

Study of Kinetic Properties of Reactive Dye with One Active Group Sodium Salt Before and After Ultrafiltration on Cotton Substrate †

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Abstract: Nowadays, the fashion industry strongly relates to science and specifically to chemistry. The scientific world behind the dye of fabric is far more interesting than someone may think. Since the accidental synthesis of a colorant named mauveine by W. Perkin, artificial dyes and their ability to color textiles have been widely researched. Consequently, the purpose of this study is to examine the physicochemical behavior of a reactive monoazodye, before and after ultrafiltration when used to dye cotton fabrics. Reactive dyes are widely used in the textile industry because of their diverse shades, high fastness properties, and ease of application. To determine the kinetic behavior of the dye, a closed rota dyer machine was used, where the samples mixed with the dyebath were placed at 60°C. The results derived from this research were focused on the chemical qualities of the dye, such as exhaustion, fixation, substantivity, migration, and the effect of metals. To measure each of them, a UV spectrophotometer and a Reflection Spectrophotometer were used. Each experiment showed the contrast between the filtrated and no filtrated dye, with the filtrated dye presenting more vivid tones and being stronger absorbed in the fabric. Additionally, the study established the connection between substantivity and migration, two inversely proportional amounts. In conclusion, this current dissertation intends to locate the most suitable dyeing conditions that will provide the best final results in a potential industrial procedure.

Keywords: reactive dyes; ultrafiltration; migration; fixation; substantivity; exhaustion.

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Conflicts of Interest

The authors declare no conflict of interest.