

Efek regenerasi dari adsorben komposit (pva, zeolit, dan karbon aktif) terhadap adsorpsi penghilangan air pada produksi bio-etanol = Regeneration effects of composite adsorbents (pva, zeolite, and activated carbon) for adsorption of water removal in bio-ethanol production

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Abstrak

ABSTRAK

Bioetanol merupakan bahan bakar alternatif yang dianggap paling menjanjikan di masa depan karena bioetanol merupakan bahan bakar yang ramah lingkungan. Pada prosesnya, etanol yang dihasilkan memiliki kadar 30-40% v/v. Sehingga dengan begitu etanol masih membutuhkan proses pemurnian. Salah satu metode pemurnian yang dapat digunakan adalah adsorpsi, karena adsorpsi menggunakan adsorben komposit, proses regenerasi adsorben dilakukan juga. Penelitian ini ditujukan untuk mengetahui kinerja adsorben setelah dilakukan beberapa kali regenerasi. Dengan adsorben komposit yang digunakan PVA : Zeolit : Karbon aktif (1:1:1), berdasarkan hasil penelitian kinerja adsorben ditinjau berdasarkan adsorpsi efektif, waktu penetrasi, dan kapasitas adsorpsi. Dari hasil penelitian dengan kandungan etanol masuk 96%, adsorben yang baru 1 kali regenerasi memiliki nilai adsorpsi efektif dan kapasitas adsorpsi sebesar 320 menit dan 49,748 mg/ 100 g adsorben sedangkan pada kandungan masuk etanol 88% adsorben yang baru 1 kali regenerasi memiliki nilai adsorpsi efektif dan kapasitas adsorpsi sebesar 270 menit dan 158,5320 mg/ 100 g adsorben, dan semakin sering dilakukan proses regenerasi kinerja adsorben akan semakin turun. Dapat disimpulkan bahwa proses regenerasi adsorben terhadap kinerja adsorben akan semakin turun sejalan dengan proses regenerasi yang dilakukan.

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ABSTRACT

Bioethanol is an alternative fuel that is considered the most promising in the future because bioethanol is an environmentally friendly fuel. In the process, the ethanol produced has 30-40% v / v levels. So that ethanol still needs a refining process. One of the purification methods that can be used is adsorption, because adsorption uses composite adsorbents, the regeneration process of the adsorbent is also done. This study was aimed at knowing the performance of the adsorbent after several regenerations. With composite adsorbent used PVA: Zeolite: Activated carbon (1: 1: 1), based on the results of the research the performance of the adsorbent was reviewed based on effective adsorption, penetration time, and adsorption capacity. From the results of research with 96% ethanol content, the adsorbent which has only 1 time regeneration has an effective adsorption value and adsorption capacity of 320 minutes and 49.748 mg / 100 g of adsorbent whereas in the content of 88% ethanol adsorbent which has only 1 time regeneration has an effective adsorption value and the adsorption capacity of 270 minutes and 158.5320 mg / 100 g of the adsorbent, and the more frequent the regeneration process of the adsorbent performance will decrease. It can be concluded that the regeneration process of the adsorbent to the performance of the adsorbent will decrease further along with the regeneration process carried out.</p><p> </p>