



## Removal of Nickel Ions from Acid Mine Drainage by Ion Exchange

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**Abstract:** The removal of nickel from acid mine drainage waste by ion exchange resins, such as Indion 820 and Indion 850, was investigated. Effect of initial metal ion concentration, resin dose and pH on exchange capacities of ion exchange resins was studied in a batch method. The adsorption process, which is pH dependent, shows maximum removal of nickel in the pH range 2-6 for an initial nickel concentration of 50-250 mg/L and with resin dose 25-700 mg/L. The experimental data have been analyzed by using the Freundlich, Langmuir, Redlich-Peterson, Temkin and Dubinin-Radushkevich isotherm models. The isotherm constants for all these isotherm models have been calculated. The uptake of nickel by the ion exchange resins was reversible and thus has good potential for the removal/recovery of nickel from acid mine drainage wastewater. Ion exchange resins, such as Indion 820 and Indion 850 can be used for the efficient removal of nickel from mine wastewater.

**Key words:** AMD, Ion Exchange, Isotherms, Nickel (II), Ion Exchange Resins

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