

EFEKTIVITAS ARANG AKTIF CANGKANG MELINJO (*Gnetum gnemon*) SEBAGAI ADSORBEN MINYAK JELANTAH

SKRIPSI

Program Studi TEKNIK LINGKUNGAN



2022

**EFFECTIVENESS OF MELINJO SHELL ACTIVE CHARCOAL
(*Gnetum gnemon*) AS AN ADSORBENT FOR USED COOKING
OIL**

UNDERGRADUATED THESIS

ENVIRONMENTAL ENGINEERING STUDY PROGRAM



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Diajukan Sebagai Salah Satu Syarat Untuk Memperoleh Gelar

SARJANA TEKNIK

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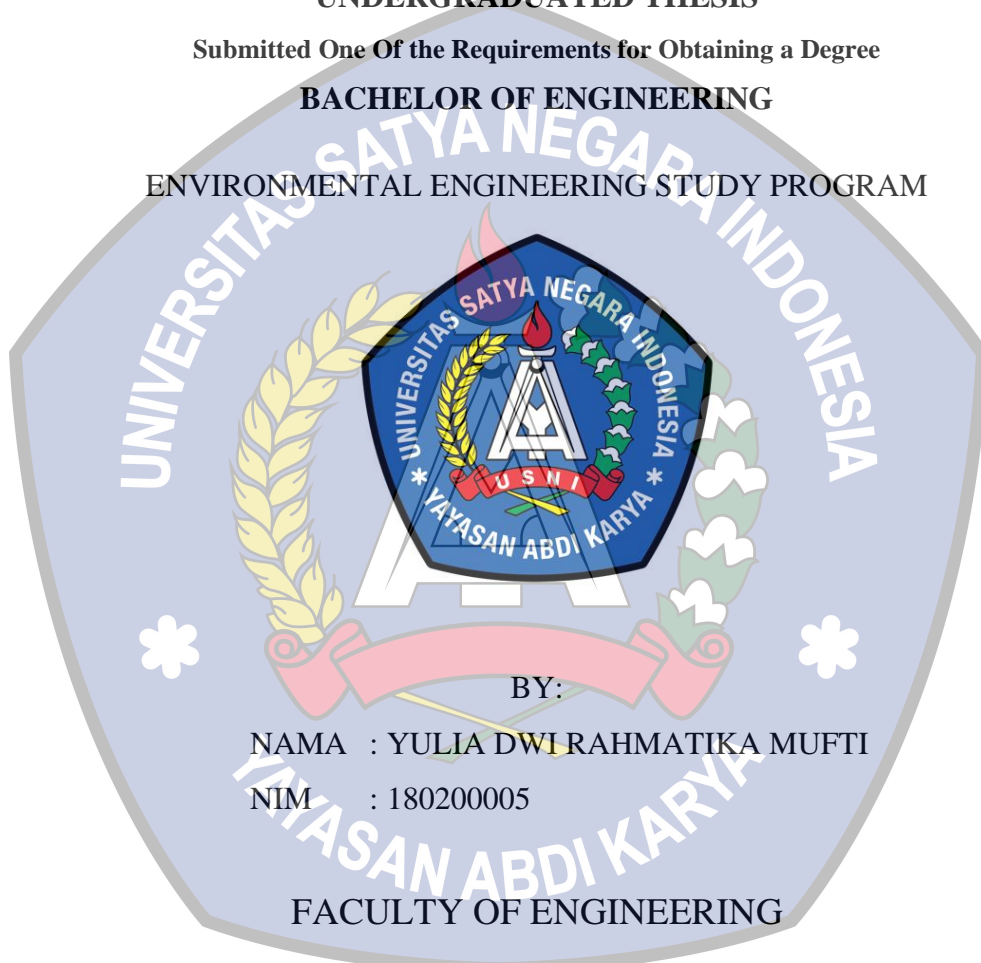
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Submitted One Of the Requirements for Obtaining a Degree

