Solid Effect of PET/Dyeable PP blends using Disperse and Super hydrophobic dyes

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1. INTRODUCTION

Polyester/polypropylene blends are lightweight materials and recently used in sportswear field.

Polyester/polypropylene blends with conventional disperse dyes have poor dyeing properties, because polyester and polypropylene have different dyeing properties. That is why it is difficult to display solid effect. The purpose of this study is to improve solid effect of PET/dyeable PP blends by using the super hydrophobic dyes what developed for dyeing polypropylene fiber.

2. EXPERIMENTAL

In PET/dayable PP blends fabric, polyester fibers are in front side and dyeable polypropylene fibers in back side.

The blends fabrics were dyed with 5% owf dyes at 130℃ and a liquor ratio of 50:1 for 60 minutes. The dyed materials were reduction-cleared in an aqueous bath comprising sodium hydroxide (2g/l), sodium hydrosulfite (2g/l), and nonionic surfactant (10g/l) at 70℃ for 15 minutes. The dyes used for dyeing are divided into two groups; one is a super hydrophobic dye synthesized in the previous studies for pure polypropylene fibers and the other is a conventional disperse dye, Dianix AC-E series (Dystar) for regular polyester fibers.

3. RESULTS AND DISCUSSION

Samples dyed in each dyeing conditions show different total K/S value. Total K/S values of both sides of samples dyed with the mixture of Dianix and super hydrophobic dyes are higher than other samples. However, fastness of dye mixture is low and wash fastness of only Dianix dyed sample was the highest level.

Fig.1 shows K/S value difference of both sides of red and blue samples in each dyeing conditions. Sample dyed with only Dianix dye has low solid effect than dyed with only super hydrophobic dye or the mixture of Dianix and super hydrophobic dyes. Especially, sample dyed with the mixture of Dianix and super hydrophobic dyes shows the highest solid effect. Similarly, yellow dyeing have the highest solid effect in samples dyed with the mixture of Dianix and super hydrophobic dyes. Blue and red samples dyed with only super hydrophobic dye show relatively high solid effect.

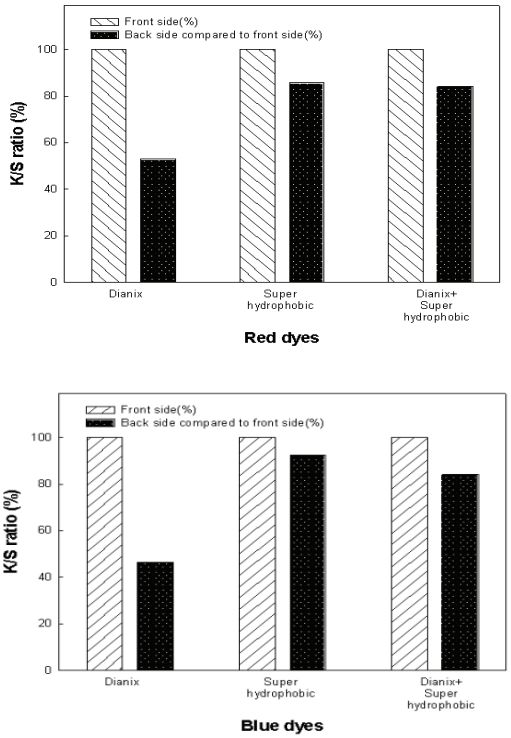

Fig. 1. K/S ratio(%) of PET/dyeable PP blends dyed selected dyes.

Although wash fastness of the dye mixture sample was relatively moderate grade, this dyeing condition provide with the highest solid effect.