AMERICAN JOURNALS
Open Access, Peer Reviewed Journals

American Journal of Technology and Applied Sciences
ISSN (E): 2832-1766| Volume 19, December, 2023

THE INTRODUCTION OF TECHNOLOGY FOR THE PRODUCTION OF A NEW TYPE OF SHIRT SILK CREPE FABRIC AT DOMESTIC ENTERPRISES

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A B S T R A C T

In this paper, a newly created type of "Crepe Fabric" is studied, which has a new structure, combines the properties of yarns and the structure of the fabric, and provides the fabric with increased crepe properties. It also discussed the introduction to production at "YODGORLIK" LLC, as well as the prospects of increasing their type and increasing the export potential of the industry.

At a time when the demand for products made from natural raw materials is increasing day by day, it is important to increase the volume of silk fabrics in world fashion, to find ways to create a new assortment of silk fabrics. Our government has put a lot of urgent issues before textile experts and scientists. Using existing opportunities, expanding the volume of production of high-quality fabrics from natural fibres, and solving the problems of achieving trade with competitive products under the label "Made in Uzbekistan" on the world market are some of the main urgent problems that are waiting for a solution today.

The purpose of the research is to introduce the production technology of a new type of high-quality shirt bop crepe gas from local raw materials at "Yodgorlik" LLC.

K E Y W O R D S

Raw silk, silk thread, mating, blown silk, crepe fabric, steaming, rewinding, carding, weaving, finishing.

Introduction

In the Resolution of the President of the Republic of Uzbekistan dated January 17, 2020, No. PQ-4567 "On additional measures for the development of the silkworm feed base in the cocoon industry", increasing the feed base of the cocoon industry by widely introducing innovative ideas, scientific developments and scientific achievements, To increase the volume of production of products intended

for export, as well as to further deepen the reforms implemented in the cocoon industry, it is the responsibility of the "Uzbekipaksanoat" Association and the enterprises and institutions that are part of the association to improve and strengthen the feed base of the industry, to establish new capacities for the production of raw silk and silk thread, and modernization of the existing ones, organization of deep cocoon processing, increasing the volume of production of ready-made silk products and further improving its quality, mastering the most popular types, and increasing the volume of export of ready-made silk products [1,2].

According to the International Sericultural Commission (INSERCO), even though the share of silk in the world textile market is less than 0.2 per cent, its production base corresponds to more than 60 countries. The main producers are China (54.1% of world production in 2021) and India (40.4%). Uzbekistan ranks third (2.4%) [3].

At a time when the demand for products made from natural raw materials is increasing day by day, it is important to increase the volume of silk fabrics in world fashion, to find ways to create a new assortment of silk fabrics. Our government has put a lot of urgent issues before textile experts and scientists. Expanding the volume of production of high-quality fabrics from natural fibres, and solving the problems of achieving trade with competitive products under the label "Made in Uzbekistan" on the world market is one of the main urgent problems that are waiting for a solution today.

Natural silk has been widely used for the production of various textile products since ancient times. The high level of hygienic properties of silk creates favourable conditions for the human body and creates a basis for the production of shirt and scarf fabrics with new content.

The volume of exports of silk, including silk fiber and gauze, from Uzbekistan is increasing: from 30.9 million USD to 92.5 million USD from 2017 to 2022. In 2022, the export of all textile products from Uzbekistan amounted to 3.2 billion US dollars, including 1.4 billion US dollars of yarn.

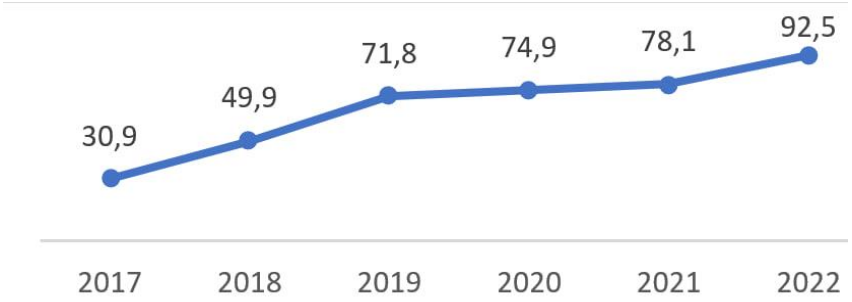

Figure 1. The volume of silk exports from Uzbekistan, including silk fibre and fabric

Export of silk, including silk fibre and gauze, from the Republic of Uzbekistan, in million US dollars [4].

