FJSR
Formosa Journal of Sustainable Research
E-ISSN 2830-6228
WhatsApp: +62 877 1388 1007
E-mail: admin@formosapublisher.org
Office: Jl, Ir Juanda No 56b, Lantai 2
Medan, Indonesia

Characteristics of Charcoal Briquettes, Activated Charcoal, and Liquid Smoke from Rice Husk (Oriza sativa L.)

Rindayatno
Fakultas Kehutanan Universitas Mulawarman

Finsya Annisa Cahya Shafiera
Fakultas Kehutanan Universitas Mulawarman

Baktiriani Banda Padang
Fakultas Kehutanan Universitas Mulawarman

Tersisius Tigang
Fakultas Kehutanan Universitas Mulawarman

Agus Nur Fahmi
Fakultas Kehutanan Universitas Mulawarman

DOI: https://doi.org/10.55927/fjsr.v2i1.2661

Keywords: Charcoal Briquettes, Activated Charcoal, Liquid Smoke, Rice Husk

Abstract

Rice husk (Oriza sativa L.) was studied in three products, namely charcoal briquettes, activated charcoal and liquid smoke. Aims to know and analyze the characteristics of the three products. Making charcoal briquettes through the forming process of rice husk charcoal powder then tested for density, moisture content, compressive strength, volatile matter, ash content, fixed carbon content, and heating value. Rice husk charcoal powder activated by soaking for 5 hours in 5% hydrochloric acid (HCl) then tested for its adsorption on spills of used lubricant. Liquid smoke from rice husk is obtained by pyrolysis process and multilevel purification and then the yield, pH value, specific gravity, and color are measured. Rice husk charcoal briquettes had the following values: density 0,601 g/cm^3, moisture content 5,596%, compressive strength 8,665 kg/cm^2, volatile matter content 25%, ash content 31,8%, fixed carbon content 43,2% and heating value 4.477 cal/g. Rice husk activated charcoal has an adsorption capacity of used lubricants up to 3,27 times stronger than activated charcoal with a fixed carbon content of 44,5%. Grade 3 rice husk liquid smoke has a yield value of 8,40%; pH 4,27; specific gravity 0,997; and black color. Grade 2 has a yield value of 5,20%; pH 3,41; specific gravity 1,003; and light brown. Grade 1 has a yield value of 3,87%; pH 3,24; specific gravity 0,997; and clear white color

Downloads

References

Anonim. 1995. Arang Aktif Teknis SNI 06-3730-1995. Badan Standarisasi Nasional. Jakarta

Anonim. 2000. SNI 01-6235-2000 Briket Arang Kayu. Badan Standarisasi Nasional. Jakarta.

Cao, Z., Zhang, S., Wang, C., Jiang, F., Huang, X., Li, H., Zhang, Y., & Lyu, J. 2019. Investigation on the physical properties of the charcoal briquettes prepared from wood sawdust and cotton stalk. Energy Sources, Part A: Recovery, Utilization and Environmental Effects, 41(4). https://doi.org/10.1080/15567036.2018.1520332

Girard,J.P. 1992. Technology of Meat and Products. Ellis Horwood. New York

Gusmailina dan Pari, G. 2013. Arang dan cuka kayu ; produk hasil hutan bukan kayu untuk meningkatkan pertumbuhan tanaman dan serapan hara karbon.

Hartoyo. 1984. Nilai Komersial Briket Aranng dari Serbuk Gergaji dan Limbah Industri Perkayuan yang dibuat dengan Cara Sederhana. Proseding Lokakarya Energi. Jakarta

Mody, L., Syafii, W., dan Pari, G. 2011. Struktur Dan Komponen Arang Serta Arang Aktif Tempurung Kemiri. Pusat Penelitian dan Pengembangan Keteknikan Kehutanan dan Pengolahan Hasil Hutan. Bogor

Nurhilal, M. dan Tarigan, R.A.P. 2017. Karakteristik Briket Arang Sekam Padi dan Arang Kulit Bawang Putih. Media Teknika Jurnal Teknologi Vol. 12, No. 2, hal. 67-79, Desember 2017.

https://e-journal.usd.ac.id/index.php/MediaTeknika/issue/view/222.

