



Original Contribution

THE STUDY ABOUT PILLING AND FRICTION TEST VALUES OF POLIAMID KNITTING TUBE FABRICS THAT ARE PRODUCED BY DIFFERENT TEXTURING MACHINES

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ABSTRACT

In this study, polyamide 6, 6 filament and polyamide yarns, which were produced at two different draw rates, were used to produce tube knitted fabrics at different adjustments.

Fabric pilling and rubbing (dry and wet) tests revealed the differences on tube knitted fabrics with the same filament yarns produced by two different texture machines, and the results were interpreted graphically.

Key Words: textile, nylon, polyamide, knitting tube fabrics, knitting, pilling, rubbing

INTRODUCTION

In this study, Polyamide 6,6 and Polyamide 6 filaments yarn used in this study composed of POY with 70/24/1 80 Nw was textured by different texturing machines₁.

70/24/1 Polyamide 6,6 yarn was divided into 4 groups. And 70/24/1 Polyamide 6 yarn was divided into 4 groups. We are 8 different filament yarn.

Textured Filaments in Group 1 and 5

The filament yarns in group 1 were textured by false-twisting procedure at a draw ratio of 1, 30, and at a speed of 610 meters per se, and heated at a temperature of 190° C by A Type machine with a heater length of 2000 mm.

Textured Filaments in Group 2 and 6

The filament yarns in this group were textured by false-twisting procedure at a draw ratio of 1, 25, and at a speed of 610 meters per se, and heated at a temperature of 190° C by A Type machine with a heater length of 2000 mm.

Textured Filaments in Group 3 and 7

The filament yarns in the group were textured by false-twisting procedure at a draw ratio of 1, 30, and at a speed of 610 meters per se, and heated at a temperature of 280° C by H Type machine with a heater length of 500 mm.

Textured Filaments in Group 4 and 8

The filament yarns in group 4 were textured by false-twisting procedure at a draw ratio of 1, 25 and at a speed of 610 meters per se, and heated at a temperature of 280° C by H Type machine with a heater length of 500 mm.

Produced filaments are knitted as normal and extra adjustment tube fabric by single cylinder COMET KNITTER sock machine. The specifications of the knitting machine are LL type, diameter: 3,75 inch, gauge: 38.

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Two different types of fabric were produced from each filament and eight tube knit-

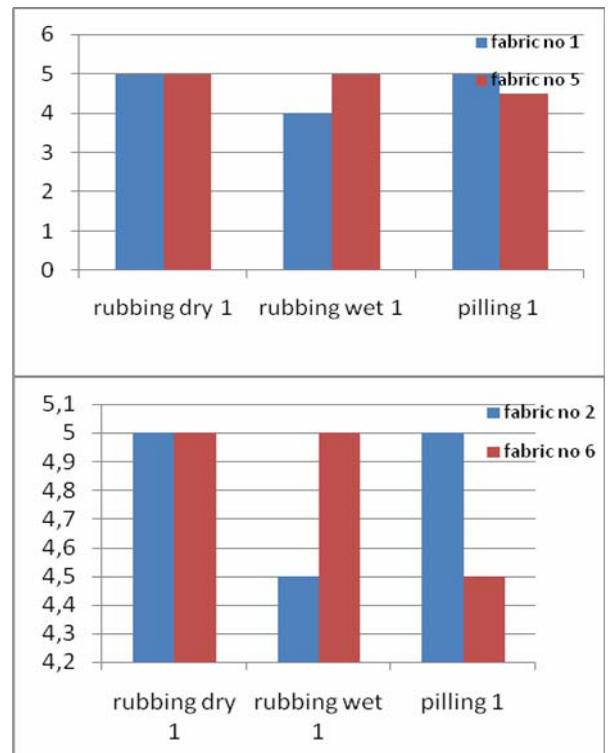
ting fabric were tested. The fabrics were numbered and shown in the table below. Tests and results were given as tables and commented with graphics.