At present, the enterprises of our Republic have not introduced new high-quality shirt and dress fabrics made of natural silk and the improved technology of their production. To date, the types of shirt fabrics produced from natural silk fibres are very limited. Without creating new types of products, in today's market economy and increasingly competitive environment, it is impossible to produce a competitive product in the world market, increase its variety, increase the export capacity of the industry, to perform product management, marketing and trade at a high level.

Research object and methods

Fabrics made from natural silk are divided into crepe, canvas, shaped and technical fabrics according to their structure. Crepe fabrics include crepe, crepe-georgette, crepe-gofer, crepe-chiffon, crepe-satin, crepe-perizen. As a result of the use of high-spun yarns in the left and right directions as warp or weft yarns, a grain is formed on the surface of the fabric after the finishing process.

It is known that in crepe weaving, crepe yarns of the right and left twist are used at the same time, usually, the fabric is woven in pairs in the direction of the twist, 2 yarns in the right twist, 2 yarns in the left twist.

The alternation of the warp threads forming the reps warp and the warp threads forming the canvas warp in the new fabric prevents the appearance of a stripe defect that can be formed in the fabric and increases the quality of this warping to a high level. This provides an opportunity to increase the assortment of gasses, which is not available in the previous technical solution of gasses. The essence of the new crepe fabric is represented in pictures 1-4 below.

Crepe gusset uses natural raw silk with a linear density of 2.33 tex, and complex natural silk (2 "S" and 2 "Z" twists) woven in the upper twist with a linear density of 2.33X4 tex. The density of the fabric is 360 y/dm on the warp threads and 330 y/dm on the warp threads. The production of crepe gauze can be carried out in the following 4 different cases, protected by the patent of the Republic of Uzbekistan No. IAP 03282 [5], based on the options of weaving the fabric: Case 1. Crepe gauze is woven according to the warp shown in Figure 1, with a warp ratio of 4 on the body and warp. In this case, the 2nd and 4th yarns form the canvas knitting with the warp yarns, and the 1st and 3rd yarns make the rep knitting with the warp yarns. The 1 warp thread forming the rep's warp is not moved relative to the 3 warp threads forming the second rep's warp. Weaves 2 and 4, which form a cloth warp, have a thread shift in one body.

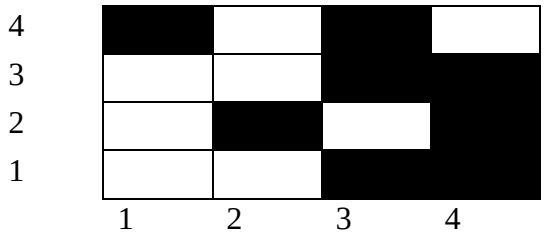

Figure 1

It should be noted that the warp is constructed in such a way that within the rapport each yarn has an equal spread (from the weft and weft of the fabric) and provides an equal amount of transition from one side of the fabric to the other, the yarns in the warp have the same penetration, and thus for the formation and quality of the fabric. conditions will improve.

Case 2. Crepe gauze is woven according to the warp shown in Fig. 2, with a warp ratio of 4 on the body and warp. In this case, the 2nd and 4th yarns form the canvas knitting with the warp yarns, and the 1st and 3rd yarns make the rep knitting with the warp yarns. The 1 warp thread forming the rep warp is offset by 2 relative to the 3 warp threads forming the second rep warp. Weaves 2 and 4, which form a cloth warp, have a thread shift in one body.

