

ABSTRACT

EFFECT OF PRESSURE ON THE CHARACTERISTICS OF OIL PALM EMPTY FRUIT BUNCH BIOPELLET OIL PALM EMPTY

By

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Oil palm empty fruit bunches (OPEFB) are palm oil processing factory waste that has the potential to be used as material for making solid fuel in the form of pellets. This study aims to determine the effect of pressure on the characteristics of biopelets from OPEFB, the effect of pressing time on the characteristics of biopelets from OPEFB, the effect of the interaction of pressure and duration of suppression on the characteristics of EFB biopelets, the optimal pressure and duration of pressing for pellet making from OPEFB. The research was conducted by printing pellets using OPEFB particle material measuring <0.6 mm with pressure variations of 0.5, 1, 2, and 3 tons and pressing time of 9, 60, and 180 seconds. Printing is done using a hydraulic type pellet press. Pellet characteristics were evaluated from water content, ash content, volatile content, density, specific gravity of kamba, pellet color, pellet strength and water absorption from pellets. Analysis of variance (ANOVA) was carried out to see the effect of treatment on pellet characteristic parameters. If there is a difference then continue with BNT test at significance level = 5%. Pressure affects the ash content, volatile content and density of OPEFB biomass pellets. The time of pressing affects the color of the OPEFB biomass pellet. The interaction of the effect of pressure and the duration of pressing has an effect on the density of OPEFB biomass pellets. Based on density, the optimal treatment is T0 pressure (0.5 Ton) and 180 seconds of suppression.

Keywords: pellet, OPEFB, pressure, water absorption, strength

ABSTRAK

PENGARUH TEKANAN TERHADAP KARAKTERISTIK BIOPELET TANDAN KOSONG KELAPA SAWIT (TKKS)

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Tandan kosong kelapa sawit (TKKS) merupakan limbah pabrik pengolahan kelapa sawit yang sangat potensial untuk dijadikan sebagai bahan pembuatan bahan bakar padat berupa pelet. Penelitian ini bertujuan untuk mengetahui pengaruh tekanan terhadap karakteristik biopelet dari TKKS, pengaruh lama penekanan terhadap karakteristik biopelet dari TKKS, pengaruh interaksi tekanan dan lama penekanan terhadap karakteristik biopelet TKKS, tekanan dan lama penekanan yang optimal untuk pembuatan pelet dari TKKS. Penelitian dilakukan dengan mencetak pelet menggunakan bahan partikel TKKS berukuran <0,6 mm dengan variasi tekanan 0,5, 1, 2, dan 3 ton dan lama penekanan 9, 60, dan 180 detik. Pencetakan dikerjakan menggunakan alat pencetak pelet tipe hidrolik. Karakteristik pelet dievaluasi dari kadar air, kadar abu, kadar volatil, masa jenis, berat jenis kamba, warna pellet, kekuatan pelet dan daya serap air dari pelet. Analisis variansi (ANOVA) dilakukan untuk melihat pengaruh perlakuan terhadap parameter karakteristik pelet. Jika terdapat perbedaan maka dilanjutkan dengan uji BNT pada taraf signifikansi $\alpha = 5\%$. Tekanan berpengaruh terhadap kadar abu, kadar volatil dan massa jenis pelet biomassa TKKS. Lama penekanan berpengaruh terhadap warna pelet biomassa TKKS. Interaksi tekanan dan lama penekanan berpengaruh terhadap massa jenis pelet biomassa TKKS. Berdasarkan massa jenis atau densitas, maka perlakuan yang optimal adalah tekanan T0 (0,5 Ton) dan lama penekanan 180 detik.

Kata kunci: pelet, TKKS, tekanan, daya serap air, kekuatan