For Poliamid 6; test values

Fabric number	Fabric type
Fabric no: 1	A type machine dr 1.25 normal
Fabric no: 2	A type machine dr 1.25 extra
Fabric no: 3	A type machine dr 1.30 extra
Fabric no: 4	A type machine dr 1.30 normal
Fabric no: 5	H type machine dr 1.25 normal
Fabric no: 6	H type machine dr 1.25 extra
Fabric no: 7	H type machine dr 1.30 extra
Fabric no: 8	H type machine dr 1.30 normal
Fabric no: 9	A type machine dr 1.25 normal
Fabric no:10	A type machine dr 1.25 extra
Fabric no:11	A type machine dr 1.30 extra
Fabric no:12	A type machine dr 1.30 normal
Fabric no:13	H type machine dr 1.25 normal
Fabric no:14	H type machine dr 1.25 extra
Fabric no:15	H type machine dr 1.30 extra
Fabric no:16	H type machine dr 1.30 normal

Tests	9	10	11	1	1	14	15	16
				2	3			
Rub- bing Dry	5	5	5	5	5	5	5	5
Wet	5	5	5	5	5	4, 5	5	5
Pilling	4, 5	4, 5	4, 5	5	5	4, 5	4, 5	4, 5

For Poliamid 6,6;

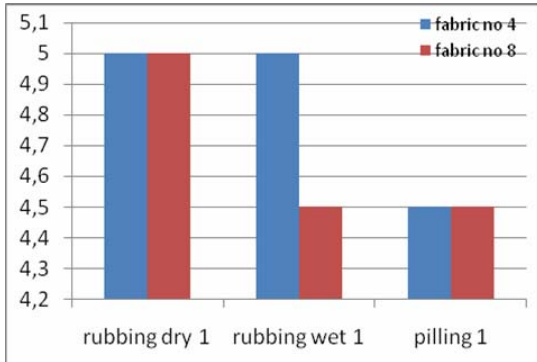
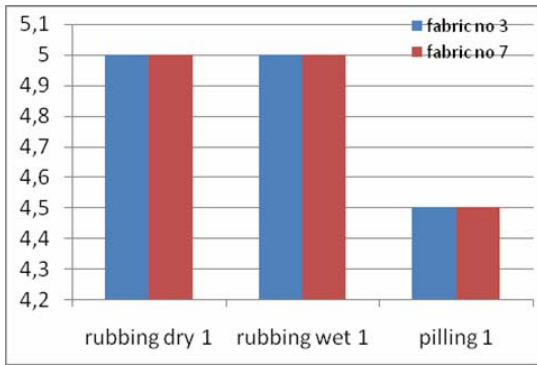


For Poliamid 6,6; tests values

Tests	1	2	3	4	5	6	7	8
Rub- bing Dry	5	5	5	5	5	5	5	5
Wet	4	4, 5	5	5	5	5	5	4, 5
Pilling	5	5	4, 5	4, 5	4, 5	4, 5	4, 5	4, 5

Graphics 1-a: For fabric 1 to 5. Effect of the difference between H type machine and A type machine at the same drawing rate (DR 1,25) to rubbing and pilling fastness of normal tube knitting machine were shown.

