

ABSTRACT

*This study aimed to analyze the effect of rice flour binder content on the characteristics of areca nut (*Areca catechu* L.) shell charcoal briquettes, utilizing abundant areca nut shell waste as an alternative energy source.*

The research method employed a Completely Randomized Design (CRD) with one factor: rice flour binder concentration at three levels: 10% (B1), 15% (B2), and 20% (B3). Each treatment was replicated 3 times. The observed variables included moisture content, volatile matter content, ash content, fixed carbon content, density, and burning rate. The briquette production process involved drying raw materials, carbonization at 300-500°C, grinding, sieving, mixing with heated binder, and molding, followed by oven drying at 60°C for 24 hours. Data were analyzed using ANOVA and Duncan's Multiple Range Test (DMRT).

The results showed that rice flour binder content significantly affected the volatile matter content, density, and burning rate of areca nut shell charcoal briquettes. Volatile matter content increased with higher binder concentrations, with the highest value of 39.30% at 20% concentration, although this did not meet SNI standards (<15%). The highest briquette density was achieved at 20% binder concentration, while the highest fixed carbon content was at 10% concentration (59.22%), indicating that binder addition reduced fixed carbon content. The briquette moisture content ranged from 7.69% to 8.54%, with an average value of 8% considered ideal according to standards.

Keywords: *Charcoal briquettes, Areca nut shell, Rice flour, Binder content, Briquette characteristics.*

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh kadar perekat tepung beras terhadap karakteristik briket arang kulit buah pinang (*Areca catechu* L.), memanfaatkan limbah kulit pinang yang melimpah sebagai sumber energi alternatif.

Metode penelitian menggunakan Rancangan Acak Lengkap (RAL) dengan satu faktor, yaitu konsentrasi perekat tepung beras pada tiga taraf: 10% (B1), 15% (B2), dan 20% (B3). Setiap perlakuan diulang 3 kali. Variabel yang diamati meliputi kadar air, kadar zat menguap, kadar abu, kadar karbon terikat, kerapatan, dan laju pembakaran. Proses pembuatan briket meliputi pengeringan bahan baku, pengarangan pada suhu 300-500°C, penggilingan, penyaringan, pencampuran dengan perekat yang dipanaskan, dan pencetakan, lalu dikeringkan dalam oven pada 60°C selama 24 jam. Data dianalisis menggunakan ANOVA dan uji Duncan *Mutiple Range Test* (DMRT).

Hasil penelitian menunjukkan bahwa kadar perekat tepung beras berpengaruh nyata terhadap kadar zat menguap, kerapatan, dan laju pembakaran briket arang kulit pinang. Kadar zat menguap meningkat dengan konsentrasi perekat yang lebih tinggi, dengan nilai tertinggi 39,30% pada konsentrasi 20% , meskipun ini tidak memenuhi standar SNI (<15%). Kerapatan briket tertinggi dicapai pada konsentrasi perekat 20% , sementara kadar karbon terikat tertinggi pada konsentrasi 10% (59,22%), menunjukkan penambahan perekat menurunkan kadar karbon terikat. Kadar air briket berada di kisaran 7,69% hingga 8,54% , dengan nilai rata-rata 8% ideal menurut standar.

Kata Kunci: Briket arang, Kulit buah pinang, Tepung beras, Kadar perekat, Karakteristik briket.