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Highlights:

Kinetic study of methylene blue adsorption

Making an alginate-bentonite beads by encapsulation

Adsorption of the basic textile dye by calcium alginate-bentonite beads

Abstract

In this study, bentonite is modified by encapsulation in calcium alginate. This material namely bentonite-alginate beads were prepared for the adsorption of basic dye of methylene blue (MB) present in aqueous solution. The alginate-bentonite compound were used under different proportions (1/1, 1/ 2 and 1/3). The results show that it is the 1/1 proportion which is most efficient in the adsorption of methylene blue. The kinetic study of the results shows that the phenomenon had governed by the second order kinetic model.
The adsorption isotherms were well described by the Langmuir model and the maximum amount adsorbed by the alginate-bentonite compound has increased significantly from 345 to 1237 mg / g after the modification of bentonite by alginate.

Keywords: *Adsorption, basic dye, bentonite, calcium alginate*