

The adsorption of phenols from model solutions by activated carbon Ecofresh carbon and NWC

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Abstract : Process of reservoirs self-purification from phenols proceeds relatively slowly, therefore before the discharge phenol-containing waste waters are subjected to additional cleaning. At present there are a lot of methods of phenol-containing waste waters purification. The variety of the systems, containing phenols, causes difficulties in selection of optimal ways of their neutralization and utilization. Many effective ways of deep phenol-containing waters purification are connected to large economic and resource expenses, use of scarce reagents with their subsequent regeneration, utilization or waste disposal. Therefore searching for the most efficient and inexpensive ways of purification of phenol-containing waste waters of small volumes is the task of an utmost importance. The adsorption of phenols was studied, by the example of resorcinol from model's solutions with activated carbon Ecofresh Carbon and NWC in static and dynamic conditions. Some theory of adsorption equations were selected to process the experimental data. They are: Langmuir monomolecular adsorption equation, BET equation of polymolecular adsorption, equation of the theory of volumetric infill of micropores with different values of degree index n . For the description of resorcinol adsorption from water solutions in static conditions the Dubinin-Astakhov equation was chosen and values of the limit adsorption and characteristic energy have been calculated. DEC, FDEC and kinetic constants of adsorption in dynamic conditions have been calculated. Protective power time and the loss of protective power time of the layer, having been computed on the base of kinetic parameters, are consistent with the experimental data for activated coconut carbon. Activated coconut carbon Ecofresh Carbon can be recommended as an optimal sorbent for purification of waste waters from phenols.

Key words : resorcinol; adsorption; adsorption theory equation; activated coconut carbon; Shilov's equation.

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