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Change in Quality Indicators of Threads Used in Sewing with Different Compositions

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Abstract: in this article, the research work was carried out in the enterprises of Mergan tex LLC, Sharq Tex Lux LLC and "Karakol kumush kalava" LLC in Bukhara region. For it, 12.1 tex re-carding yarn was produced from 100% cotton fiber, 90% cotton fiber and 10% lavsan fiber mixture, 80% cotton fiber and 20% lavsan fiber mixture, 70% cotton fiber and 30% lavsan fiber mixture. . The physico-mechanical properties of the manufactured thread were determined using modern equipment at the CentexUz laboratory at the Tashkent Textile and Light Industry Institute.

Keywords: strength, elasticity, elasticity, degree of whiteness for white yarns, color fastness of dyed yarns, absence of defects in appearance, uniformity in strength and thickness, balance of hearing.

I. INTRODUCTION

In spinning plants, yarn is spun from a mixture of different fibers, that is, special spinning systems are used to obtain yarn of a certain thickness and thickness. In order for the spun yarn to be of high quality and low cost, it is necessary to plan the spinning systems depending on the yarn spinning system, the quality of raw materials, especially the length and thinness of the fiber.

In order for the process to run correctly at the spinning plant, a separate spinning plan is drawn up for spinning yarn of each thickness, and the following main factors are taken into account:

- the technological process should be short, the cost should be low;
- involving modern technologies working at high speed;
- computer-based management of spinning processes;
- the work of connecting broken threads and removing full tubes should be automated;
- the sizes of the tubes used for winding yarn in spinning machines should be increased.

According to the composition of raw materials, yarns are divided into many types according to their physical and mechanical properties, preparation method and application. According to the type of fiber, cotton yarn is divided into wool, silk, viscose and made of a mixture of different fibers.

Threads are divided into three types according to their linear density: more used (11-30 tex), less used (11 tex and smaller) and high linear density (30 tex and higher). Thin gauzes-batiste, marquise, etc. are produced from yarn of low linear density.

Yarns are produced in plain, baked, blown and finished form. Yarns are used for weaving, knitting and special items.

Twisted yarn is produced by joining two or more single yarns of the same linear density together and twisting them. When cooked, the yarn has the specified parameters, and all the consumption properties are also improved. The purpose of yarn cooking is to ensure that the yarn products have the specified properties, a glossy appearance and a certain stable structure. The essence of yarn spinning is to create a yarn with stable structure and properties by adding several yarns.

When the threads are twisted together along the screw line, the deformation forces caused by twist deformation compress the threads in the radial direction towards the axis of the thread and ensure the specified thread stiffness.

The main fastening materials for clothes include sewing threads. Sewing threads are made from cotton, linen, silk, viscose, kapron, anid, lavsan, fluorolon, propylene fibers and threads.

In sewing, mainly (up to 80%) sewing threads made of cotton fibers are used. They are obtained by cooking 2, 3, 4, 6, 9 and 12 single strands. In the sewing industry, 3-ply and 6-ply threads are mainly used. These yarns are graded as extra, premium and specialty brands based on strength, stretchability and flatness of these properties. According to the thickness, it is available in the following trade numbers:

3 - additives - 10,20,30,40,50,60,80,100;

6 - additives - 10,20,30,40,50,60,80;

9- additions - 0, 1, 3, 4, 6;

2 - additives - 00.

The number of cotton threads is selected depending on the thickness and finish of the fabrics to be sewn.

According to the finish, cotton sewing threads are produced in raw, black, bleached and colored cases.

Finished threads are made silky and shiny. It is prepared soft or hard in terms of hardness.

For the sewing industry, cotton thread is wound on spools or paper tubes. The length of the sewing thread is 200 m, the length of the thread in the tubes is 400, 500, 1000, 2500 and 6000 m. Sewing threads are sewn in the right or left direction. The direction of sewing affects the process of forming a shell on a sewing machine. If the sewing direction is chosen incorrectly, the sewing machine threads will loosen and they will break.

The quality of sewing threads is characterized by their strength, stretchability, elasticity, degree of whiteness for white threads, strength of color of dyed threads, absence of defects in appearance, uniformity in strength and thickness, balance of weaving.

Silk threads are less often used in sewing. They are obtained by cooking the precious raw silk twice. The linear density of raw silk is 3.22 or 4.56 tex. Cooked threads are boiled and white threads are bleached, colored threads are dyed with dyes.

Silk threads are produced with trade numbers 9, 13, 18, 33, 65. They are wound on coils or tubes in lengths of 100, 200, 500, 700 and 1300 m.

Trade number 65 and 33 silk threads are used for sewing women's and men's shirts, women's blouses and other items, while thread numbers 18 and 13 are used for sewing buttonholes and attaching buttons to the garment. For hand grooving of buttonholes, fastening of buttons, a thick number 3 and 7 garus is used for decorative bahias.

