

**KARAKTERISTIK BRIKET ARANG LIMBAH AMPAS TEBU
(*Saccharum officinarum* L.) PADA BERBAGAI KOMBINASI SUHU DAN
WAKTU KARBONISASI**

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INTISARI

Ampas tebu merupakan limbah biomassa yang melimpah tetapi belum dimanfaatkan secara optimal, sementara kebutuhan energi terus meningkat dan subsidi bahan bakar minyak semakin dikurangi. Penelitian ini bertujuan untuk mempelajari dan mengidentifikasi karakteristik kualitas briket arang dari limbah ampas tebu (*Saccharum officinarum* L.) pada berbagai kombinasi suhu dan waktu karbonisasi sesuai dengan standar internasional.

Penelitian ini menggunakan rancangan deskriptif untuk mengamati karakteristik kualitas briket arang dari limbah ampas tebu pada berbagai kombinasi suhu karbonisasi (300°C, 350°C, dan 400°C) serta waktu karbonisasi (60, 90, dan 120 menit). Proses pembuatan briket arang dilakukan dengan mencampurkan perekat (perbandingan: air 1:16) sebanyak 6% dari 27 g serbuk arang. Campuran perekat dan serbuk arang kemudian dicetak menggunakan kempa hidraulik dengan tekanan 3000 psi selama 15 menit dan dikeringkan. Briket arang yang dihasilkan diuji kualitasnya berdasarkan 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 bahwa briket arang dari limbah ampas tebu memiliki sifat sebagai berikut: kadar air 7,07% - 8,31%; berat jenis 0,76 - 0,87; nilai kalor 5.369,33 kal/g - 6.345,33 kal/g; zat mudah menguap 11,74% - 25,38%; kadar abu 10,21% - 11,13%; dan kadar karbon terikat 64,09% - 77,47%. Hasil pengujian menunjukkan briket arang yang dihasilkan telah memenuhi standar kualitas briket arang Indonesia, Jepang, dan Amerika untuk parameter kadar air, nilai kalor, kadar zat mudah menguap, dan karbon terikat.

Kata Kunci: Limbah Ampas Tebu, Briket Arang, Suhu Karbonisasi, Waktu karbonisasi

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CHARACTERISTICS OF SUGARCANE BAGASSE (*Saccharum officinarum* L.) CHARCOAL BRIQUETTES AT VARIOUS COMBINATIONS OF CARBONIZATION TEMPERATURE AND TIME

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ABSTRACT

Sugarcane bagasse is an abundant biomass waste that has not been optimally utilized, while energy needs continue to increase and fuel oil subsidies are increasingly being reduced. This research aims to study and identify the quality characteristics of charcoal briquettes from bagasse waste (*Saccharum officinarum* L.) at various combinations of temperature and carbonization time in accordance with international standards.

This research uses a descriptive design to observe the quality characteristics of charcoal briquettes from bagasse waste based on a combination of carbonization temperature (300°C, 350°C, and 400°C) and carbonization time (60, 90, and 120 minutes). The process of making charcoal briquettes was carried out by mixing the adhesive (ratio: water 1:16) as much as 6% of 27 g of charcoal powder. The mixture of adhesive and charcoal powder was then molded using hydraulic felts with a pressure of 3000 psi for 15 minutes and dried. The resulting charcoal briquettes were tested for quality based on physical properties (moisture content, bulk density, and calorific value) and chemical properties (ash content, volatile matter content, and fixed carbon content).

The results showed that charcoal briquettes from bagasse waste have the following properties: moisture content of 7,07% - 8,31%; bulk density of 0,76 – 0,87; calorific value of 5.369,33 – 6.345,33 cal/g; volatile matter content of 11,74% - 25,38%; ash content of 10,21% - 11,13%; and fixed carbon content of 64,09% - 77,47%. The test results show that the charcoal briquettes produced have met the quality standards of Indonesian, Japanese, and American charcoal briquettes for the parameters of moisture content, calorific value, volatile matter content, and fixed carbon content.

Keywords: Sugarcane Bagasse Waste, Charcoal Briquettes, Carbonization Temperature, Carbonization Time

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