

**PENGARUH TEKANAN KEMPA DAN JUMLAH PEREKAT TERHADAP
KUALITAS BRIKET ARANG LIMBAH BATANG KETELA POHON
(*Manihot esculenta Crantz*)**

Intisari

Penelitian ini bertujuan untuk memanfaatkan limbah batang ketela pohon (*Manihot esculenta Crantz*) menjadi salah satu sumber energi alternatif berupa briket arang. Penelitian ini mencoba mengetahui pengaruh tekanan kempa dan jumlah perekat terhadap sifat fisika briket arang (kadar air, berat jenis, nilai kalor) dan sifat kimia briket arang (kadar zat mudah menguap, kadar abu, dan kadar karbon terikat).

Bahan penelitian limbah batang ketela pohon didapat dari Kecamatan Saptosari, Kabupaten Gunungkidul. Proses karbonisasi batang ketela pohon dengan kadar air $\pm 12-14\%$ menggunakan retort listrik dengan suhu 400°C selama tiga jam. Penelitian ini menggunakan rancangan acak lengkap (*Completely Randomized Design*) dengan dua faktor perlakuan yaitu tekanan kempa (2000 psi, 2500 psi, 3000 psi) dan jumlah perekat pembuatan briket arang (4%, 5%, dan 6%) dengan masing-masing perlakuan lima kali ulangan. Briket arang yang dihasilkan diuji kualitasnya dengan parameter sifat fisika (kadar air, berat jenis, dan nilai kalor) dan sifat kimia (kadar abu, kadar zat mudah menguap, dan kadar karbon terikat).

Hasil penelitian menunjukkan briket arang yang dihasilkan memiliki parameter kualitas sebagai berikut : kadar air 6,54% – 7,41%; berat jenis 0,54 – 0,74; nilai kalor 4.910,74 kal/g – 5.542,78 kal/g; kadar abu 6,42% -8,09%; kadar zat mudah menguap 24,74% -35,69%; dan kadar karbon terikat 49,26% -60,92%. Briket arang terbaik diperoleh dari jumlah perekat 4% dan tekanan kempa 3000 psi yang menghasilkan briket arang dengan spesifikasi sebagai berikut : kadar air 6,54%; berat jenis 0,70; nilai kalor 5.542,78 kal/g; kadar abu 6,42%; kadar zat mudah menguap 26,88%; dan kadar karbon terikat 60,16%. Beberapa sampel briket arang yang dihasilkan telah memenuhi sebagian parameter standar Jepang, Amerika, Inggris dan Indonesia.

Kata kunci : ketela pohon, briket arang, sifat fisika, sifat kimia

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**THE EFFECT OF PRESSURE PRESS AND THE NUMBER OF
ADHESIVES ON THE QUALITY OF CHARCOAL BRIQUETTES OF
CASSAVA STEM WASTE (*Manihot esculenta* Crantz)**

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Abstract

This study aims to utilize the cassava stem waste (*Manihot esculenta* Crantz) into alternative energy source as charcoal briquettes. This research tries to determine the effect of pressure press and the amount of adhesives on the physical properties (moisture content, specific gravity, heating value) and chemical properties of charcoal briquettes (volatile matters, ash content, and fixed carbon).

Research material was obtained from cassava stem waste and collected from Saptosari District, Gunungkidul Regency. Carbonization process of cassava stem were conducted with moisture content of $\pm 12-14\%$ using an electric retort with a temperature of 400°C for three hours. The design used in this research was Completely Randomized Design (CRD) with two treatment factors, There were pressure press (2000 psi, 2500 psi, 3000 psi) and the amount of adhesive (4%, 5%, and 6%) with five replication for each treatment. The charcoal briquettes produced were tested for quality with parameters of physical properties (moisture content, specific gravity, and heating value) and chemical properties (ash content, volatile matters, and fixed carbon).

The results showed the charcoal briquettes made had the following quality parameters: 6.54% - 7.41% of moisture content; 0.54 - 0.74 of specific gravity; 4,910.74 cal/g - 5,542.78 cal/g of heating value; 6.42% - 8.09% of ash content; 24.74% - 35.69% of volatile matters; and 49.26% - 60.92% of fixed carbon. The best charcoal briquettes are obtained from 4% of the amount of adhesive and press pressure of 3000 psi which produced charcoal briquettes with the following specifications: 6.54% of moisture content; 0.70 of specific gravity; 5,542.78 cal/g of heating value; 6.42% of ash content; 26.88% of volatile matters; and 60.16% of fixed carbon. Some samples of charcoal briquettes produced have met some of the parameters in Japanese, American, British and Indonesian standards.

Keywords : cassava, charcoal briquettes, physical properties, chemical properties

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