The types of sewing threads made from chemically complex threads and fibers are expanding year by year.

Composite of chemical fibers, shaped, reinforced with a core; clear and water-soluble sewing threads are produced from staple fibers.

The thickness, breaking strength and length of the fibers are important in the spinning process. For example, the thickness of the fibers is of great importance in the spinning process. The properties of the obtained threads depend on the thickness of the fiber.

Thin, straight and strong threads are obtained from thin fibers that meet the demand. Fine, light fabrics, knitted fabrics are produced from thin threads.

The finer the fiber, the more fibers there are in the cross-section of a thread of the same thickness. In this way, the surface of fibers touching each other in the structure of the yarn increases and the force of friction increases, as a result, the strength of the yarn is high.

In addition, the fiber composition has a great influence on the properties of yarns. For example, the more synthetic fibers are added to the yarn, the greater its toughness, stretchability and abrasion resistance.

The linear density of the fiber is crucial to obtain yarns with minimum linear density. So, the number of minimum fibers in the cross-section of yarns of minimum thickness will be variable. There are also downsides to very fine fibers.

The unevenness of the threads in terms of thickness is considered the most important quality indicator. As a result of unevenness, streaks are formed on the products and their appearance is spoiled.

As the unevenness of yarns increases, the strength of the fibers in the yarn and the strength of single yarns in the bunch yarns decreases, as a result, the mechanical properties of the yarns deteriorate, and breakage during weaving and shearing increases.

The mechanical properties of cotton fiber are important in the production of yarn during the spinning process, i.e. resistance to abrasion, compression, bending and pushing fibers together.

II. METHODOLOGY

The mechanical properties of yarns include strength, specific tensile strength, square root of strength, elongation at break, and square root of elongation at break. For example, in the process of obtaining iips and producing finished products from them, they are subjected to various mechanical effects.

If the amount of forces acting on the threads is greater than their breaking strength, the threads will break.

Yarns of any assortment produced in spinning enterprises must meet standard requirements for strength, elasticity, twist and unevenness.

Based on the results of the research, Figures 1-3.9 show the coefficient of variation in the linear density of yarns with different fiber content, the coefficient of variation in the number of twists, the breaking force, the variation coefficient in the breaking force, the elongation at break, the variation coefficient in the elongation at break, the specific breaking strength and the specific breaking graphs of the variation coefficient in terms of strength are presented.

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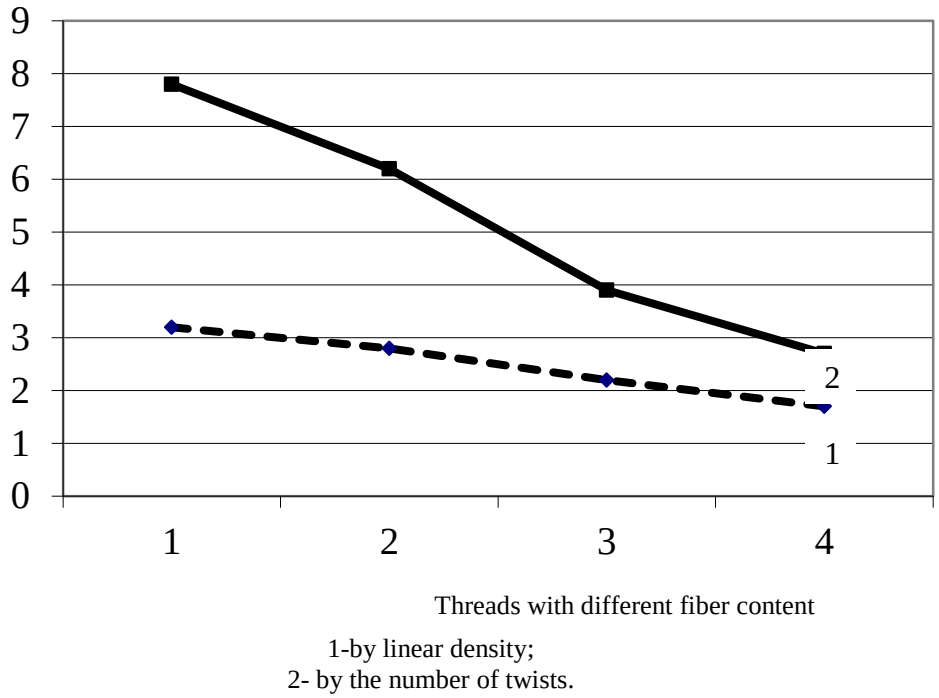

Figure 1.Variation of the coefficient of variation in terms of the linear density and the number of twists of yarns with different fiber content.

