

TREATMENT OF LIQUID WASTE THROUGH STUDY OF SURFACE COMPLEXATION OF KAOLIN WITH TOXIC CATIONS AND CHEMICALS

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ABSTRACT

This study aims to determine (1) the characteristics of the membrane of the saturated kaolin Na^+ and unsaturated kaolin Na^+ . (2) the effect of pH on the adsorption of the cation Cr^{3+} and Pb^{2+} . (3) the effect of adsorbent used on the adsorption of the cation Cr^{3+} and Pb^{2+} . (4) the effect of cation competitors to the adsorption of the cation Cr^{3+} and Pb^{2+} .

The subject of this research is the adsorbent kaolin. The object of this research is the content of the cation as Pb^{2+} and Cr^{3+} . The independent variable in this study is the acidity or Ph of the solution, which are 2, 3, 4, 5, 6, 7, 8, 9, and 10. The dependent variable in this study is the number of cation that adsorbed by kaolin and Na-kaolin. The control variables in this study are the mass of the kaolin used, the cation concentration, contact time and temperatures. The working procedure consists of four stages, which are the preparation of kaolin, making waste simulation, testing adsorbent and data analysis cation adsorped. The characterization used is FTIR and XRD.

The characterization results obtained in the analysis with FTIR is the adsorbent kaolin and Na-kaolin has no significant difference. While the XRD characterization on the adsorbent kaolin appears spectra of $2\theta = 21,23$ and $41,93$. On Na-kaolin appears spectra of $2\theta = 12,6$, which indicates the presence of haloisit. Percentage as Pb^{2+} and Cr^{3+} adsorped is increasing as the increasing of pH. Adsorption on the Pb^{2+} and Cr^{3+} have the percentage of cation adsorbed the highest on the adsorbent Na-kaolin, but the Cr^{3+} has a percentage of the cation adsorped higher than as Pb^{2+} on the adsorbents kaolin and Na-kaolin. As Pb^{2+} and Cr^{3+} in the absence of cations competitors overall has a percentage of the cation adsorped higher than in as Pb^{2+} and Cr^{3+} with the cation competitors. While the sequence of cation competitors that most quickly adsorped is $\text{Cr} > \text{Pb} > \text{Cu} > \text{Ni}$.

Kata Kunci: *Pb²⁺, Cr³⁺, kaolin, adsorption, competitor*