

Advanced Electrocoagulation for Textile Wastewater Treatment

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Abstract : The textile industry is among the biggest industries in the world, producing a wide variety of products. Industry plays an important role in the world economy as well as in our daily lives. In Ethiopia, this has also been aided by the country's impressive economic growth over the years. However, Textile industries consume large amounts of water and produce colored wastewater, which results in polluting the environment. In this study, the efficiency of the electrocoagulation treatment process using Iron electrodes to treat textile wastewater containing Reactive black everzol was studied. The effects of parameters such as voltage, time of reaction, and inter-electrode distance on Chemical oxygen demand (COD) and dye removal efficiency were investigated. In addition, electrical energy consumption at optimum conditions has been investigated. The results showed that COD and dye removals were 90.76% and 97.66%, respectively, at the optimum point of input voltage of 14v, inter-electrode distance of 7.24mm, and 47.86min electrolysis time. Energy consumption at the optimum point is also 2.9×10^{-3} . It can be concluded that the electrocoagulation process by the iron electrode is a very efficient and clean process for COD and reactive black removal from wastewater.

Keywords : iron electrode, electrocoagulation, chemical oxygen demand, wastewater

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