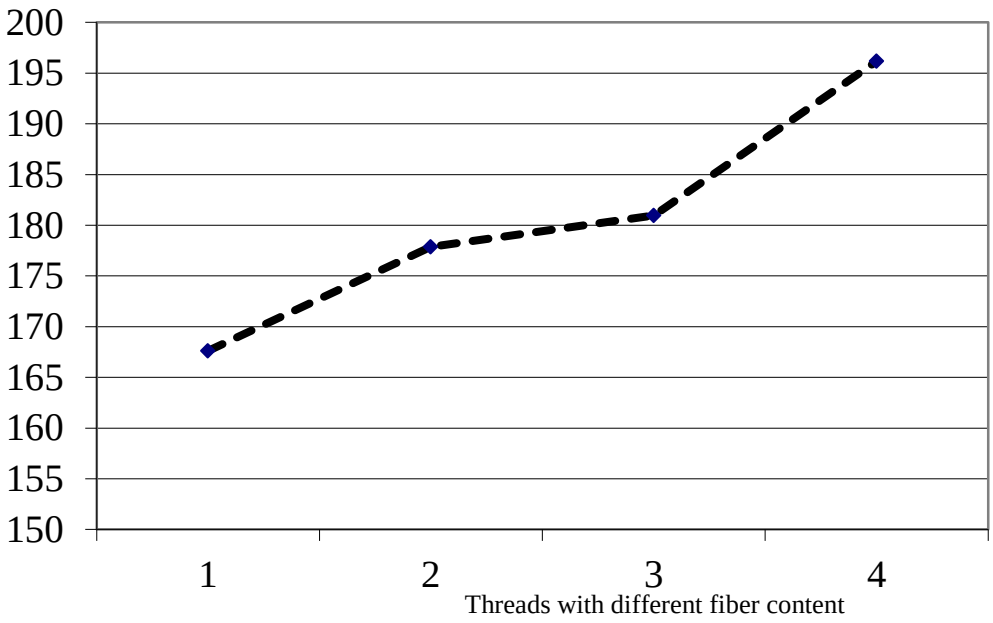

Figure 2.Variation of tensile strength of yarns with different fiber composition.

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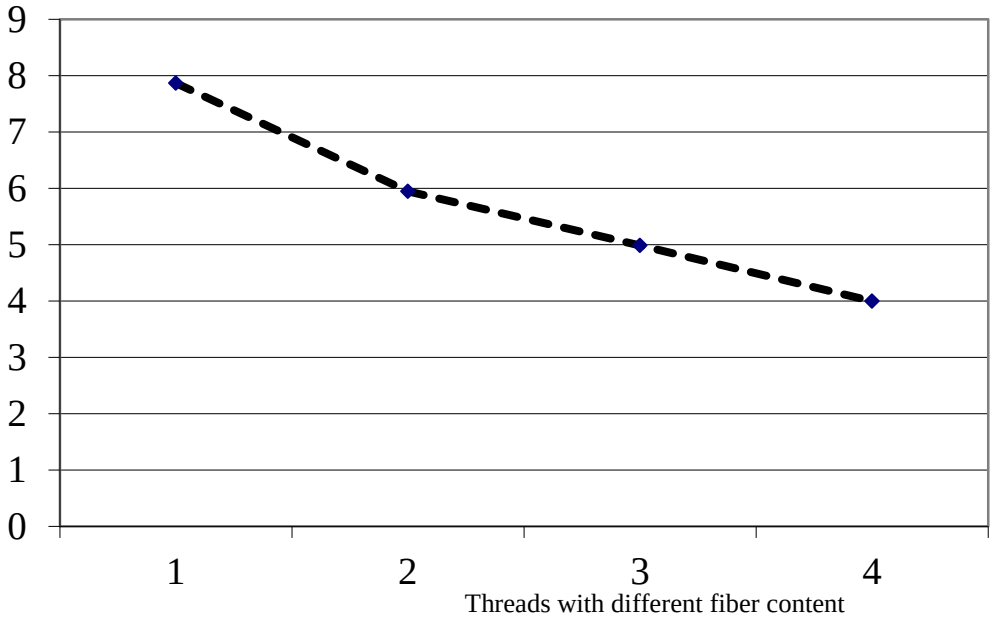
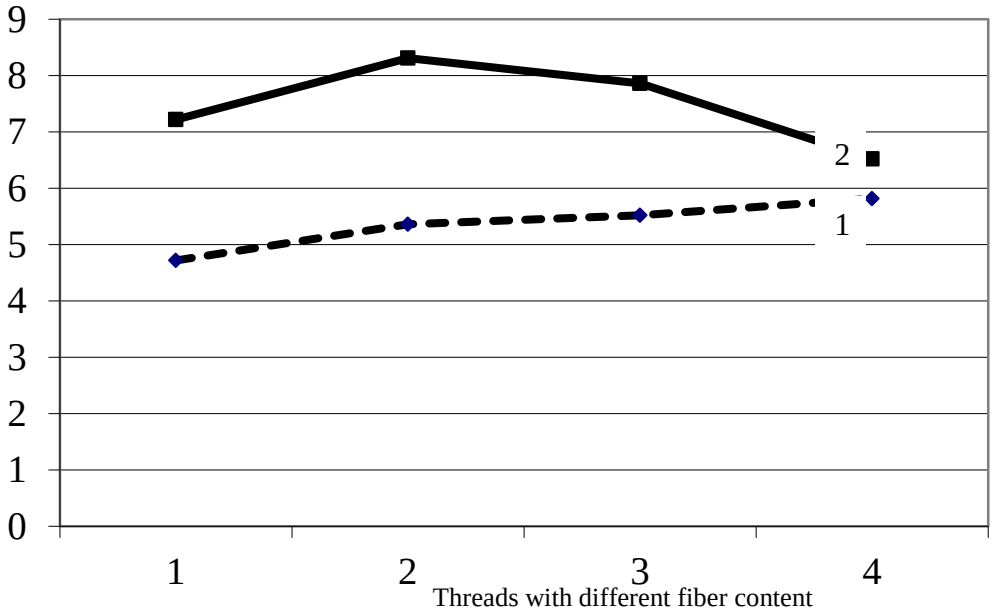


