

## Removal of Basic Dyes from Aqueous Solutions with a Treated Spent Bleaching Earth

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**Abstract :** A spent bleaching earth from an edible oil refinery has been treated by impregnation with a normal sodium hydroxide solution followed by mild thermal treatment (100°C). The obtained material (TSBE) was washed, dried and characterized by X-ray diffraction, FTIR, SEM, BET, and thermal analysis. The clay structure was not apparently affected by the treatment and the impregnated organic matter was quantitatively removed. We have investigated the comparative sorption of safranin and methylene blue on this material, the spent bleaching earth (SBE) and the virgin bleaching earth (VBE). The kinetic results fit the pseudo second order kinetic model and the Weber & Morris, intra-particle diffusion model. The pH had no effect on the sorption efficiency. The sorption isotherms followed the Langmuir model for various sorbent concentrations with good values of determination coefficient. A linear relationship was found between the calculated maximum removal capacity and the solid/solution ratio. A comparison between the results obtained with this material and those of the literature highlighted the low cost and the good removal capacity of the treated spent bleaching earth.

**Keywords :** basic dyes, isotherms, sorption, spent bleaching earth

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