Pengaruh Variasi Ketebalan Media Pipe Filter Layer Dalam Menurunkan Kadar *Chemical Oxygen Demand* (COD) Dan *Total Suspended Solid* (TSS) Pada Limbah Cair Produksi Klanting

Juwita Pebrianti, 25117070
Didik Supriyadi, S.T., M.Eng.
Rahma Yanda, S.Si., M.Eng, Ph.D

ABSTRAK

Limbah cair klanting merupakan limbah yang dihasilkan dari proses pengepresan singkong dalam produksi industri klanting, dari 300 kg singkong dihasilkan 60 liter limbah cair. Limbah cair klanting memiliki karakteristik yaitu berbau, berwarna keruh, nilai TSS 1498 mg/L, dan COD 1220 mg/L. Nilai TSS dan COD yang melampaui baku mutu dapat menimbulkan masalah lingkungan jika limbah langsung dibuang ke lingkungan tanpa melakukan pengolahan terlebih dahulu.

Pengolahan menggunakan alat *pipe filter layer* dengan metode filtrasi adsorpsi dapat mengurangi konsentrasi COD dan TSS. Dengan menggunakan variabel ketebalan media filter yang divariasi pada Tangki 1 (zeolit aktif 50 cm, arang aktif 25 cm) pada Tangki 2 zeolit (aktif 25 cm, arang aktif 50 cm) dan menggunakan variasi waktu kontak 10, 30, 50 menit.

Hasil penelitian menunjukan bahwa Tangki 1 dengan tebal zeolit aktif lebih tebal mampu menurunkan TSS dan COD lebih besar dibandingkan Tangki 2. Penurunan optimum TSS pada Tangki 1 sebesar 149 mg/L dengan efisiensi penyisihan 90.1% dan Tangki 2 sebesar 294 mg/L dengan efisiensi penyisihan 80.4%, sedangkan penurunan optimum COD pada Tangki 1 sebesar 890 mg/L dengan efisiensi penyisihan 27% dan Tangki 2 sebesar 960 dengan efisiensi penyisihan 21%. Penurunan kadar TSS oleh Tangki 1 sebesar 149 mg/L telah mencapai kriteria baku mutu, sedangkan penurunan kadar COD hasil kedua Tangki belum memenuhi kriteria baku mutu Permen LH RI No 5 tahun 2014.

Kata kunci: Limbah Cair Klanting, Filtrasi, Adsorpsi, dan *Chemical Oxygen Demand* (COD), *Total Suspended Solid* (TSS)

The Effect Of Variation Of Pipe Filter Layer Thickness In Reducing Chemical Oxygen Demand (COD) And Total Suspended Solid (TSS) On Liquid Production Waste Of Klanting

Juwita Pebrianti, 25117070
Didik Supriyadi, S.T., M.Eng.
Rahma Yanda, S.Si., M.Eng, Ph.D

ABSTRACT

Klanting liquid waste is waste generated from the cassava pressing process in the clanting industrial production, from 300 kg of cassava produced 60 liters of liquid waste. Klanting liquid waste has the characteristics of smelling, cloudy in color, TSS value of 1498 mg/L, and COD of 1220 mg/L. TSS and COD values that exceed quality standards can cause environmental problems if the waste is directly discharged into the environment without processing it first.

Processing using a pipe filter layer with adsorption filtration method can reduce the concentration of COD and TSS. By using a variable thickness of filter media which was varied in Tank 1 (active zeolite 50 cm, activated charcoal 25 cm) in Tank 2 zeolite (active 25 cm, activated charcoal 50 cm) and using variations in contact time of 10, 30, 50 minutes.

The results showed that Tank 1 with thicker active zeolite was able to reduce TSS and COD more than Tank 2. The optimum reduction of TSS in Tank 1 was 149 mg/L with 90.1% removal efficiency and Tank 2 was 294 mg/L with removal efficiency. 80.4%, while the optimum reduction of COD in Tank 1 is 890 mg/L with a removal efficiency of 27% and Tank 2 is 960 with a removal efficiency of 21%. The decrease in TSS levels by Tank 1 of 149 mg/L has reached the quality standard criteria, while the decrease in COD levels from the second tank has not met the quality standard criteria of Minister of Environment Regulation No. 5 of 2014.

Keywords: Klanting Liquid Waste, Filtration, Adsorption, and Chemical Oxygen Demand (COD), Total Suspended Solid (TSS)