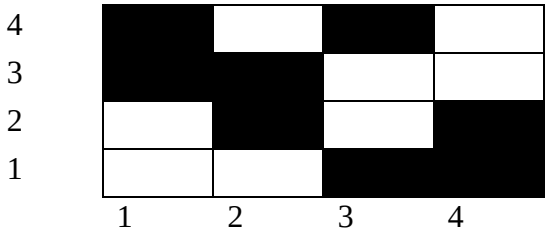

Figure 2

Here too, within the rapport, each warp yarn has an equal spread (from the right and wrong side of the fabric) and provides an equal amount of transition from one side of the fabric to the other, the warp yarns have the same penetration, thus improving the fabric's shape and quality.

Case 3. Crepe cheese is produced according to the cutting procedure shown in Figure 3. In this case, the ratio of harvesting is equal to 8 for weft and 4 for warp. 2 within rapport; 4; 6 and 8 warp threads alternately form canvas weaving with warp threads, the remaining 1; 3; 5 and 7 ropes make reps knitting with threads on the body. In this case, the 1 warp thread forming the rep weaving creates a shift in one body thread in relation to the 3 warp forming the second reps, and the 2 warp in the canvas weft in relation to the 4 warp in the next canvas weaving.

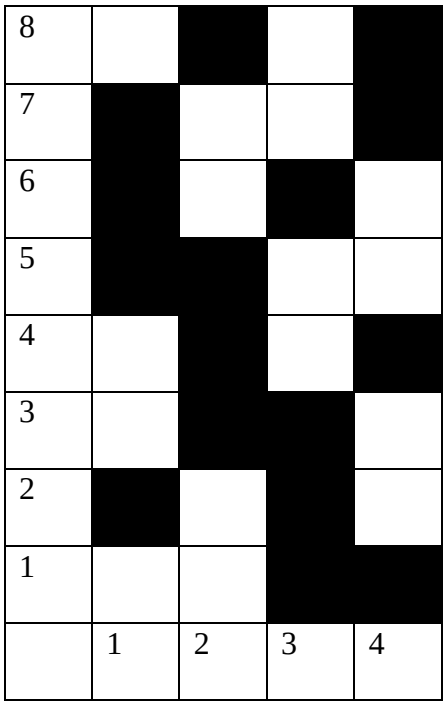

Figure 3

This situation is repeated in the next rows, and the entry of the threads into the body is the same as in the above cases according to the rapport.

Case 4. Crepe cheese is produced according to the cutting procedure shown in Figure 4. In this case, the ratio of mowing is 8 for weft and 4 for warp.

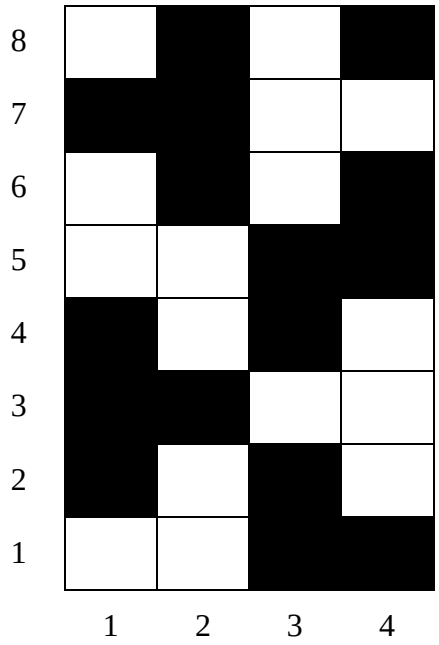

Figure 4

But here, the rapport of weaving on the rope consists of two parts (1; 2; 3 and 4 ropes are the first part, and 5; 6; 7 and 8 ropes are the second part) and is constructed in such a way that the rope threads in each part of the rapport have a shift relative to each other not (2 and 4; 6 and 8), but the wefts of the first part have a displacement of one thread compared to the wefts of the second part (2 and 6; 4 and 8).

On the other hand, the warps forming the reps warp have a mutual displacement of the warp yarns in each part (1 and 3; 5 and 7), and do not have a displacement when looking at the position of the parts (1 and 5; 3 and 7).

In all the mentioned cases, within the rapport, the warp and weft threads are of the same size, and the weft thread penetration is the same. This reduces the tension of the threads of the body against each other. That is, it reduces the number of interruptions, and this, in turn, makes it possible to increase the productivity of the loom. It should also be noted that these proposed methods can be used for weaving other crepe fabrics (crepe deshehin, crepe-georgette, crepe-chiffon, etc.). That is, this development can be used to increase the range of gas products on a large scale.