Rindayatno, Shafiera, F.A.C., Padang, B.B., Nugrahaningrum, A., dan Fahmi, A.N. 2022. Characteristics of Charcoal Briquettes, Activated Charcoal, and Liquid Smoke from Oil Palm Shells (Elaeis guineensis Jacq.). Formosa Journal of Sustainable Research (FJSR). Vol.1, No.7, 2022:1199-1212. https://doi.org/10.55927/fjsr.v1i7.2192

Sari, M.K. 2010. Kualitas Briket Arang berdasarkan Komposisi Campuran Arang dari Kayu Meranti Merah (Shorea sp.) dengan Tempurung Kelapa (Cocos nucifera L.). Skripsi Sarjana Kehutanan Universitas Mulawarman. Samarinda.

Sari, N.M., , Mahdie, M.F., dan Segah, R. 2015. Rendemen Arang Sekam Dan Kualitas Asap Cair Sekam Padi. Jurnal Hutan Tropis. Vol. 3, No. 3. Fakultas Kehutanan Universitas Lambung Mangkurat. Banjarbaru.

https://ppjp.ulm.ac.id/journal/index.php/jht/issue/view/284

Sirajuddin, Z. 2021. Pengaruh Densitas Bahan terhadap Mutu Briket Arang Tempurung Kelapa. MEDIAGRO, 17(1). https://doi.org/10.31942/md.v17i1.3750

Tajalli, A. 2015. Panduan Penilaian Potensi Biomassa Sebagai Sumber Energi Alternatif di Indonesia. Penabulu Alliance.

Wijayanti, D.S. 2009. Karakteristik Briket Arang dari Serbuk Gergaji dengan Penambahan Arang Sekam padi. Skripsi Sarjana Pertanian Universitas Sumatera Utara. Medan.

Wirani, I. L. BR. P. 2017. Aktivasi Karbon dari Sekam Padi dengan Aktivator Asam Klorida (HCl) dan Pengaplikasiannya pada Limbah Pengolahan Baterai Mobil Untuk Mengurangi Kadar Timbal (Pb) . Skripsi Departement teknik Kimia. Fakultas Teknik. Universita Sumatra Utara. Medan.

Yatagai, Mitsoyushi. 2001. Utilization of Charcoal and Wood Vinegar in Japan. RDCFPT in Coorporation with JCFA, Bogor.

Yuliyati, Y.B., Ernawati, E.E., Rakhmawaty, D., Noviyanti, A.R. , dan Solihudin. 2018. Pemanfaatan Arang Aktif Sekam Padi Untuk Penjernihan Air Sumur. Jurnal Pengabdian Kepada Masyarakat. Universitas Padjadjaran. Vol. 2, No. 2. 2018. https://jurnal.unpad.ac.id/pkm/issue/view/995

FJSR

Formosa Journal of Sustainable Research

Vol 2, No. 1, January 2023

Published by:
Formosa Publisher
Jl. Ir Juanda No. 56b,Lantai 2, Medan, Indonesia
Website: https://journal.formosapublisher.org

Pdf

Published
2023-01-30

How to Cite
Rindayatno, Finsya Annisa Cahya Shafiera, Baktiriani Banda Padang, Tersisius Tigang, & Agus Nur Fahmi. (2023). Characteristics of Charcoal Briquettes, Activated Charcoal, and Liquid Smoke from Rice Husk (Oriza sativa L.). *Formosa Journal of Sustainable Research*, *2*(1), 97–112. https://doi.org/10.55927/fjsr.v2i1.2661

More Citation Formats

Issue
Vol. 2 No. 1 (2023): January, 2023

Section
Articles

0

Open Access Policy

Online Submission

Peer Review Process

Copyright Notice

Publication Fee

Author Guideline

Plagiarism Policy

Archiving Policy

Forthcoming Articles

TEMPLATE ENGLISH

TEMPLATE ENGLISH

Article Template

ISSN 2830-6228

Indexed By:

Office:

PT. FORMOSA CENDEKIA GLOBAL

Jl. Ir Juanda No.56b Lantai 2, Medan. Indonesia

Website: http://formosapublisher.org

Phone: +62 877-1388-1007

Email: admin@formosapublisher.org