

**PEMANFAATAN SERBUK GERGAJIAN KAYU SENGON (*Paraserianthes falcataria* L. Nielsen) DAN LIMBAH TONGKOL JAGUNG (*Zea mays* L.) SEBAGAI BAHAN PEMBUATAN ARANG AKTIF**

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**INTISARI**

Sistem yang terintegrasi dalam pengelolaan limbah diperlukan untuk meminimalkan jumlah limbah yang dihasilkan. Pendekatan dengan aplikasi teknologi dapat dilakukan dengan mengolah limbah menjadi produk yang memiliki nilai tambah. Penelitian ini bertujuan untuk mengetahui pengaruh interaksi antara suhu aktivasi dan komposisi campuran bahan arang yang dipakai terhadap rendemen dan kualitas arang aktif dari serbuk gergajian kayu sengon dan limbah tongkol jagung. Arang aktif kualitas terbaik digunakan untuk meningkatkan kualitas air konsumsi.

Penelitian dilakukan dengan mengarangkan serbuk gergajian kayu sengon dan limbah tongkol jagung dalam retort dengan suhu 400°C selama 3 jam. Komposisi bahan yang digunakan adalah 100% serbuk sengon, 50% serbuk sengon 50% tongkol jagung, dan 100% tongkol jagung. Arang diaktivasi secara *thermal* pada suhu 800°C dan 900°C selama 90 menit. Analisa data menggunakan analisis varians dan uji HSD.

Karakteristik arang aktif serbuk gergajian kayu sengon dan limbah tongkol jagung dari penelitian ini meliputi: rendemen 65,313%-80,241%; kadar air 2,985-5,953%; kadar zat mudah menguap 29,346-50,631%; kadar abu 4,927-11,509%; kadar karbon terikat 34,875-58,702%; daya serap terhadap benzena 5,059-8,348%; daya serap terhadap iodium 793,784-1.435,615 mg/g; dan daya serap terhadap metilen biru 134,404-141,778 mg/g. Arang aktif terbaik diperoleh dari suhu aktivasi 800°C dengan komposisi 50% serbuk sengon dan 50% tongkol jagung. Aplikasi untuk meningkatkan kualitas air konsumsi di desa Brayut menghasilkan penurunan kekeruhan sebesar 81%, warna 84%, kesadahan 20%, kadar besi (Fe) 85% dan kadar mangan (Mn) 83%, dan kenaikan pH sebesar 7,3%. Kualitas air yang dihasilkan telah sesuai standar mutu air bersih menurut KEP.MENKES RI No.416/Menkes/IX/1990.

**Kata kunci : arang aktif, serbuk sengon, tongkol jagung, air konsumsi**

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**THE UTILIZATION OF WOOD SAWDUST SENGON (*Paraserianthes falcataria* L. Nielsen) AND CORN COB (*Zea mays* L.) WASTE AS ACTIVATED CARBON**

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**ABSTRACT**

Integrated system of waste management is necessary to minimize the amount of waste produced. The approach with application of the technology is able to process the waste into value-added products. This research aims to determine the reaction of interaction between temperature activation and charcoal mixture materials used for yield and quality activated carbon from wood sawdust sengon and waste corn cobs. The best quality of activated carbon used to improve the quality of water consumption.

And thus, the materials were carbonized with temperature 400°C on electrical retort for 3 hours. The composition substance were 100% sawdust, 50% sawdust 50% corn cob, and 100% corn cob and activated thermally on 800°C and 900°C for 90 minutes. The result was analyzed with analysis of variance and HSD test.

Characteristics of activated carbon from wood sawdust sengon and waste corn cob of this research includes: yield 65.313%-80.241%; moisture content 2.985-5.953%; volatile matter 29.346-50.631%; ash content 4.927-11.509%; fixed carbon 34.875-58.702%; benzene adsorption 5.059-8.348%; iodine adsorption 793.784-1435.615 mg/g; and blue methylene adsorption 134.404-141.778 mg/g. The best activated carbon was obtained on 800°C temperature activation and 50% wood sawdust sengon 50% corn cob composition materials. The application of activated carbon improved the quality of water consumption on Brayut Village, which able to reduce the turbidity 81%, color 84%, CaCO<sub>3</sub> hardness 20%, grade of Ferro (Fe) 85% and grade of manganese (Mn) 83%, and increase the level of pH 7.3%. The water quality produced in compliance with water quality standards according to the recommendation of the Ministry of Health number 416/Menkes/Per/IX/1990.

**Keyword: Activated carbon, sengon sawdust, corn cob, water consumption**

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