According to its technical calculation, crepe gauze type shirt gauze can be woven from various yarns of different thicknesses, with different densities on the warp and weft. Gas can be of different types. Taking into account the technical and technological capabilities of the "Yodgorlik" enterprise, technological system processes for the production of crepe gauze type shirt silk gauze were developed (Fig. 1.5). Technological tools, equipment and equipment were selected according to the processes of the developed technological system. The technical condition of all the selected machines and equipment was readjusted in accordance with the new type of gas production, provided with the necessary equipment. Based on the technological system for the production of crepe gauze, the technical calculation of the gauze was carried out.

Results

To introduce the newly created crepe gauze shirt fabric and its production technology at "Yodgorlik" LLC, the state of the existing technological equipment and equipment was studied and their adjustment and adjustment was carried out according to the requirements of the new gauze technology.

The parameters of the new type of crepe weaving - the linear density (tex) of warp and weft yarns, the density of the fabric on the warp and weft, the density of the weft surface, etc., correspond to the range of possibilities of the "CHEONG WOON" loom made in South Korea. Based on this, a new type of crepe gauze can be woven on the "CHEONG WOON" machine. The technical parameters of the "CHEONG WOON" machine are listed in Table 1.

Table 1. Technical description of the loom

№	Technological description	Unit of measure	Indicator
1	Model of the loom (South Korea)	CHEONG WOON	
2	Width across the needle	mm	140
3	Crankshaft speed	rpm/min	140
4	Linear density of threads: linoleum, tan	teks teks	5,38 - 16,60 2,33 - 16,60
5	The density of the fabric on the rope	Yarn/cm	500
6	The number of slats	дона	6
7	Weaving reel sizes	mm mm	250 800
8	core diameter;	mm	1490
9	flange diameter;	coefficient	12,0
10	Flange spacing	coefficient	1,28
11	Coefficient of coupling	mm mm	2500 1275

After studying the technological system at the "Yodgorlik" enterprise, a new technological system was developed for the production of a new type of crepe fabric, which preserves the properties of complex yarns.

The following works were carried out at "Yodgorlik" LLC in order to install the technological factors of all transitions in the existing machine tools and equipment according to the technological system selected for the production of a new type of shirt "Crepe fabric" and to manufacture it based on the technical calculation of fabric:

– The technological system at "Yodgorlik" LLC was adapted to production and the technological equipment was determined according to the processes;

– the technical condition of the selected equipment according to the technological system was brought to working condition;

– the technical calculation of the new type of pancake gas products was completed;
– the production area and machines were prepared for work, adjustments were made;
– The looms at "Yodgorlik" LLC were adjusted for the production of new types of crepe fabrics;
– necessary raw materials and auxiliary materials were prepared;
– the raw materials brought in for the production of new type crepe gauze silk shirt fabrics were processed in the processes of the new technological system and prepared for weaving on the body and back;
– machines were equipped with raw materials and adjustment works were performed;
– technological factors for the production of a new type of pancake gas production were established.

Conclusions and Recommendations

1. To expand their types by creating new structures of shirt fabrics, new types of silk crepe fabrics were created, the structure of which is based on canvas weaving.
2. To expand the range of crepe fabrics, a crepe fabric with new content was created.
3. The technological system at the "Yodgorlik" enterprise was studied, a suitable technological system was developed for the production of a new type of crepe gauze, the technological equipment for the processes was determined, the technical calculation of the crepe-gauze tissue was performed, the processes of the technological system and technological parameters (factors) for the processes were developed. released
4. According to the test results, it was determined that the physical and mechanical properties of the crepe fabric type jacket, fabric meet the requirements of GOST 20723-2003.
5. A new type of "Crepe- fabric" natural silk fabric and its production technology was introduced into production at "Yodgorlik" Limited Liability Company.
6. It was recommended that the results of the research be introduced into the educational process in the training of bachelors and masters, and the technology of production of jacket gauzes of the new content type of crepe gauzes be widely introduced in the silk industry.

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