Figure 3. Variation of the coefficient of variation on the breaking strength of yarns with different fiber content.



1-unevenness;
2- elongation at break.

Figure 4.Variation of Coefficient of Variation in Elongation at Break and Elongation at Break of Yarns of Different Fiber Composition.

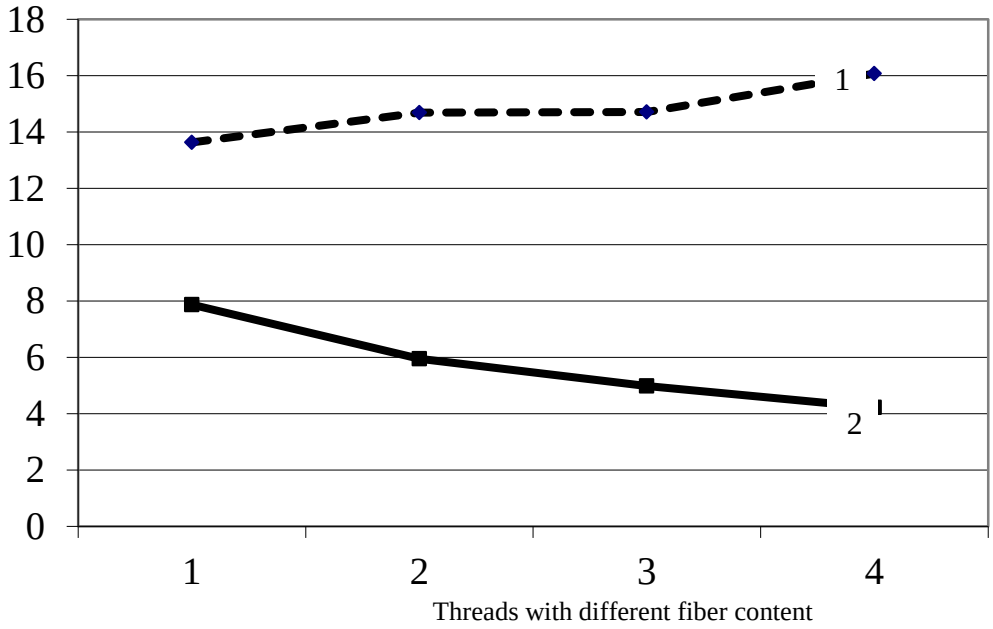


Figure 5.Variation of coefficient of variation in specific tensile strength and specific tensile strength of yarns with different fiber content.

III. RESULTS AND DISCUSSION

The physico-mechanical properties of the yarns are also dependent on the quality of the raw materials, that is, the higher the quality of the fibers, the more quality products can be produced from them. Among them, the strength of fibers is considered one of the main properties of yarn. This property of fibers is important in spinning. In addition, the more the fibers are stretched, the higher their elasticity, and the more dense yarns can be obtained from it.

IV. CONCLUSION

The results of the research showed that the higher the amount of lavsan fiber in the yarn, the higher the coefficient of variation in the linear density of the yarn is from 12.5% to 46.9%, and the coefficient of variation in the number of twists is from 20.5% to 55.4%. decreased, the breaking strength increased from 5.8% to 14.6%, the coefficient of variation for the breaking strength decreased from 24.4% to 49.1%, the elongation at break increased from 12.0% to 19.0%, the elongation at break it was found that the coefficient of variation decreased to 9.1%, the specific tensile strength increased from 7.2% to 15.2%, and the coefficient of variation of the specific tensile strength decreased from 24.4% to 46.3%.

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