

Sorption Characteristics of Copper on Steel-Making Slag

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Various methods exist for the removal of toxic metal ions from aqueous solution via ion exchange, reverse osmosis, precipitation and adsorption. Adsorption is by far the most versatile and widely used process. The sorbents for the heavy metal sorption ranged from natural materials to industrial and agricultural by-products, such as fly ash, carbonaceous material, metal oxides, zeolites, moss, hydroxides, lignin, clays, biomass, peanut hulls, pyrite fines, and coral sand. Slags as metallurgical by-products are being used as fillers or in the production of slag cement and is very cheap and abundant compared to other sorbents. In this study, the sorption characteristics of copper using steel-making slag was investigated. The sorption reached equilibrium within 1 hour. The sorption isotherms of uptake metals by the slags expressed as Freundlich isotherms. CaO in slag played an important role in the sorption of copper on the slag surface. Even though the high pH after sorption experiments, the major mechanism of copper removal was not precipitation but sorption.