The Dyeing Properties of the Functional Fiber Including Inorganic Compounds

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1. INTRODUCTION

Commonly used polyester fiber has been modified with copolymer technology, inorganic particulate blending technology and particle dispersion technology. Inorganic particulate blending technology from them was used for the purpose of extinction of synthetic fiber. Inorganic particles TiO2 commonly used for extinction.[1]

And various inorganic compounds used for making micro-void and improving of dyeing property. They included germanium, silicone, magnesium, etc.

Recently, functional fibers including inorganic compounds are used as antibacterial fiber, infrared emission fiber, deodorant fiber, UV protection fiber. Inorganic compounds create micro-voids on surface of the functional fiber. And micro-voids improve absorption property and dyeing property.[2]

In this study, polyester fabric was modified with inorganic compounds blending, and which was manufactured by melt spinning. And dyeing property was study in this paper.

2. EXPERIMENTAL

2.1 Materials

Functional fiber used in this experiment were manufactured by Woongin chemical Co., Ltd. And used polyester fabric were manufactured by ring spinning and knitting process.

2.2 Dyeing with disperse dye

Used polyester fabric dyed with disperse dye at 130°C for 40minute. Disperse dye were E type and manufactured by M-company.

3. RESULTS AND DISCUSSION

Fig. 1 showed microscope image of the functional fiber including inorganic fiber and SEM image of the inorganic compounds. Functional fiber diameter was about 15micrometer and average of the inorganic compounds in functional fiber was 1micrometer.

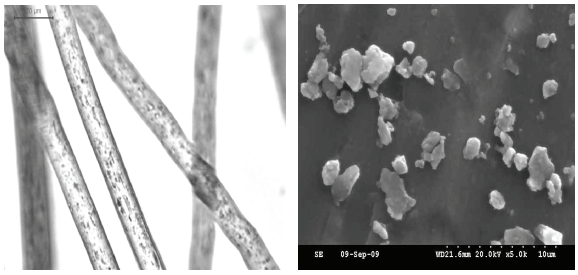

Fig. 1. Microscope image of the functional fiber including inorganic compounds and SEM image of the inorganic compounds

Fig. 2 showed normal polyester fabric and functional polyester fabric dyed with disperse dye for same color(F-fiber(functional polyester fibric), PET(normal polyester fabric)). Functional polyester fabric was dyed well than normal polyester fabric. It was assumed that functional fiber have micro-void on the surface of the functional fiber.

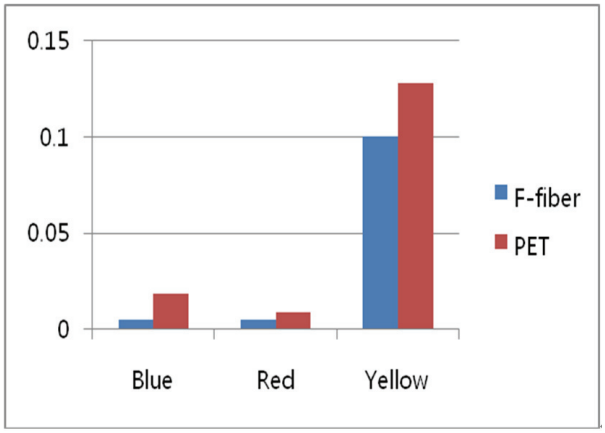

Fig. 2. Dyeing result of normal polyester fabric and functional polyester fabric

4. REFERENCES

[1] Korea textile development institute; "New Sensitive & New Functional Fiber", Korea textile development institute, Korea, pp.10-45, 2005.

[2] Yasuhiro Washino; "Functional Fibers", Toray Research Center, Inc., Japan, pp.178-215, 1993.