

Cutting weft yarn type clip jacquard fabrics using polyester hollow fiber

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1. INTRODUCTION

This study is designing each unique solid pattern, jacquard design double cloth cutting, shirring technology and weft cutting technology for enlarge productive efficiency. And also, we choose hollow fibers which are compose surface and back jacquard weave, and we wish to study all properties about development process of differentiate weave applied clip jacquard finish process that reveal light-weight, volume, elasticity and excellent firmness.

2. EXPERIMENTAL

2.1. Specimens

- Elution hollow fiber PET POY SD 120/36(4 kinds)

2.2. Method of test

- Strength & Elongation: KS K 0412, Yarn Shrinkage : KS K 0215A
- Tearing strength: KS K 0535 pendulum method, Fabric Shrinkage: KS K 0599 Soaking method in boiling water

3. RESULT & DISCUSSION

3.1. Spinning of PET elution hollow fiber

- Equipment: POY spinning pilot M/C
- Process conditions: Optimization of process conditions (rate of sheath/core, spinning temp., Spinning speed, draw ratio etc.)
- Results of yarn properties

Elution polymer : PET polymer	Denier (g)	Tenacity (g/d)	Elongation (%)	Cross-section
30 : 70	119.60	2.33	119.96	
35 : 65	120.59	2.41	125.62	

40 : 60	119.96	2.28	119.93	
45 : 55	120.78	2.43	124.11	

3.2. Texturing

- PET elution hollow fiber POY 120/36 (Elution polymer : PET polymer = 35 : 65)
- Draw textured yarn: DTY 75/36
- Texturing m/c: High speed 3feed texturing Pilot m/c
- Processing factor: DR(draw ratio), VR(velocity ratio), 1st Heater temp.
- Results of texturing test

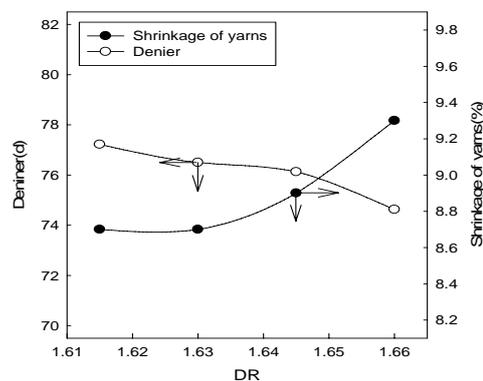


Fig. 1. Denier & shrinkage of yarn according to draw ratio

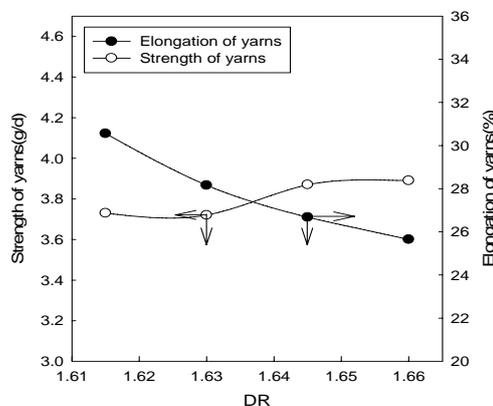


Fig. 2. Strength & Elongation of yarn according to draw ratio

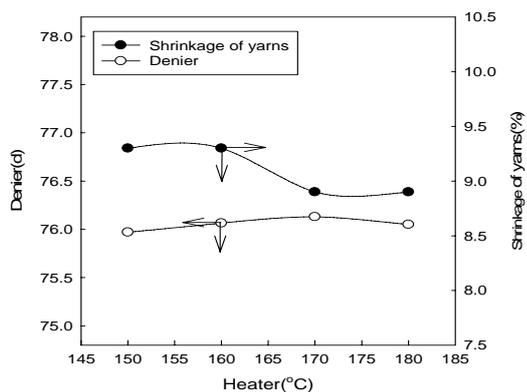


Fig. 3. Denier & shrinkage of yarn according to 1st Heater temp.