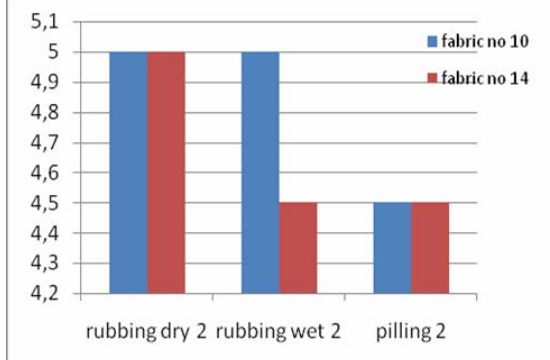
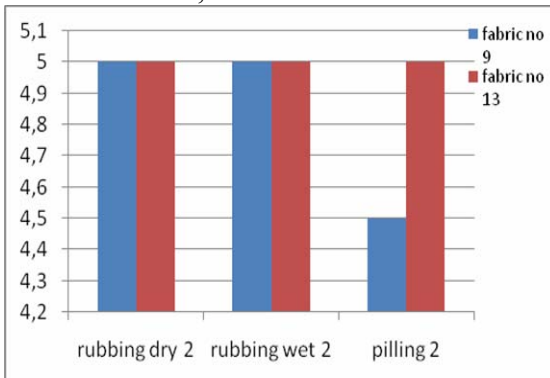
Graphics 1-b: For fabric 2 to 6. Effect of the difference between H type machine and A type machine at the same drawing rate (DR 1,25) to rubbing and pilling fastness of extra tube knitting machine were shown.



Graphics 2-a: For fabric 3 to 7. Effect of the difference between H type machine and A type machine at the same drawing rate (DR 1,30) to rubbing and pilling fastness of extra tube knitting machine were shown.

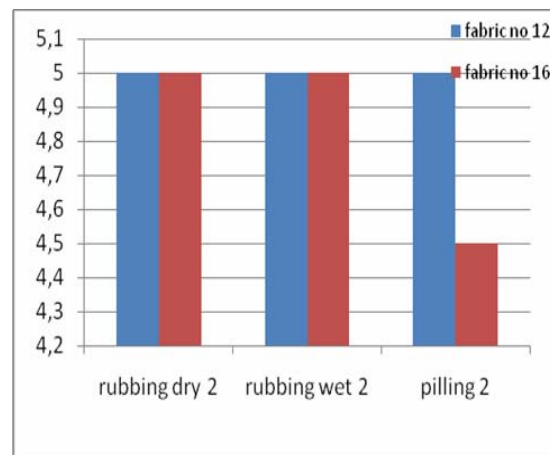
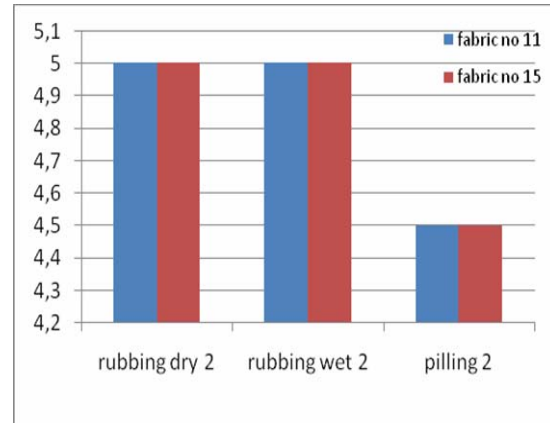
Graphics 2-b: For fabric 4 to 8. Effect of the difference between H type machine and A type machine at the same drawing rate (DR 1,30) to rubbing and pilling fastness of normal tube knitting machine were shown.

For Poliamid 6;



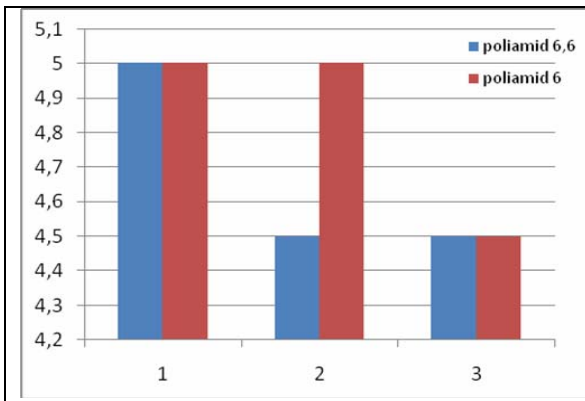
Graphics 3-a: For fabric 9 to 13. Effect of the difference between H type machine and A type machine at the same drawing rate (DR 1,25) to rubbing and pilling fastness of normal tube knitting machine were shown.

