

# DEVELOPMENT OF FABRIC EFFICIENCY AND OTHER REQUIRED TRAITS USING VARIOUS MIXING AND BLENDING METHODS.

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## ABSTRACT

Textiles has always have been a major development in human history since the evolution of human kind. Blending the fabrics is often done to achieve the maximum strength, quality and reduce the cost of the total output when it is out as a fabric. There are various combinations in which we can mix and blend these fibers and these different mixtures and blending combinations can give different out combinations and various results in the testing phase. These are some commons methods that are done, Bale Mixing, Bale Blending, Volume Mixing, Weight Mixing, Hand Stack Mixing, Lap Mixing, Bin Mixing, Automatic Mixing, Card Mixing and Sliver Mixing. Our objective is to find a new trait or obtain a desired trait by achieving the mixing using Drafting, Drawing and Doubling using Cotton and Polyester and compare them with the existing fibers using Strength test, Water Absorbency, Air Permeability, Breaking Force and Elongation at Break test.

**Keyword:** Mixing, Sliver, Drafting, Drawing, Doubling, Elongation test, Breaking Force test, Air permeability, Water Absorbency.

## 1.Introduction

Blending the fibers has been existing for many generations now and has been proving to be more and more useful over the long term usage and has many benefits like giving the fiber a good trait like high strength and stretchability. Cotton is a cool, soft, strong, comfortable fabric and polyester is a hard wearing, light weight, a poor absorber and elastic, combining them in one fabric gives the comfort cool feel of cotton but which the hard wearing, quick drying and crease resisting properties of polyester. This is the one of the most popular blends in the market right now.

Mixed fibers are obtained by mixing one type of yarn with the other in fabric production.

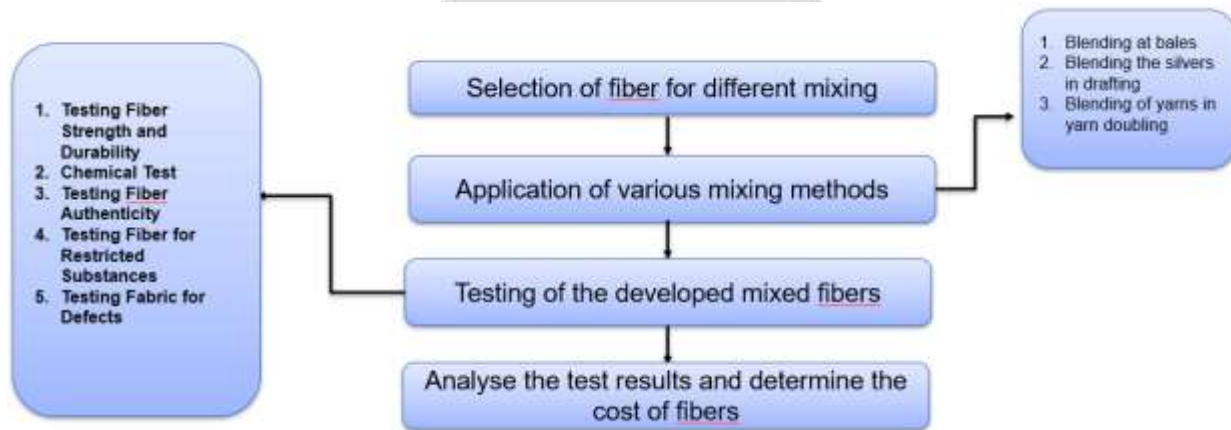
## 2. BENEFITS OF BLENDING AND MIXING FIBERS:

1. To improve the appearance of a fabric.
2. To improve the quality of the fabric so that it is more durable, stronger, and can be more easily cared for.
3. To improve the handle of fabric so that it drapes better is easier to sew and keep its shape well
4. To improve the profitability of fabric so that it is cheaper to produce, and more desirable to customers.

