

ABSTRAKS

PEMBUATAN ADSORBEN DARI CANGKANG KEMIRI SUNAN (*Reutealis trisperma*) UNTUK MENURUNKAN KADAR Fe DAN Cu PADA LIMBAH CAIR TEKSTIL

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Limbah cair dari proses pewarnaan jumputan mengandung logam berat dalam jumlah signifikan, terutama besi (Fe) dan tembaga (Cu). Keberadaan logam-logam ini dalam limbah dapat mencemari lingkungan dan menimbulkan risiko kesehatan jika paparan berlangsung terus-menerus. Salah satu cara untuk menurunkan konsentrasi logam Fe dan Cu adalah melalui proses adsorpsi menggunakan adsorben. Dalam penelitian ini, adsorben dibuat dari limbah cangkang kemiri sunan dengan tujuan untuk mengetahui pengaruh variasi konsentrasi larutan KOH serta waktu kontak terhadap karakteristik adsorben yang dihasilkan. Adsorben yang dibuat diharapkan memenuhi standar mutu berdasarkan SNI 06-3730-1995, serta dapat diaplikasikan untuk menghilangkan logam Fe dan Cu dari limbah cair tekstil. Aktivasi dilakukan dengan variasi konsentrasi KOH sebesar 10%, 20%, 30%, 40%, dan 50%, sedangkan waktu kontak untuk proses adsorpsi adalah 60 menit dan 90 menit. Hasil terbaik diperoleh pada konsentrasi KOH 50% dan waktu adsorpsi 90 menit, dengan karakteristik kadar air 5,08%, kadar abu 3,45%, zat terbang 14,22%, daya serap terhadap iodine sebesar 964,44 mg/g, serta daya serap terhadap metilen biru sebesar 192,324 mg/g. Selain itu, kemampuan adsorpsi logam menunjukkan nilai sebesar 77,78% untuk Fe dan 58,33% untuk Cu, yang sesuai dengan persyaratan dalam SNI 06-3730-1995.

Kata kunci : Cangkang kemiri sunan, adsorben, adsorpsi, aktivasi, limbah cair tekstil, limbah cair jumputan

ABSTRACS

ADSORBENT MAKING FROM KEMIRI SUNAN (*Reutealis trisperma*) SHEETS TO REDUCE FE AND Cu LEVELS IN TEXTILE WASTES

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The effluent from the jumputan dyeing process contains significant amounts of heavy metals, particularly iron (Fe) and copper (Cu). The presence of these metals in the effluent can pollute the environment and pose health risks if exposure continues. One way to reduce the concentration of Fe and Cu metals is through an adsorption process using adsorbent materials. In this study, adsorbents were made from hazelnut shell waste with the aim of knowing the effect of variations in KOH solution concentration and contact time on the characteristics of the resulting adsorbents. The adsorbent made is expected to meet the quality standards based on SNI 06-3730-1995, and can be applied to remove Fe and Cu metals from textile liquid waste. Activation was carried out with KOH concentration variations of 10%, 20%, 30%, 40%, and 50%, while the contact time for the adsorption process was 60 minutes and 90 minutes. The best results were obtained at 50% KOH concentration and 90 minutes adsorption time, with characteristics of moisture content 5,08%, ash content 3,45%, fly matter 14,22%, adsorption capacity to iodine by 964,44 mg/g, and adsorption capacity to methylene blue by 192,324 mg/g. In addition, the metal adsorption ability shows a value of 77,78% for Fe and 58,33% for Cu, which is in accordance with the requirements in SNI 06-3730-1995.

Keywords : Sunan candlenut shell, adsorbent, adsorption, activation, textile liquid waste, jumputan liquid waste