

## Effect of Bead Size and pH on Removal of Reactive Dye Using Natural Polymer

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Various industries such as textiles, paint and varnishes, ink, plastics, pulp and paper and cosmetics use different types of organic dyes and dye intermediates. However, such colored dye effluents pose a major threat to the surrounding ecosystem. Some of the dyes are extremely toxic. Dye effluents can be treated by biological methods, flocculation, reverse osmosis, adsorption on activated charcoal, chemical oxidation methods and advanced oxidation processes.

Chitin and chitosan, which have been found in crustacea, mollusca and fungus, are natural polymers. The average molecular weight and the degree of deacetylation of the chitosan used were found to be 820,000 and 85%, respectively. The spherical chitosan beads for adsorption equilibrium and batch experiments were made by the sol-gel method. The particle size of the spherical natural polymer used in this study was 0.8 mm, 1.2 mm, 1.7 mm and 2 mm respectively. Single component isotherms of the reactive orange (RO16) fitted well with the Sips isotherm. The adsorption amounts of RO 16 onto natural polymer increased with decreasing bead size and initial pH of the solution.