## 2. OBJECTIVES:

- 1. To develop a fabric that produces new traits according to the requirements.
- 2. To produce different slivers and be able to mix them together in the drafting or drawing process to increase the efficiency of the fabric.
- 3. To produce the mixing cost as low as possible to able to apply them instantly to the markets to obtain a profits in the start of this applications.
- 4. These fabrics can be used for various applications and even new applications according to the traits that are obtained.

## 3. METHODOLOGY:



## 4. MATERIALS:

We have used Cotton and Polyester to produce the mixture of the blend as 90% and 10% and 70% and 30%. This was produced using bale blending machine, spinning machine, drawing machine and doubling machine.

## 5. EXPERIMENT:

Using cotton of and polyester of the same and produce the yarn of 26s count and start with the bale mixing process and we can achieve the cotton and polyester blend. The second process is the same with the drawing mixing the slivers together in the drawing with the hank of 0.120Ne. The third process we create the cotton and polyester mix in the doubling process. With these produced yarns we knit the fabric. The produced fabrics are then tested with these stated testing methods. Thickness, Stiffness, Tear and Tensile strengths are tested. These various methods are calculated and compared with the current existing products.

## 6. CONCLUSION:

This fabric produces new traits which can be achieved with the above derived process which are then tested and compared with the already existing samples which are then tested. This sample is then checked whether product is suitable for various applications and functions in the modern era of technical textiles. The possibilities of commercializing the product and thereby creating an efficient product which can be instantly applied in the current products.

**7. REFERERNCES:**

- 1) Blended Fiber Analysis, Blended Fibre Analysis- Textile School  
<https://www.textileschool.com/314/blended-fiber-analysis/>
- 2) Erkhan G (2): Research Journal of Textile and Apparel, Vol:8 No:2pp 57-64. <https://doi.org/10.1108/RJTA-08-02-2004-B008>
- 3) Guangjan Peng, Gujing Duo and Yiheng Sun (3): Advance in Polymer Technology 2020, <https://doi.org/10.1155/2020/9490873>
- 4) Younsook Shin, Dong – II (4): Applied Polymer Science, <https://doi.org/10.1002/app.21846>
- 5) Khushboo Shrimali and Dr. Ella Manoj Dedhia (5): Journal of Polymer and Textile Engineering Volume 2, PP 01-04, March-April 2015, [www.iosrjournals.org](http://www.iosrjournals.org)
- 6) Mahbubur Rahman and Abu Hamja (6): Conference Paper, December 2013, <https://www.researchgate.net/publication/326589045>
- 7) Juan F. Rodriguez and Amaya Romero (7): Journal of Applied Polymer Science, PP 4809-4818
- 8) Threenadh Ponnappally and Gayathri Dornala (8): Journal of Applied Polymer Science, PP 4809-4818
- 9) Youngmin Jun and Chung Hee Park (9): Textile Research Journal Volume 79(2): 179-189, DOI: 10.1177/0040517508093444
- 10) Stephane Giraud and Rochery (10): Polymer Degradation and Stability 88(1):106-113, DOI: 10.1016/j.polyimdegradstab.2004.01.028
- 11) Subhas Ghosh and Prasad BhatKhande (11): IJOC Vol.2 No.4, December 2012, DOI: 10.4236/ijoc.2012024050
- 12) Asif Rahman and Michelle E.Dickinson (12): 4 December 2012, DOI: 10.1007/s40243-012-0004-8
- 13) Bruna Barbon Paulo and Kaciane Andreola (13): March 2018, DOI: 10.1016/j.powtec.2018.03.003
- 14) Agus Prasetya and Rochmadi Rochmadi (14): American Journal of Applied Science 7(6), DOI: 10.3844/ajassp.2010.739.745
- 15) Gordon Nelson (15): International Journal of Pharmaceutics, DOI: 10.1016/S0378-5173(0200141-2)
- 16) Ajeet Kumar Rai (16): Department of Mechanical Engineering, SSET Allahabad.