
Removal of Nickel and Cobalt from Aqueous Solutions by Na-Activated Bentonite

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Abstract: The ability of Na-activated bentonite to remove Ni^{2+} and Co^{2+} from aqueous solutions at room temperature ($22 \pm 1^\circ \text{C}$) was studied under various experimental conditions. The parameters studied were solid-to-liquid ratios and initial cation concentrations. Experiments involved the behavior of bentonite *vs.* Ni and Co separately and where Ni and Co were present in solution at different concentrations and ratios. Bentonite retained substantial amounts of both metals readily, but it showed a higher affinity for Ni. Over-exchange appears when initial metal concentration exceeds the concentration corresponding to the cation exchange capacity (CEC) of bentonite. The presence of both metals in solution may be either synergistic or antagonistic sorption, depending on the initial ion concentrations.

Key Words: Adsorption • Bentonite • Cation Exchange • Clays • Cobalt Removal • Heavy Metals • Nickel Removal • Wastewater

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