CREATION OF NEW TEXTILE ASSORTMENTS

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Abstract. The article gives a method of tissue design, taking into account the structural properties of the fabric, in addition to the properties of the body and back yarns in the creation of a new range of fabrics.

Changes in economic conditions observed in the world textile industry to improve the efficiency of cotton yarn prepared on the basis of tissue expansion of the range are one of the current issues. Measures are being taken to develop the textile and light industries, bring competitive products to domestic and foreign markets, and expand such assortments.

Several researchers have been successful in creating and introducing a new range of shirt fabrics that meet consumer requirements, using yarns spun from cotton fibre, the main raw material for textiles.

Taking into account the above, based on today's requirements, we researched to expand the range of textile fabrics for shirts, based on a comprehensive analysis of raw materials, fabrics, products, the creation of technological conditions, the solution of theoretical and practical problems. Based on this, the study of the structure of the tissue and the creation of a new tissue range based on the definition of the laws of change of its properties allows solving the above tasks [1,2].

In the conducted studies, simple and composite weave tissue samples were designed, the effect of many factors on the tissue structure such as raw material composition, the linear density of yarns, shrinkage of yarns in weaving was studied [3,4]. As a result, it was found that the structure of the tissue is greatly influenced by the thickness of the body and back threads, the relationship between them [5,6].

It was studied that the transfer of warping yarns from remise depends on the following parameters: weaving report, transfer report and the number of remises [7]. The main indicators included in the weaving report, the order of passing through the teeth of the blade, the method of threading through the thread, the order of lifting the threads, are included in the tissue cutting element [8,9].

Based on the analysis of theoretical and applied research, a complete board image of simple and patterned cuts was prepared for 10 tissue samples for the experiment. For each sample, the thickness of the weft yarn and the density of the tissue were changed. The experimental samples used silk threads of 11.1 tex on the body, yarn spun from cotton fibres with a linear density of 20 tex on the back and acetate threads of 13.3 tex. These patterns are woven on an STB-220 loom.
Fig. 1. Simple mowing.
Report on body threads, Rt = 2; Report on weft yarns, Ra = 2;

Fig. 2. Patterned weaving (Base sarja 3/1, 3/2, 1/2)
Report on body threads, R_t = 6; Report on weft yarns, R_a = 12;

The values of the technological parameters of the tissue samples obtained in the experiments are given in Table 1.
Table 1

| №  | Yarn fibre content | The linear density of threads, tex. | Tissue density, 10cm. | Tissue cutting | Transfer method |
|----|-------------------|-------------------------------------|-----------------------|----------------|----------------|
|    |                   | warp (N)                            | weft (N)              | warp           | weft           |
| 1  | Silk              | Cotton 11.1 20                      | 250                   | 150            | Simple         |
| 2  | Cotton            | 11.1 20                             | 156                   | 170            | Simple         |
| 3  | Cotton            | 11.1 20                             | 162                   | 172            | Simple         |
| 4  | Cotton            | 11.1 20                             | 170                   | 175            | Simple         |
| 5  | Cotton            | 11.1 20                             | 261                   | 260            | Simple         |
| 6  | Cotton            | 11.1 20                             | 290                   | 280            | Simple         |
| 7  | Cotton            | 11.1 13.3                           | 240                   | 268            | Patterned      |
| 8  | Cotton            | 11.1 13.3                           | 280                   | 270            | Patterned      |
| 9  | Cotton            | 11.1 20                             | 265                   | 269            | Patterned      |
| 10 | Acetate           | 11.1 13.3                           | 272                   | 275            | Patterned      |

Indicators that determine the structural properties of tissue samples: length (L), width (V), thickness (T), weight (M), volume weight (δ), linearity on the body and back, surface and volume filling (E), binding coefficient (K), surface, and volumetric (R) values were determined, and their mean values are given in Table 2.

Table 2

| №  | L, m  | B, mm | T, mm | M, g | δ, mg/mm² | E, % | Eh, % | K | Ec, % | Ec, % | Rb, % | Rs, % | M, g/p.m |
|----|-------|-------|-------|------|------------|------|-------|---|-------|-------|-------|-------|----------|
| 1  | 400   | 800   | 0.40  | 103.1| 0.25       | 22.5 | 28.5  | 2.37| 44.6  | 31.25 | 55.4  | 68.7  | 82.5     |
| 2  | 400   | 800   | 0.42  | 103.1| 0.25       | 23.4 | 32.3  | 2.27| 38.2  | 31.25 | 51.8  | 68.7  | 82.5     |
| 3  | 400   | 800   | 0.42  | 104.7| 0.26       | 24.3 | 32.7  | 2.27| 49.1  | 32.50 | 50.9  | 67.5  | 83.7     |
| 4  | 400   | 800   | 0.45  | 104.7| 0.26       | 25.5 | 33.2  | 2.27| 50.3  | 32.60 | 49.7  | 67.4  | 83.7     |
| 5  | 400   | 800   | 0.58  | 106.2| 0.26       | 39.1 | 49.4  | 2.27| 69.2  | 33.12 | 30.8  | 66.8  | 85.0     |
| 6  | 400   | 800   | 0.60  | 111.6| 0.28       | 43.5 | 53.2  | 2.27| 73.5  | 35.00 | 26.4  | 65.0  | 89.2     |
| 7  | 400   | 800   | 0.58  | 108.1| 0.27       | 36.0 | 50.9  | 2.27| 68.6  | 33.75 | 31.4  | 66.2  | 86.5     |
| 8  | 400   | 800   | 0.59  | 109.4| 0.27       | 42.0 | 32.4  | 1.80| 60.8  | 45.50 | 39.2  | 54.5  | 87.5     |
| 9  | 400   | 800   | 0.60  | 113.1| 0.28       | 39.7 | 51.1  | 2.27| 70.5  | 35.25 | 29.4  | 64.5  | 9.0      |
| 10 | 400   | 800   | 0.61  | 112.2| 0.28       | 4.8  | 33.0  | 1.80| 60.5  | 46.70 | 39.5  | 53.3  | 89.7     |

When examined in practice, it was found that the degree of dependence of the weight of the fabric on its density on the body and back, the linear density of yarns in the fabric, the composition of yarns and tissue weaving are higher in surp weaving than in other weaving. As the density of the tissue along the trunk and back in the weave decreased, so did its surface and volume filling index.

In patterned weaves, the fabric’s elasticity index is better than in normal weaves, which means that the fabric has good air permeability.

The value of the textured surface and volume filling indicators is greatly influenced by the type of yarn, the weave of the fabric and the density. This is why air permeability is high in pictorial cutting. This means that in creating a new range of dress fabrics, along with the change of raw materials, it is necessary to study the
structural properties of the fabric, taking into account the requirements of the consumer.

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