BACHELOR OF ENGINEERING

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui efektivitas arang aktif dari cangkang melinjo (*Gnetum gnemon*) sebagai adsorben minyak jelantah. Variabel yang diteliti untuk perbandingan pengaruh proses adsorpsi minyak jelantah oleh adsorben arang aktif cangkang melinjo (*Gnetum gnemon*) ialah konsentrasi arang aktif dan waktu kontak. Pembuatan arang aktif dari cangkang melinjo (*Gnetum gnemon*) menggunakan metode kimia dengan aktivator $ZnCl_2$. Hasil aktivasi arang aktif cangkang melinjo (*Gnetum gnemon*) dilakukan dengan perlakuan konsentrasi $ZnCl_2$ (20, 40, 60) % dan waktu aktivasi 12 jam dengan suhu $200^\circ C$. Hasil aktivasi terbaik didapatkan pada konsentrasi 20% dengan hasil kadar air 5,64%, kadar abu 3,4% dan daya serap iod 241,11 mg/g. Parameter kualitas mengacu pada SNI 06-3730-1995 tentang syarat mutu dan pengujian arang aktif. Pemurnian minyak jelantah oleh arang aktif cangkang melinjo (*Gnetum gnemon*) dipengaruhi oleh konsentrasi arang dan waktu kontak. Hasil pemurnian minyak jelantah oleh arang aktif dilakukan dengan perlakuan konsentrasi arang aktif (5, 10, 15) % dan waktu lama kontak pengadukan (30, 60, 90) menit. Perlakuan terbaik didapatkan pada konsentrasi arang aktif 15% dengan waktu kontak 90 menit. Efektivitas pemurnian minyak jelantah dengan adsorben arang aktif cangkang melinjo (*Gnetum gnemon*) konsentrasi $ZnCl_2$ 20% dan konsentrasi arang aktif 15% lama kontak pengadukan 90 menit dengan hasil nilai kadar air 0,008% dan bilangan Asam Lemak 0,5292%. Semakin banyak konsentrasi arang aktif dan semakin lama waktu kontak maka hasil semakin baik .

Kata Kunci : Arang Aktif, Waktu Tinggal, Cangkang Melinjo

ABSTRACT

This study aims to determine the effectiveness of activated charcoal from the shell of melinjo (*Gnetum gnemon*) as an absorbent of used cooking oil. The variables studied to compare the effect of the used cooking oil adsorption process by the activated charcoal adsorbent from melinjo (*Gnetum gnemon*) shells were the concentration of activated charcoal and the stirring time. Making activated charcoal from melinjo (*Gnetum gnemon*) shell using the chemical method with $ZnCl_2$ as an activator. The activation results of the activated charcoal from the melinjo (*Gnetum gnemon*) shell were treated with a concentration of $ZnCl_2$ (20, 40, 60) % and an activation time of 12 hours at a temperature of $200^\circ C$. The best activation results were obtained at a concentration of 20% with the results of 5.64% water content, 3.4% ash content, and 241.11 mg/g iodine absorption. Quality parameters refer to SNI 06-3730-1995 regarding quality requirements and testing of activated charcoal. Purification of used cooking oil by activated charcoal of melinjo (*Gnetum gnemon*) shell is influenced by the charcoal concentration and stirring time. The results of the purification of used cooking oil by activated charcoal were carried out by treating the concentration of activated charcoal (5, 10, 15) % and stirring contact time (30, 60, 90) minutes. The best treatment was obtained at a concentration of 15% activated charcoal with a stirring time of 90 minutes. The effectiveness of cooking oil purification with activated charcoal melinjo (*Gnetum gnemon*) shell as a concentration of 20% $ZnCl_2$ and 15% activated charcoal concentration, stirring contact time of 90 minutes with the results of a water content value of 0.008% and an fatty acid number of 0.5292%. The more the concentration of activated charcoal and the longer the stirring, the results better

Keywords : Activated Charcoal, Retention time, Melinjo Shell