



Study on the treatment of wastewater containing Cu(II) by D851 ion exchange resin

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ABSTRACT

A static adsorption experiment of copper ion was performed with D851 ion exchange resin to determine some optimum treatment parameters. The results of the experiment showed that the enthalpy value of the reaction was positive and the optimum reaction time was 60 min, while the optimum pH value and reaction temperature were 5.5 and 35°C, respectively. The adsorption equilibrium density of 0.1 g ion exchange resin was between 75 and 100 mg/L. With the condition of the hydraulic retention time of 60 min, wastewater containing 10 mg/L Cu(II) (pH ≈ 5.5) was treated by a dynamic ion exchange column, and the treatment effluent can meet the primary standard of the National Integrated Wastewater Discharge Standard (GB8978-1996). Meanwhile a desorption experiment with ion exchange resin was carried out, which determined that the optimum volume fraction of hydrochloric acid solution was 4% in the desorption solution. The figures of the scanning electron microscope showed that the resin saturated with Cu(II) could be regenerated well under the effect of hydrochloric acid solution, which was consistent with the experimental results.

Keywords: Ion exchange resin; Wastewater containing Cu(II); Static adsorption; Dynamic adsorption; Desorption experiment

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