

Dyeing and Flame-retardant Properties of Low melting yarn

Se-Jeong Hwang, Mun-Hong Min, Hyun-Sik Son,
Chang-Nam Kim, Gyr-Hwan Lee¹

Korea Dyeing Technology Center, GijinTex¹
E-mail: hsj@dyetec.or.kr

ABSTRACT

Non coating type Low melting yarn(L/M PET) not to use the polyurethane resin causing some problems was knitting and evaluated its dyeing characteristics, heat setting properties and flame-retardant properties without flame retardant agent or flame retardant fabric.

In order to investigate the dyeing property of fabric of L/M PET, the dyeing of L/M PET was experimented at each different dyeing temperature. Higher exhaustion yield was achieved at lower temperature of L/M PET compared to regular PET.

According to result of the study for the heat setting properties of L/M fiber, the K/S value of dyed L/M fiber increased as much as the heat setting temperature did. The experiment for the light fastness reached similar result to dyed PET. However washing fastness in L/M fiber showed lower grade compared with regular PET.

flame-retardant efficiency of L/M PET without flame retardant agent or flame retardant fabric measured by 45° burn test and Contact burn test. The flame-retardant performance of the sample was carried out according to the Korea Fire-fighting Standard.[KOFEIS 1001].

1. INTRODUCTION

The problem of environmental pollution has become a important issue and various solutions have been suggested. One of the solutions is the use of window covering made from L/M PET. Properties of Window Covering Product made by Low Melting Yarn have several advantages.

- Non Coating type
- Hard touch property
- Environment-friendly product
- Human body harmlessness
- Recycling possibility
- Manufacturing process simplification possibility
- Contamination and moisture durability

This study was carried out investigation about the dyeing and flame-retardant properties of L/M PET.

2. EXPERIMENTAL

L/M PET of FY 150/48 SD was woven. Sunmol SS-30(Nicca Korea Co.) was used 2g/l as pretreatment agent at 95°C for 40 minute. Dyeing condition of L/M PET showed table 1. Disperse agent was supplied by Nicca Korea Co. NaOH and Na₂S₂O₄ were purchased from Dong Yang chemical. Heat setting of L/M PET was examined by Mathis lab. Tenter at 140°C, 150°C, 160°C, 170°C and 180°C for 1 minute. The flame retardant of dyed L/M PET was experimented by 45° burn test and Contact burn test.

Table 1. Dyeing condition of low melting yarn

Dye	C.I. Disperse Orange 30	0.5%(o.w.f)
	C.I. Disperse Red 179	0.5%(o.w.f)
	C.I. Disperse Blue 79	0.5%(o.w.f)
Dyeing program	Step-dyeing	60°C ~ 130°C
	Disperse agent	0.3%(o.w.f)
	pH	4.5
	Liquid ratio	1 : 30
R/C condition	NaOH	2 g/l
	Na ₂ S ₂ O ₄	2 g/l

3. RESULT & DISCUSSION

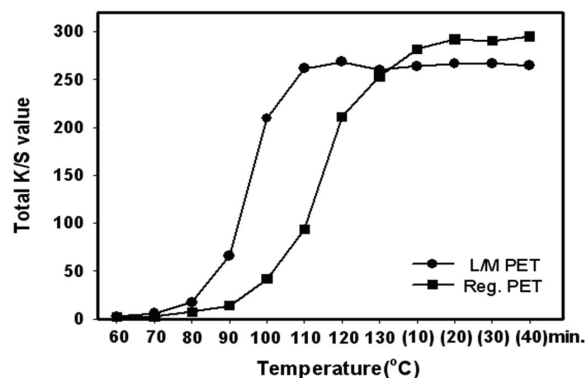


Fig. 1. Total K/S value of dyed L/M PET and Regular PET with S-type disperse dyestuffs.

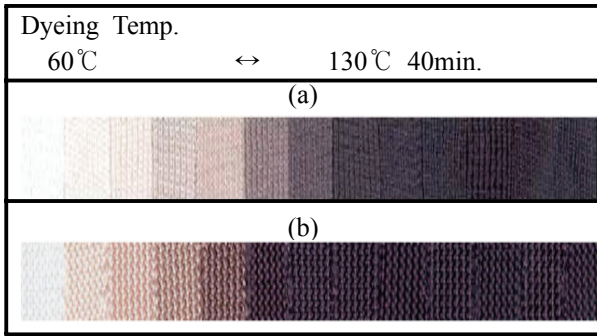


Fig. 2. Dyeing aspects according to change of temperature. : (a) Regular PET (b) L/M PET

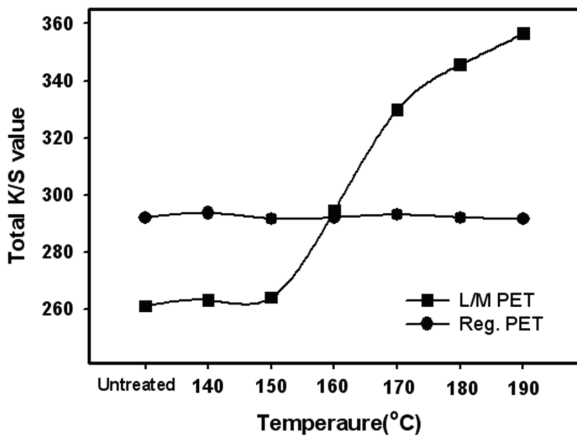


Fig. 3. Changes in the Total K/S value of L/M PET and regular PET according to increase the heat setting temperature.

Table 2. Results of flame-retardant test of dyeing fabrics : Contact burn test

	untreated	pretreatment	Dyeing
Regular PET	0	0	0
L/M PET	1.5	3.8	3.3

4. CONCLUSIONS

In order to investigate the dyeing property of fabric of L/M PET, the dyeing of L/M PET was experimented at each different temperature. In result, higher exhaustion yield was achieved at lower temperature compared with the regular PET.

According to result of the study for the heat setting properties of L/M fiber, the K/S value of dyed L/M fiber increased as much as the heat setting temperature did. The experiment for the light fastness reached similar result to the one of regular

PET. However, washing fastness in L/M fiber showed lower grade compared with Regular PET.

The flame-retardant of pretreatment L/M PET is excellent compared with untreated L/M PET and dyed L/M PET.

5. REFERENCES

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