

MODIFICATION OF VOLCANIC ASH KELUD (2014) AS A SELECTIVE ADSORBENT MATERIAL FOR Zn (II) AND Cr (VI) METAL IONS IN INDUSTRIAL WASTE SAMPLES

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ABSTRACT

This study aims to determine the type and concentration of acid optimal, the character of functional groups, acidity, moisture content and efficiency as well as the adsorption capacity of the metal ion Zn (II) and Cr (VI) in industrial waste from the adsorbent modified compared Kiesel gel 60G E ' Merck. Adsorbent synthesis is done by dissolving 6 grams of volcanic ash in 200 mL of 3M sodium hydroxide with stirring and heating of 100 ° C for 1 hour. The filtrate sodium silicate plus hydrochloric acid to neutral. Variations of hydrochloric acid used is 1, 2, 3 M. The mixture was allowed to stand for 24 hours then filtered and washed with akuademineralisata to neutral. Then dried and crushed. The procedure is repeated for nitric acid (1,2,3 M) with a contact time of 24 hours. After silica gel was characterized using FTIR, furthermore determined acidity, moisture content, and were tested against ion adsorption power Zn (II) and Cr (VI) with AAS. The results showed that the type of acid that produces optimum adsorbent is AK-HCl-3M is 25.5%, Character functional groups of silica gel synthesized all have similarities with Kiesel gel 60G E'Merck as a comparison. Qualitative analysis by FTIR indicates that it has formed a bond of Si-O-Si and Si-OH. The acidity of the adsorbent silica gel synthesized all similar to Kiesel gel 60G E'Merck of 6.302 mmol / gram. The water content of the adsorbent silica gel synthesized similar to Kiesel gel 60G E'Merck ie adsorbent AD-HNO₃. Optimum adsorption efficiency of Zn (II) and Cr (VI) was obtained by AK-HNO₃ in the amount of 63.24% for Zn (II) in electroplating waste and 64.01% for Cr (VI) in tannery waste.

Kata Kunci: *adsorbents, silica gel, adsorption, volcanic ash kelud, Zn (II), Cr (VI) adsorption efficiency*