ABSTRAK

Limbah aluminium yang dihasilkan dari usaha pembuatan perabotan rumah tangga dapat dimanfaatkan sebagai bahan dasar pembuatan koagulan tawas kalium. Hal ini dilakukan karena dapat mengurangi pencemaran lingkungan akibat timbunan limbah yang tidak mudah terdegradasi. Penelitian ini bertujuan untuk mengetahui: konsentrasi KOH, H_2SO_4, suhu, waktu, dan berat limbah aluminium dalam menghasilkan tawas paling banyak; kadar Al dalam limbah aluminium, tawas yang dihasilkan dari limbah aluminium, dan tawas komersial; serta persentase penurunan kadar amonia dan nitrat limbah cair rumah pemotongan ayam setelah proses koagulasi menggunakan koagulan tawas dari limbah aluminium. Metode pengolahan limbah cair RPA yang digunakan dalam penelitian ini adalah metode koagulasi dengan koagulan tawas kalium [$KAl(SO_4)_2.12H_2O$]. Variasi yang dilakukan untuk pembuatan tawas yaitu konsentrasi KOH 10, 15, 20, dan 25%; H_2SO_4 7, 8, 9, dan 10 M; suhu sebesar 50, 60, 70, dan 80 ^oC; waktu pemanasan selama 5, 10, 15, dan 20 menit, serta berat limbah aluminium sebanyak 1; 2; 3; dan 4 gram. Hasil penelitian menunjukkan tawas kalium paling banyak dihasilkan pada limbah aluminium 4 gram, KOH 25%, H_2SO_4 7 M, suhu 70 ^oC, dan waktu pemanasan selama 15 menit. Penurunan kadar amonia limbah cair RPA sebesar 97,18% dan nitrat sebesar 94,52%.

Kata kunci: koagulasi, limbah aluminium, limbah cair rumah pemotongan ayam, tawas kalium

ABSTRACT

Aluminium waste generated from the household furniture manufacturing business can be utilized as a basic material for the manufacture of potassium alum coagulant. This is done because it can reduce environmental pollution due to piles of waste that are not easily degraded. This study aims to determine: the concentration of KOH, H_2SO_4, temperature, time, and weight of aluminium waste in producing the most alum, Al levels in aluminium waste, alum produced from aluminium waste, and commercial alum; as well as the percentage reduction in ammonia and nitrate levels in chicken slaughterhouse liquid waste after the coagulation process using alum coagulant from aluminium waste. The RPA wastewater treatment method used in this study is the coagulation method with potassium alum coagulant [$KAl(SO_4)_2.12H_2O$]. The variations used to make alum are KOH concentration of 10, 15, 20, and 25%; H_2SO_4 7, 8, 9, and 10 M; temperatures of 50, 60, 70, and 80 ^oC; heating time for 5, 10, 15, and 20 minutes; and weight of aluminium waste is 1, 2, 3, and 4 grams. The results showed that the most potassium alum was produced in 4 grams of aluminium waste, 25% KOH, 7 M H_2SO_4, temperature 70 ^oC, and heating time for 15 minutes. Reduction in ammonia levels in RPA liquid waste by 97.18% and nitrate od 94.52%.

Keywords: *aluminium waste, chicken slaughterhouse wastewater, coagulation, potassium alum*