ABSTRAK

Limbah cair industri tempe memiliki nilai *Biochemical Oxygen Demand* (BOD), *Chemical Oxygen Demand* (COD), dan *Total Suspended Solids* (TSS) yang tinggi, apabila tidak diolah terlebih dahulu dan langsung dibuang ke badan perairan akan mencemari lingkungan. Oleh karena itu, perlu dilakukan penurunan nilai BOD, COD, dan TSS limbah cair industri tempe sebelum dibuang ke badan perairan. Penurunan nilai BOD, COD, dan TSS dapat dilakukan dengan metode elektrokoagulasi. Elektrokoagulasi pada prinsipnya berdasarkan pada proses sel elektrolisis, pada katoda dioksidasi (kehilangan elektro), sedangkan air berkurang (menerima elektron), sehingga membuat air limbah lebih baik diolah. Penelitian ini bertujuan untuk mengetahui pengaruh pH, kecepatan pengadukan, dan waktu proses elektrokoagulasi terhadap penurunan nilai BOD, COD, dan TSS limbah cair industri tempe menggunakan elektroda Al. Hasil penelitian menunjukkan penurunan nilai BOD, COD, dan TSS maksimal pada pH 11 dengan kecepatan pengadukan 300 rpm selama 120 menit. Persentase penurunan BOD sebesar 97,50%; COD sebesar 97,05%; dan TSS sebesar 95,24%.

Kata Kunci: Aluminium, Biochemical Oxygen Demand, Chemical Oxygen Demand, Elektrokoagulasi, Limbah Cair Tempe, Total Suspended Solids

ABSTRACT

Tempe industrial wastewater has a high value of Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and Total Suspended Solids (TSS) if it's not treated first and is immediately discharged into water bodies, it will pollute the environment. Therefore, it's necessary to reduce the BOD, COD, and TSS values of tempe industrial wastewater before being released into water bodies. The decrease in BOD, COD, and TSS values can be done by electrocoagulation method. Electrocoagulation is principally based on an electrolysis cell process, in cathode is oxidized (loss of electrons), while water is reduced (accepts electrons), this making wastewater better treated. This study aims to determine the effect of pH, stirring speed, and time of the electrocoagulation process on the decrease in BOD, COD, and TSS values of tempe industrial waste water using Al electrodes. The result showed a maximum reduction in BOD, COD, and TSS values at pH 11 with a stirring speed of 300 rpm for 120 minutes. The percentage decrease in BOD is 97.50%; COD of 97.05%; and TSS of 95.24%.

Keywords: *Aluminium, Biochemical Oxygen Demand, Chemical Oxygen Demand, Electrocoagulation, Tempe wastewater, Total Suspended Solids*