

**PENGARUH SUHU DAN WAKTU AKTIVASI SECARA FISIKA
TERHADAP KUALITAS ARANG AKTIF SEKAM PADI (*Oryza sativa* L.)**

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INTISARI

Sekam padi merupakan limbah yang keberadaannya cukup melimpah di Indonesia. Sekam padi dihasilkan saat proses penggilingan padi menjadi beras. Sampai saat ini, limbah sekam padi yang cukup melimpah belum dimanfaatkan secara maksimal. Berdasarkan data Badan Pusat Statistik pada tahun 2020 limbah sekam padi di Indonesia mencapai 12,1352 ton. Sekam padi cukup potensial untuk dimanfaatkan sebagai bahan baku pembuatan arang aktif.

Tujuan penelitian ini untuk mengetahui kualitas arang aktif sekam padi. Sampel penelitian diperoleh dari salah satu tempat penggilingan padi di Wonosari, Gunungkidul, Yogyakarta. Rancangan penelitian berupa rancangan acak lengkap secara faktorial dengan dua faktor yaitu suhu aktivasi (600°C dan 800°C) dan waktu aktivasi (30 menit, 60 menit, dan 90 menit). Arang diaktivasi menjadi arang aktif secara fisika. Pengujian kualitas arang aktif dilakukan berdasarkan SNI 06-3730-1995.

Hasil penelitian menunjukkan rata-rata rendemen arang aktif pada suhu 600°C dan 800°C sebesar 79,693% dan 73,403% , rata-rata kadar zat mudah menguap arang aktif pada suhu 600°C dan 800°C sebesar 25,84% dan 19,145%, rata-rata kadar karbon terikat arang aktif pada suhu 600°C dan 800°C sebesar 33,019% dan 38,115%, rata-rata kadar air arang aktif pada suhu 600°C dan 800°C sebesar 4,5% dan 3,61%, rata-rata kadar abu arang aktif pada suhu 600°C dan 800°C sebesar 36,643% dan 38,825%, rata-rata daya serap terhadap benzena pada suhu 600°C dan 800°C sebesar 16,507% dan 17,876%, rata-rata daya serap terhadap iodium pada suhu 600°C dan 800°C sebesar 318,096% dan 388,314%, dan rata-rata daya serap terhadap metilen biru pada suhu 600°C dan 800°C sebesar 98,305% dan 99,789%.

Kata Kunci: *Oryza sativa* L, sekam padi, arang aktif, aktivasi fisika,

**THE EFFECT OF TEMPERATURE AND TIME ON PHYSICAL
ACTIVATION ON THE QUALITY OF RICE HUSK ACTIVE
CHARCOAL (*Oryza sativa* L.)**

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ABSTRACT

Rice husk is a waste which is quite abundant in Indonesia. Rice husk is produced during the process of milling rice. Rice husk waste has not been utilized optimally. According to the Central Statistics Agency, in 2020 rice husk waste in Indonesia reached 12.1352 tons. Rice husk is potential to be used as a raw material for making activated charcoal.

The research sample was obtained from a rice mill in Wonosari, Gunungkidul, Yogyakarta. The research design was a completely randomized design with two factors, namely activation temperature (600°C and 800°C) and activation period (30 minutes, 60 minutes and 90 minutes). Charcoal is activated with physical activation. Testing the quality of activated charcoal is carried out based on SNI 06-3730-1995.

The results showed that the average yield of activated charcoal at 600 °C and 800 °C was 79.693% and 73.403%, the average volatile matter content of activated charcoal at 600°C and 800°C was 25.84% and 19.145%, the average content of activated charcoal bound substances at 600°C and 800°C was 33.019% and 38.115%, the average moisture content of activated charcoal at 600°C and 800°C was 4.5% and 3.61%, the average ash content of activated charcoal at 600°C and 800°C is 36.643% and 38.825%, the average absorption capacity of benzene at 600°C and 800°C is 16.507% and 17.876% , the average absorption of iodine at 600°C and 800°C were 318.096% and 388.314%, and the average absorption of methylene blue at 600°C and 800°C were 98.305% and 99.789%.

Keyword: *Oryza sativa* L, rice husk, activated charcoal, activation, physical,