Graphics 3-b: For fabric 10 to 14. Effect of the difference between H type machine and A type machine at the same drawing rate (DR 1,25) to rubbing and pilling fastness of extra tube knitting machine were shown.

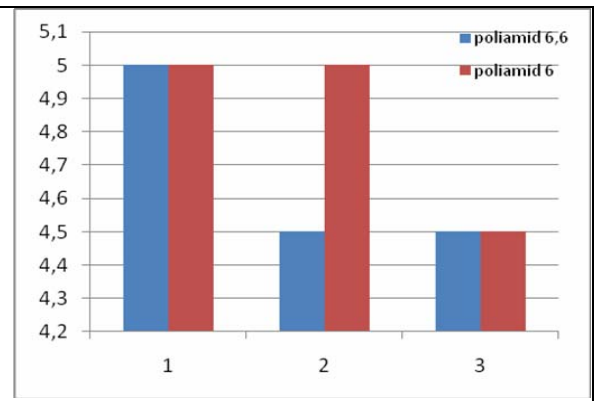


Graphics 4-a: For fabric 11 to 15. Effect of the difference between H type machine and A type machine at the same drawing rate (DR 1,30) to rubbing and pilling fastness of extra tube knitting machine were shown.

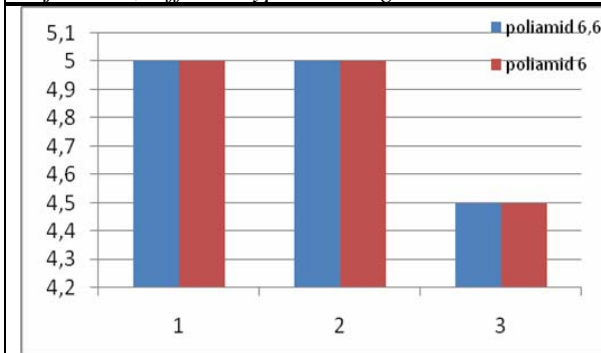
Graphics 4-b: For fabric 12 to 16. Effect of the difference between H type machine and A type machine at the same drawing rate (DR 1,30) to rubbing and pilling fastness of extra tube knitting machine were shown.



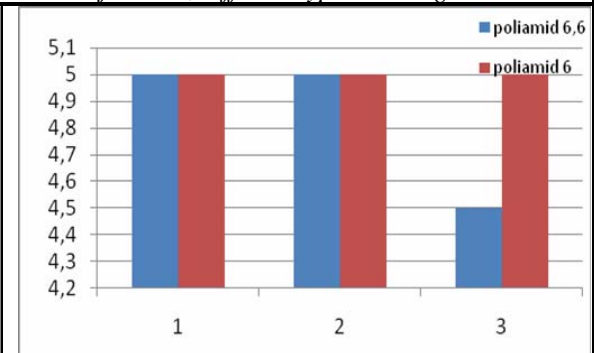
Graphics 5: for P 6,6 and P 6 fabrics (1 to 9), same adjustment, different type texturing machine.



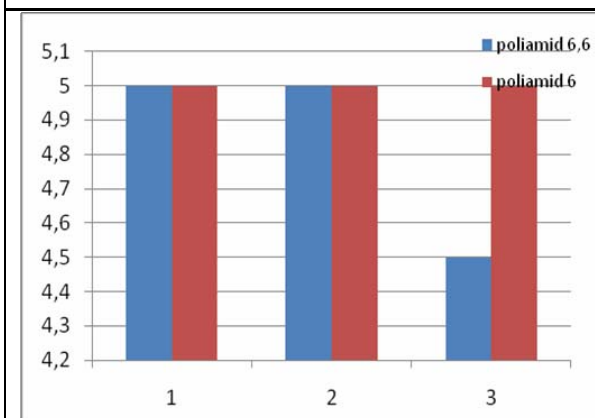
Graphics 6: for P 6,6 and P 6 fabrics (2 to 10), same adjustment, different type texturing machine.



