

The influence of the activated carbon post-treatment on the phenolic compounds removal

The aim of this research was to investigate how post treatment modification, such as those with sodium hydroxide or urea, can influence the capacity of activated carbon (AC) for phenolic compounds removal from liquid media. The ACs modification was performed using urea impregnation followed by pyrolysis at high temperature. With all ACs used, this treatment induced a pore volume increase, a mean pore size broadening, an increase in the point of zero charge and also in the basic character. The modification with sodium hydroxide brings to light the influence of the precursor nature as the achievements are really diverse. With the ACs obtained from PET, a pore volume and mean pore size reduction occurred, with the AC-cloth no textural effect was observed and with the AC obtained from cork, an enlargement of the mean pore size and an increase of the pore volume were confirmed. The difference in the acidic/basic character exhibited by the modified ACs was in agreement with the presence of acidic/basic superficial groups identified by FTIR. The textural and chemical properties of the ACs affect in a direct way the phenolic compounds removal capacity. Particularly, those modified with urea, which exhibited a superior removal capacity for both phenolic compounds.

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Corresponding author: pamm@uevora.pt