Decolorization of Levafix Brilliant Blue E-B by Electrocoagulation Method

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Effluents from dyeing industry are not only colored but also contain high amounts of chemical oxidation demand (COD) and dissolved solids. Dyes are gradually emerging as a class of anthropogenic organic substances that pose serious threat to environment. Dye bath effluents are not only aesthetic pollutants by their color but also interfere with light penetration that disturbs biological process. Furthermore dye effluent may contain toxic, carcinogenic, mutagenic or teratogenic chemicals. The dye effluents are usually treated by coagulation, anaerobic reduction and aerobic oxidation and adsorption methods. Due to large variations in the effluent composition most of these traditional methods are inadequate. Although biological degradation is the most economic process, it is ineffective to degrade molecules of refractive nature.

The electrochemical methods appear to be effective for the treatment of different effluents compared to conventional methods. The electrocoagulation process is based on the continuous in situ production of a coagulant in the contaminated water. Additionally there is the possibility the oxidation and reduction of substances at the anode and cathode, respectively. Electrocoagulation process provides a simple, reliable and cost effective method for the treatment of wastewater without any need for additional chemicals, and thus secondary pollution. It also reduces the amount of sludge, which needs to be disposed. Electrocoagulation has been successfully been used for the treatment of wastewaters such as electroplating wastewater, laundry wastewater, latex particles, restaurant wastewater and slaughterhouse wastewater. Meanwhile electrocoagulation process has been widely used in the removal of arsenic, phosphate, sulphide, sulphate and sulfite, boron, fluoride, nitrate and chromate.

In this study is the decolorization of Levafix Brilliant Blue E-B by electrocoagulation process was investigated and the influence of the operating variables such as current density, initial pH, time of electrolysis, supporting electrolyte type and concentration on decolorization was determined. The results show that Levafix Brilliant Blue E-B was effectively removed by electrocoagulation method.