

# The Production process of New Sensual fabrics using High Shrinkage finishing

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## 1. Introduction

Recently the tendency of textile materials development is softness, ultra-fine, high density and lightweight etc. Joins in, the sensual fabrics appear before the footlights from Europe.

The products which develop in this research are new sensual fabrics used N/P micro-fibers. Hitherto N/P micro-fiber fabrics were composed by nylon and PET ratio of 20:80. But new sensual fabrics which are preferred recently were composed by nylon and PET ratio of 50:50, 60:40 etc. The high-density fabrics of new ratio of component are possible in high shrinkage finishing. The preparation of finishing agent which is used from this process is the shrinkage agent of benzyl-alcohol type.

Purpose of this study was various and new sensual fabrics development about the N/P micro-fiber fabrics using the developed process of pre-treatments. And establish a dyeing process on the developed high density fabrics.

## 2. Experimental

### 2.1. Materials

N/P micro-fiber fabric (composition ratio 50:50) was obtained from Seojin textile Ltd., Korea. Shrinkage agent of benzyl-alcohol type was imported from Japan. Other chemicals in this study such as sodium hydroxide were chemical grade.

### 2.2. Desizing & scouring (1<sup>st</sup>. pre-treatment)

Desizing and scouring process were treated by C.P.B. system (Cold-Pad-Batch system). Desizing agent, scouring agent, penetrating agent etc are added in the general C.P.B. system and ageing time is 10~12 hours.

### 2.3. Separating & shrinkage (2<sup>nd</sup>. pre-treatment)

Second pre-treatment is for separating and shrinkage of N/P micro-fiber fabrics. The establishment of treat conditions, such as caustic soda concentration and finishing temperature etc. is very important from this process.

### 2.4. High shrinkage finishing (3<sup>rd</sup>. pre-treatment)

Third pre-treatment is for high shrinkage of N/P micro-fiber fabrics. High shrinkage agent of benzyl-alcohol type was used in this process. The concentration of shrinkage agent was controlled with density of fabrics. Fabrics showed various handle according to treated conditions.

### 2.5. Testing and analysis of treated fabrics

K/S values of the dyed samples were calculated from the reflectance curves measured using a spectrophotometer(Data color SF-600 Plus) interfaced with a personal computer.

The dry-cleaning fastness of each dyeing was performed using the test method K ISO 105-D01 to evaluate color change and staining of adjacent multifibers.

The light fastness test was conducted according to ISO 105 B02 method assessing fading with gray scale by exposure at 63 °C for 20 hours.

The tear strength and density of fabrics were evaluated by tearing resistance and scope.

## 3. Results and Discussions

Fig. 1 shows densities and widths of N/P micro-fiber fabrics which were treated by high shrinkage finishing. The density of fabric came to be higher with increasing shrinkage agent concentration. But width of fabric decreased consequently.

The tear strength of N/P micro-fiber fabrics versus shrinkage agent concentration was illustrated in Fig. 2. The tear strength of fabric came to be weaker with increasing shrinkage agent concentration.

In order the fabrics being used with the clothing, rises the tear strength must be above of 350gf. Consequently must control the shrinkage agent concentration with maintenance the tear strength which is good.

The textile goods of satisfied sensitivity had high density of 145T from 128T.

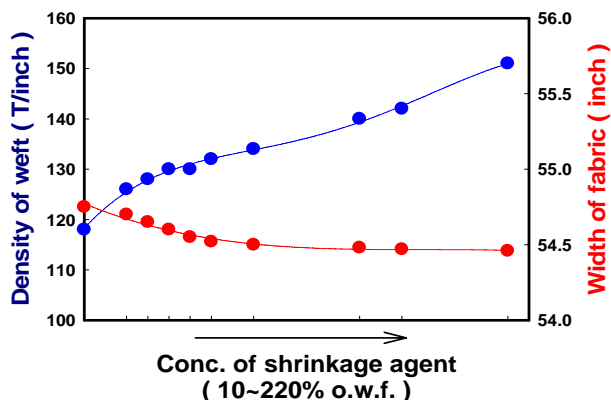


Figure 1. Density and width of N/P micro-fiber fabrics versus shrinkage agent conc.

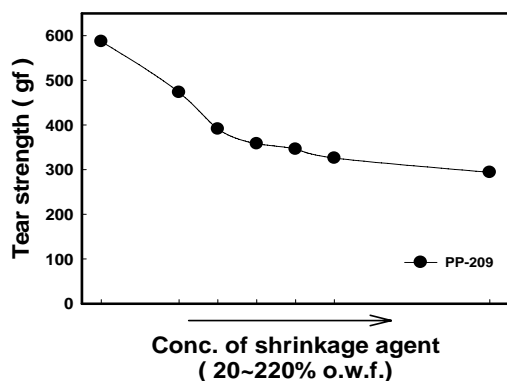


Figure 2. Tear strength of N/P micro-fiber fabrics versus shrinkage agent conc.

Fig. 3 shows color strength (K/S value) on N/P micro-fiber fabric (density : 135T) which is dyed with disperse dyes and acid dyes. Satisfied color strength was appeared at above 110°C. In case of dyeing temperature at 110°C, one-step dyeing process with disperse dyes and acid dyes is impossible.

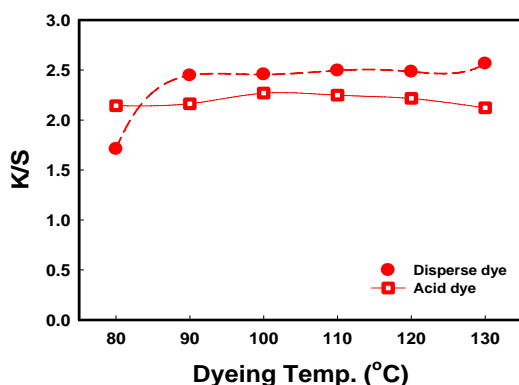


Figure 3. Color strength (K/S value) of N/P micro-fiber fabrics versus dyeing temperature.

135T) was appeared at 4 grade. And durability for rubbing was good in dry 4-5, wet 4 grades. Degree of light fastness was 3-4 grades at black and 3 grade at navy.

Table 1. Color fastness of dyed N/P micro-fiber fabrics

Color	Dry cleaning		Rubbing		Light
	Change in color	Staining	Dry	Wet	
Black	4	4	4-5	4	3-4
Navy	4	3-4	4-5	3-4	3

#### 4. Conclusions

The purpose of this research was to product a new sensual textile goods and to develop the technique of pre-treatment which can appears various sensitivity of fabric. The density of the fabrics comes to be higher, new sensitivity is revealed. But too high density of fabric makes tear strength to weaker. Dyeing on the N/P micro-fiber fabrics was impossible in one-bath with disperse dyes and acid dyes. And color fastness was good compared conventional micro-fiber fabrics.

As illustrated in Table 1, dry-cleaning fastness degree of dyed N/P micro-fiber fabric (density :