

PENGOLAHAN LIMBAH BATIK DENGAN TEKNIK KOAGULASI MENGGUNAKAN TAWAS DAN ADSORPSI MENGGUNAKAN KAOLIN, DAN ARANG AKTIF

INTISARI

Melystha Charina Hidayah

18612002

Pengolahan limbah cair batik telah dilakukan menggunakan metode gabungan antara koagulasi dan adsorpsi. Koagulan yang digunakan yaitu tawas sedangkan adsorben yang digunakan yaitu kaolin dan arang aktif untuk menurunkan kadar *Chemical Oxygen Demand* (COD). Tujuan dilakukan penelitian ini untuk mengetahui pengaruh variasi massa, pH dan waktu pengadukan tawas dengan metode koagulasi dan gabungan metode koagulasi dan adsorpsi untuk menurunkan konsentrasi COD pada limbah cair batik karena berbahaya apabila dibuang ke lingkungan. Hasil dari koagulasi dianalisis menggunakan Spektrofotometer UV-Vis dengan metode kurva kalibrasi. Kemudian dilanjutkan dengan metode adsorpsi sistem kontinu menggunakan adsorben kaolin dan arang aktif. Hasil dari adsorpsi juga dianalisis menggunakan Spektrofotometer UV-Vis dengan metode kurva kalibrasi. Hasil penelitian menunjukkan bahwa massa optimum tawas 0,75 gram, pH optimum tawas 9 dan waktu pengadukan tawas 45 menit. Sedangkan untuk metode adsorpsi menggunakan kaolin dan arang aktif dengan massa masing-masing 50 gram diperoleh konsentrasi COD kaolin sebesar 465 mg/L dengan persentase penurunan kadar COD sebesar 93,93% dan untuk arang aktif diperoleh konsentrasi COD sebesar 98,33 mg/L dengan persentase penurunan kadar COD sebesar 98,71%. Berdasarkan hasil arang aktif dapat disimpulkan bahwa konsentrasi COD memenuhi baku mutu PerMenLH No. 5 Tahun 2014.

Kata kunci: limbah cair batik, COD, koagulasi, adsorpsi, tawas, kaolin, arang aktif.

PENGOLAHAN LIMBAH BATIK DENGAN TEKNIK KOAGULASI MENGGUNAKAN TAWAS DAN ADSORPSI MENGGUNAKAN KAOLIN, DAN ARANG AKTIF

ABSTRACT

**Melystha Charina Hidayah
18612002**

Batik wastewater treatment has been carried out by using a combination method of coagulation and adsorption. The coagulant used alum while the adsorbent used was kaolin and activated charcoal to reduce the concentration of Chemical Oxygen Demand (COD). The purpose research was to determine the effect of variations in weight, pH, and stirring times of alum with the coagulation method and combination of coagulation and adsorption method to reduce the concentration COD in batik wastewater because it is dangerous when discharged into the environment. The results of the coagulation process were analyzed using Spectrophotometer UV-Vis by calibration curve method. The continuous system adsorption method used kaolin and activated charcoal. The results of the adsorption process were analyzed using Spectrophotometer UV-Vis by calibration curve method. The results showed that the optimum weight of alum was 0,75 grams, the optimum pH was 9 and the alum stirring time was 45 minutes. While, for the adsorption method using kaolin and activated charcoal with a weight of 50 gram, the COD concentration of kaolin was 465 mg/L with a decreased percentage of COD was 93,93% and for activated charcoal the COD concentration was 98,33 mg/L with a decreased percentage of COD was 98,71%. Based on the results of activated charcoal, it was concluded that COD concentration meets the quality standard of PerMenLH No.5 Tahun 2014.

Keywords: Batik wastewater, COD, coagulation, adsorption, alum, kaolin, active charcoal.