

## PEMANFAATAN LIMBAH KULIT BUAH DURIAN (*Durio sp.*) SEBAGAI BAHAN BAKU PEMBUATAN ARANG AKTIF

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### INTISARI

Penelitian ini bertujuan untuk memanfaatkan limbah kulit buah durian sebagai bahan dasar pembuatan arang aktif dalam rangka mengatasi masalah limbah kulit buah durian pada saat panen raya, untuk mengetahui pengaruh interaksi suhu aktivasi dan lama aktivasi serta kualitas terbaik arang aktif yang dihasilkan.

Penelitian ini menggunakan rancangan acak lengkap yang disusun secara faktorial dengan dua faktor yaitu suhu aktivasi (750 °C dan 850 °C) dan lama aktivasi (30 menit, 60 menit, 90 menit, dan 120 menit) dengan masing-masing perlakuan 5 ulangan. Penelitian dimulai dengan megumpulan kulit durian dari pedagang buah durian di Kota Baru dan Jalan Magelang Km 6 Yogyakarta. Kulit buah durian kemudian dipotong berukuran ±5cm dan dikeringkan dengan tanur pengering, selanjutnya kulit durian diarsangkan menggunakan retort pada suhu 300°C selama ±3 jam. Arang diserbukkan dan disaring lolos 45 mesh tertahan 60 mesh kemudian diaktivasi secara fisik. Pengujian arang aktif meliputi rendemen, kadar air, kadar abu, kadar zat mudah menguap, karbon terikat, daya serap terhadap iodium, uap benzene, dan biru metilen. Data hasil penelitian dianalisis menggunakan SPSS, dilakukan uji lanjut HSD untuk faktor berbeda nyata dan sangat nyata.

Hasil penelitian menunjukkan kualitas arang aktif terbaik diperoleh dari kombinasi perlakuan suhu aktivasi 750 °C dan lama aktivasi 30 menit dengan nilai rendemen 66,943%, kadar air 1,757%, kadar zat mudah menguap 12,014%, kadar abu 24,37% dan karbon terikat 61,858%, daya serap terhadap iodium 1169,506 mg/g, daya serap terhadap uap benzene 10,627%, daya serap terhadap biru metilen 127,815 mg/g. Arang aktif ini diaplikasikan sebagai bahan penjernih air sumur. Hasil pemeriksaan terhadap air sumur setelah diperlakukan dengan arang aktif menghasilkan penurunan kekeruhan sebesar 78%, penurunan warna sebesar 83,333%, penurunan kadar besi sebesar 96,875%, penurunan kadar Mangaan sebesar 50%, penurunan kadar CaCO<sub>3</sub> sebesar 23,394%

Kata kunci : arang aktif, kulit buah durian, limbah.

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## THE USE OF DURIAN PEEL WASTE (*Durio sp.*) AS THE RAW MATERIAL OF CREATING CARBON ACTIVATED

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### ABSTRACT

This research is aimed to use the durian peel's waste to make the activated carbon in order to solve the durian peel's waste problem during the harvest time, to know the interaction the activation degree and the length activation and to know the best quality product of the carbon activated its self.

The research used a set of random sampling that arranges to two major factors, the activation degree (750 °C and 850 °C) and the length activation (30 minutes, 60 minutes, 90 minutes, and 120 minutes), with its five times treatment. The research started by collect the durian peel's from the durian fruit sellers at Kota Baru and Jalan Magelang Km. 6 Yogyakarta. The peel's are being cut into ± 5 cm sizes and then dried in the klin drying. The next step is that the peel's are being klin drying into charcoal using the retort at 300°C for about 3 hours. The charcoal are being pulverized so we can get the 45 mesh and hold 60 mesh and then the charcoal are activated physicaly. The activated carbon test consist of the rendemen, moister matter, the ash, volatile value, fixed carbon, the absorbance for iodium, benzena condensation, and blue metilen . The datas of the result are analyzed by using the SPSS programme, followed by HSD test to get the different factors and factual.

The results shows that the best quality of activated carbon are taken from the 750 °C activation degree and 30 minutes length activation, with the rendemen 66,943%, moisture matter 1,757%, volatile matter 12,014%, ash content 24,37%, fixed carbon 61,858%, the absorbance for benzene 10,627%, for iodine 1169,506 mg/g and metilen blue 127,815mg/g. the best activated carbon is used for water purification. The result of examination to ware water quality after being purified by activated carbon can reduce turbidity 78%, reduce color 83,333%, reduce iron (Fe) 96,875%, reduce mangaan (Mn) 50%, and reduce betel lime (CaCO<sub>3</sub>) 23,394%

Key words: activated carbon, durian pell's, waste

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