"Impact of Cotton/Polyester Blend Methods During Various Spinning Stages on Produced Yarns Quality Properties"

Assistant Heba Elsayed Aboelnaga

Department of Sculpture, Architectural Forming and Restoration, Damietta University, Faculty of Applied Arts, Egypt

Abstract

Blending different types of fibers is a widely practiced means of enhancing the performance and the aesthetic qualities of a fabric. Blended yarns from natural and man-made fibers have the particular advantage of successfully combining the good properties of both fiber components, such as comfort of wear with easy care properties. These advantages also permit an increased variety of products to be made, and yield a stronger marketing advantage.

The present study was conducted to determine the impact of polyester/cotton technique and ratio on the yarn structure and quality properties of spun yarns through the production of experimental samples of blended yarn of cotton and polyester depending on the variables mentioned under study:

1) mixing method include:
   - Blending On Blow-Room
   - Blending On Draw-Frame

2) mixing ratios include:
   - 50% Cotton: 50% polyester
   - 65% Cotton: 35% polyester
Abstract

- 35% Cotton: 65% polyester
- 3) Count Yarn: 16/1, 20/1, 30/1 s

The Thesis consists of three sections as follows:

**Part I: previous studies contain:**
- 1-1 Cotton
- 1-2 polyester
- 1-3 effect Of Blending on the properties of the yarns

**Part II: experiments and laboratory tests contain:**
- 2-1 specifications of the used raw materials
- 2-2 machinery used in the research topic
- 2-3 laboratory tests

**Part III: Results and discussion contains:**
- 3-1 blending on blow-room
- 3-2 blending on draw frame
- 3-3 Comparison between blending on blow-room and blending on draw frame

**Results of thesis**

1) The quality characters such as single yarn strength, yarn elongation, were directly proportional to the ratio of polyester with cotton in the blend

2) tensile strength of yarn during blending on Blow- Room is higher than its tensile strength during blending on Draw-frame when mixing by 50% polyester: 50% cotton for yarn count 16/1 and 30/1 but there is no significant difference between them in count 20/1

3) yarn elongation during blending on Draw-frame is higher than its elongation during blending on Blow- Room when mixing by 50% polyester: 50% cotton for yarn count 30/1 but there is no significant difference between them in counts 16/1and 20/1
4) Yarn irregularity be higher during blending on Draw-frame compared to blending on Blow- Room when mixing by 65% polyester: 35% cotton for counts yarns 16/1, 20/1 and 30/1.

5) Yarn hairiness be higher during blending on Draw-frame compared to blending on Blow- Room when mixing by 65% polyester: 35% cotton for counts yarns 16/1 and 30/1 but there is no significant difference between them in count 20/1.

6) Tensile strength of yarn during blending on Blow- Room is higher than its tensile strength during blending on Draw-frame when mixing by 50% polyester: 50% cotton for counts yarns 16/1, 20/1 and 30/1.

7) Yarn elongation during blending on Blow- Room is higher than its elongation during blending on Draw-frame when mixing by 50% polyester: 50% cotton for yarn count 30/1 but there is no significant difference between them in counts 16/1 and 20/1.

8) Yarn irregularity be higher during blending on Draw-frame compared to blending on Blow- Room when mixing by 65% polyester: 35% cotton for counts yarns 16/1, 20/1 and 30/1.

9) Yarn hairiness be higher during blending on Draw-frame compared to blending on Blow- Room when mixing by 65% polyester: 35% cotton for counts yarns 16/1, 20/1 and 30/1.

10) Tensile strength of yarn during blending on Blow- Room is higher than its tensile strength during blending on Draw-frame when mixing by 50% polyester: 50% cotton for yarn count 16/1 but there is no significant difference between them in counts 30/1 and 20/1.

11) Yarn elongation during blending on Blow- Room is higher than its elongation during blending on Draw-frame when mixing by 50% polyester: 50% cotton for counts yarns 16/1, 20/1 and 30/1.

12) Yarn irregularity be higher during blending on Draw-frame compared to blending on Blow- Room when mixing by 65% polyester: 35% cotton for counts yarns 16/1, 20/1 and 30/1.

13) Yarn hairiness be higher during blending on Draw-frame compared to blending on Blow- Room when mixing by 65%
polyester: 35% cotton for yarn counts 16/1 and 30/1 but there is no significant difference between them in counts 20/1.