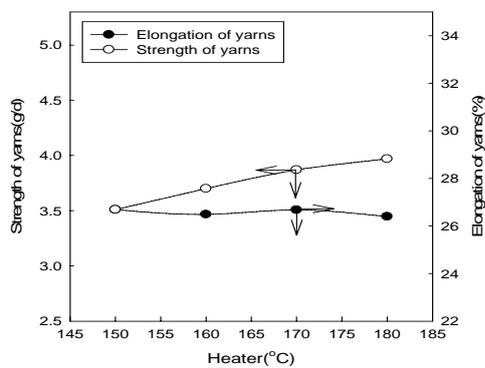


Fig. 4. Strength & Elongation of yarn according to 1st Heater temp.

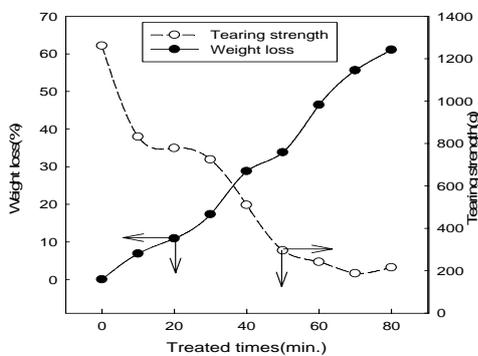


Fig. 5. Weight loss & tearing strength of fabric according to treated times

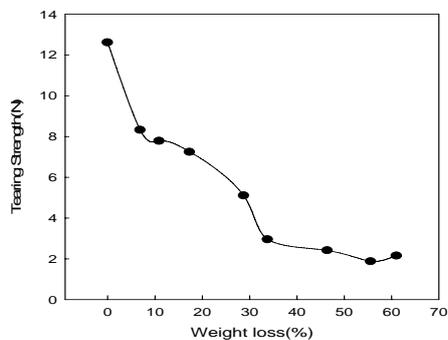
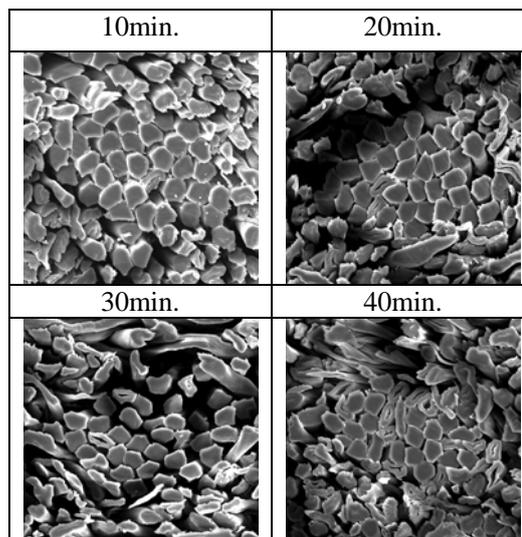


Fig. 6. Tearing strength of fabric according to weight loss

3.3. Deweghting of fabric

- PET elution hollow fiber DTY 75/36 (elution polymer : PET polymer = 35: 65)
- Dewspo fabric (9,000 ends X 65 ends)
- Reducing conditions : NaOH (20kg/200ℓ), Time (10~80min.), Temp. (95°C), Equipment (liquor flow reducing M/C)



4. CONCLUSION

1) Spinning process

- Suitable composition rate of elution polymer/PET polymer is 35/65 in POY SD 120/36
- Input polymer for use 10% for sheath segment at hollow fiber spinning process

2) Texturing

- Denier is decreased with draw ratio but yarn shrinkage increased.
- Tenacity is slightly increased with draw ratio but elongation is decreased.
- Denier is increased with velocity ratio but it is stabilized in 1.45
- No change to the denier according to the 1st heat temperature and yarn shrinkage is decrease in 0.5%.
- Tenacity is increased with velocity ratio and no change to the elongation.

3) Deweghting

- As a result of reducing test, It shows significant elution from 30~40 minute after start, and decreased tearing strength when more than 40 minutes,