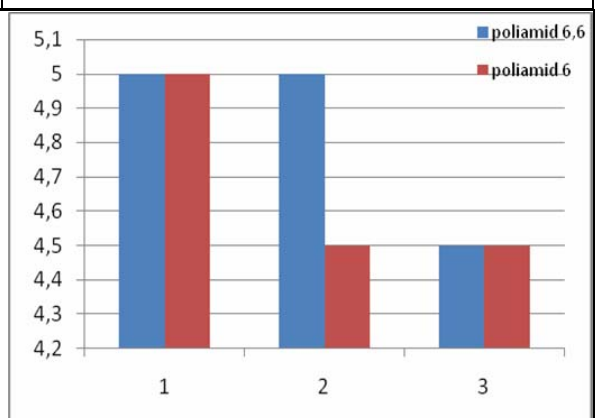
Graphics 7: for P 6,6 and P 6 fabrics (3 to 11), same adjustment, different type texturing machine.



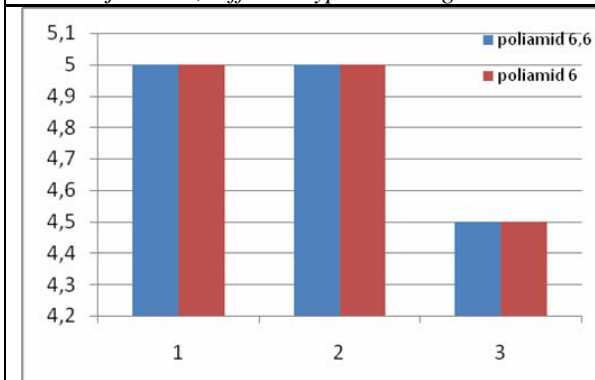
Graphics 8: for P 6,6 and P 6 fabrics (4 to 12), same adjustment, different type texturing machine.



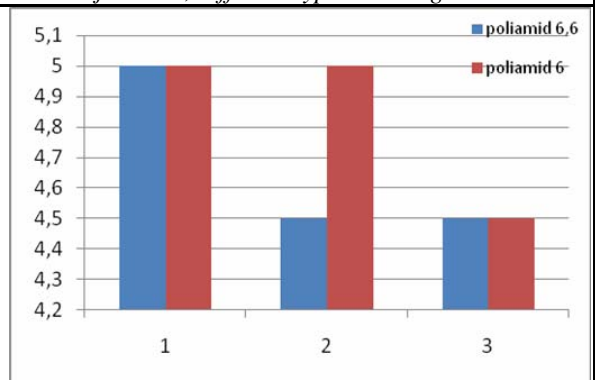
Graphics 9: for P 6,6 and P 6 fabrics (5 to 13), same adjustment, different type texturing machine.



Graphics 10: for P 6,6 and P 6 fabrics (6 to 14), same adjustment, different type texturing machine.



Graphics 11: for P 6,6 and P 6 fabrics (7 to 15), same adjustment, different type texturing machine.



Graphics 12: for P 6,6 and P 6 fabrics (8 to 16), same adjustment, different type texturing machine.

RESULTS

There are two types of RIETER-SCRAGG Drawtex machines used for the production Polyamid-6,6 and Polyamid-6 . During the production, H Type machine is preferred due to short-term heating in H Type machine than long-term heating in A Type machine. In this study, however, considerably new technology H Type showed some underdeveloped factors like the quality of the filament in the tests when compared to A Type machine.

Tube knitting fabrics knitted from the filaments which produced by A type machines give more better results. However, production speed is low and energy consumption is high.

So that, H type knitting machines are preferred because of their short heater length, high production speed and energy efficiency.

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