Pengaruh Tekanan Terhadap Karakteristik Briket Bioarang dari Sampah Kebun Campuran dan Kulit Kacang Tanah dengan Tambahan Minyak Jelantah

INTISARI

Peningkatan jumlah penduduk dan semakin banyaknya industri yang berkembang mengakibatkan permintaan akan kebutuhan energi terus meningkat. Penelitian ini bertujuan untuk mengetahui variasi tekanan terhadap karakteristik briket bioarang dari campuran sampah kebun, kulit kacang tanah dan minyak jelantah. Limbah sampah kebun campuran diarangkan dengan suhu karbonisasi 500°C selama 5 jam. Penelitian ini menggunakan variasi tekanan (100 kg/cm^2 dan 250 kg/cm^2) dengan masing-masing perlakuan tiga kali diuji. Briket bioarang yang dihasilkan diuji kualitasnya dengan parameter sifat fisika (kadar air, nilai kalor, ketahanan, dan lama nyala api) dan sifat kimia (kadar abu, kadar zat mudah menguap, dan kadar karbon terikat)) yang dilanjutkan dengan perendaman briket menggunakan minyak jelantah dengan waktu 10 menit. Hasil pengujian sifat fisika dan sifat kimia briket bioarang sebagai berikut : kadar air (4,9177% - 6,9070%), kadar zat mudah menguap (5,0226% - 6,9070%), kadar abu (10,5846% - 11,4884%), kadar karbon terikat (52,6753% - 58,6800%), nilai kalor (6955,8509 kal/gram – 7207,7607 kal/gram), ketahanan briket (99,950% - 99,959%), lama nyala api untuk Burning Time (1.31" – 3.14") dan untuk Self Burning Time (134" – 147"). Variasi tekanan berpengaruh sangat nyata terhadap nilai kadar air, nilai kalor, kadar abu, kadar zat mudah menguap, kadar karbon terikat, ketahanan briket dan lama nyala api. Briket bioarang yang optimal diperoleh pada tekanan kempa 100 kg/cm2 dengan hasil sebagai berikut : kadar air 6,7897%, kadar zat mudah menguap 29,5328%, kadar abu 10,5846%, kadar karbon terikat 53,0929%, nilai kalor 7207,7607 kal/gram, ketahanan briket 99,959%, dan lama nyala api pada Burning Time 1.31" dan Self Burning Time 134''.

Kata kunci : briket bioarang, sampah kebun campuran, kulit kacang tanah, dan tekanan.

Influence of Pressure on The Characteristics of Briquettes Based on Garden Waste Combined with Peanuts Peels using Waste Cooking Oil

ABSTRACT

Population growth and the increasing number of growing industries resulted in the demand for energy needs continue to increase. This study aims to determine the characteristics of felt pressure variations bioarang briquettes from a mixture of garden waste, peanuts peels and cooking oil. Waste bins charred mixed farms with carbonization temperature of 500°C for 5 hours. This study uses a variation of pressure (100 kg / cm^2 and 250 kg / cm^2) with each treatment three times tested. Briquette bioarang produced is tested quality with parameter physical properties (water content, calorific value, durability, and old flame) and chemical properties (ash content, content of volatile substance, and the levels of carbon bonded)), followed by soaking the briquettes using waste cooking oil with a time of 10 minutes. Results of testing the physical properties and chemical properties of briquettes bioarang as follows: water content (4.9177% - 6.9070%), the levels of volatile substance (5.0226% - 6.9070%), ash content (10.5846% - 11.4884%), bound carbon content (52.6753% - 58.6800%), calorific value (6955.8509 cal / gram - 7207.7607 cal / gram), briquettes resistance (99.950% - 99.959%), long flame for Burning Time (1:31 "- 3:14") and for a Self Burning Time (134 "- 147"). Pressure variation felts very significant effect on water content, calorific value, ash content, volatile matter content, bound carbon content, durability briquettes and old flame. Bioarang optimum briquette obtained on pressure of felt 100 kg / cm2 with the following results: water content of 6.7897%, volatile substance content of 29.5328%, ash content of 10.5846%, 53.0929% bound carbon content, calorific value 7207.7607 cal / gram, endurance briquettes 99.959%, and old flame at Burning Time 1:31 "and Self Burning Time 134 ".

Keywords : bioarang briquettes, mixture garden waste, peanuts peel, pressure felts.