbah padat organik industri pulp (50 : 50%) lebih tinggi dari pada karton produksi industri rakyat (dari campuran kertas 50% kertas bekas dan 50% limbah padat organik industri kertas, tetapi tanpa aditif), dan memenuhi kriteria karton komersial. Di samping itu, terdapat kesan visual menarik pada permukaan karton dari campuran pulp TKKS dan limbah padat organik, mengakibatkan sesuai untuk kertas karton indah (kartu undangan, sampul buku, karton hiasan, dsb). Ini mengisyaratkan prospek penggunaan pulp TKKS yang dicampur dengan limbah padat organik industri pulp, sebagai bahan baku alternatif/pengganti campuran limbah padat organik pada industri karton rakyat yaitu kertas bekas.

Kata kunci: Tandan kosong kelapa sawit (TKKS), pulp, kertas bekas, limbah padat organik industri pulp, industri karton rakyat