



## An experimental study of CI Reactive Blue 25 removal from aqueous solution by electrocoagulation using Aluminum sacrificial electrode: kinetics and influence of parameters on electrocoagulation performance

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### ABSTRACT

Electrocoagulation (EC) has been employed for the removal of CI Reactive Blue 25 from aqueous solution using a batch stirred reactor with aluminum as sacrificial electrode. In the electrocoagulation of CI Reactive Blue 25, the effects of different electrolyte (NaCl and Na<sub>2</sub>SO<sub>4</sub>), electrolyte concentration (0.1–0.5 g/L), initial pH (5–11), initial concentration of dye (5–30 mg/L), electrodes spacing (2–6 cm), voltage applied (8–20 V), and electrode area (30–60 cm<sup>2</sup>) exposed were investigated. The reaction rate constants were determined according to the pseudo-first-order kinetic model, which fits the experimental data. The highest rate constant of 0.0832 min<sup>-1</sup> was achieved for an electrolyte concentration of 0.2 g/L, pH 8, spacing of electrode 4 cm, current density of 2.33 mA/cm<sup>2</sup>, an initial dye concentration of 10 mg/L, with a removal efficiency of 97.2% at 45 min of electrolysis. Electrocoagulation with aluminum electrodes degrades CI reactive Blue 25 effectively from aqueous solution.

*Keywords:* Electrocoagulation; CI reactive Blue 25; Aluminum electrode; Pseudo-first-order reaction rate

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