Spectrum Journal of Innovation, Reforms and Development
Volume 10, Dec., 2022 | ISSN (E): 2751-1731
Website: www.sjird.journalspark.org

EVALUATION OF QUALITY INDICATORS OF DOUBLE-LAYER POROUS KNITTED FABRICS

O`ralov Lazizbek Soyibnazar o`g`li
Namangan Institute of Engineering and Technology
Doctoral Student
lazizbekoralov1@gmail.com

Jo`rabayev Abdurashid To`ramirzayevich
Namangan Institute of Engineering and Technology, Ph.D

Abstract
In this paper, in order to evaluate the quality indicators of the two-layer porous knitted fabric, 5 samples were knitted on Mayer&Cie double circular needle knitting machine, and as a result of comparing the comparative histogram of the quality indicators, the best sample was was selected and recommended for production.

Keywords: Property, complex, triangle, polygon, porous, quality, area, angle, comparative, diagram, index.

In order to determine the best option for a two-layer porous knitted fabric, it is necessary to take into account several factors that shape the structure and properties of the fabric.

Therefore, in order to compare the obtained results, the method of constructing a complex evaluation diagram and histogram of indicators of two-layer porous knitted fabric was chosen. In the complex diagram, the largest contour of the sample shows the best quality indicators of the knitted fabric produced, that is, the closer the contour is to the outer line, the higher the quality indicators of the knitted fabric and the polygonal area obtained will be so big.

Physico-mechanical, surface and volume densities are presented as analyzed indicators. Surface and volume density, tissue thickness, percentage of return deformation and permeability are such indicators.

Physico-mechanical properties of 5 variants of two-layer knitted fabric samples were determined experimentally using modern equipment installed in the testing laboratory of Namanagan Institute of Engineering and Technology [1-2-3].

The construction of a complex evaluation polygon for the quality indicators of two-layer knitted fabric consists of successively combining the separated points of the radius vectors describing each feature.

In addition, the most cost-effective technology, which allows for the production of high-quality products, will have the maximum area.

The area of a polygon is calculated in the same way as the sum of the area of triangles, where the radius vectors divide the polygon into triangles.

The area of each triangle was calculated according to the following formula:

$$S = \frac{1}{2} \cdot a \cdot b \cdot \sin \alpha \qquad (1)$$

where: *a, b* are the radius-vectors forming the triangle,
α - radius - angle between vectors.

In order to determine the optimal version of the manufactured two-layer knitted fabric samples in terms of technological parameters and physical properties, a comprehensive assessment diagram of quality indicators was built [4-5-6].

The results of the analysis revealed that the presence of two-layer porous knitted fabric elements in the knitwear structure has a positive effect on such indicators as friction resistance, elongation at break, volume density of the knitwear.

It was found that the sample of option II has a small volume density indicator compared to the base tissue, i.e. by 13%, option III by 38%, option IV by 31%, option V by 29.5%. Comparing the friction resistance index of our II, III, IV, V option samples with our base fabric, it was found that our base fabric is significantly higher.

As a result of the comparison of the comparative histogram of the evaluation of the quality indicators of the two-layer porous knitted fabric, it was found that the samples of the I and V options of the two-layer porous knitted fabric produced in this case have the highest quality, had indicators (Fig. 1).

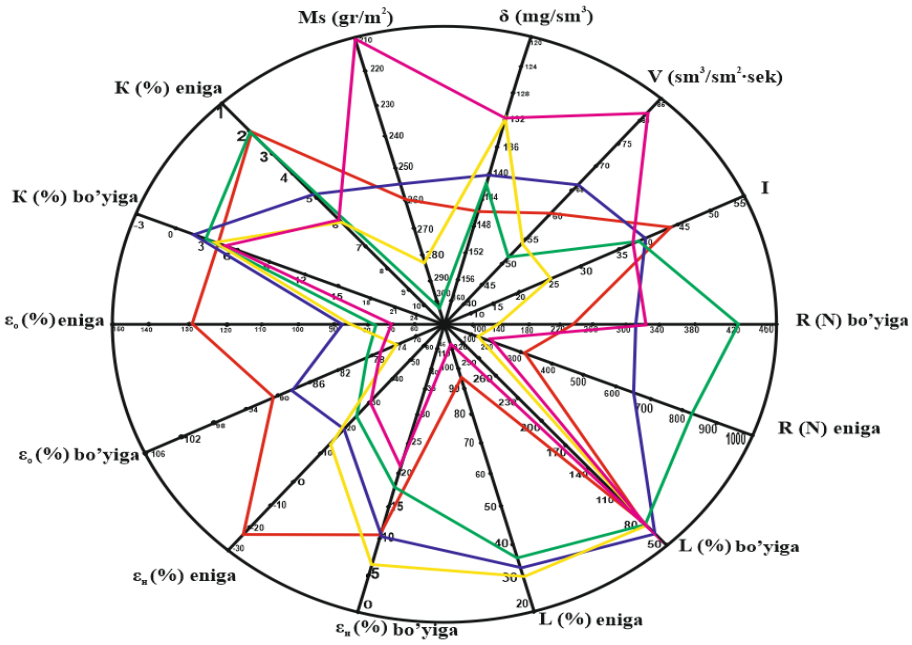

Figure 1. Diagram of comprehensive assessment of quality indicators of two-layer porous knitted fabric. (bo`yiga - *to the height*, eniga- *wide)*

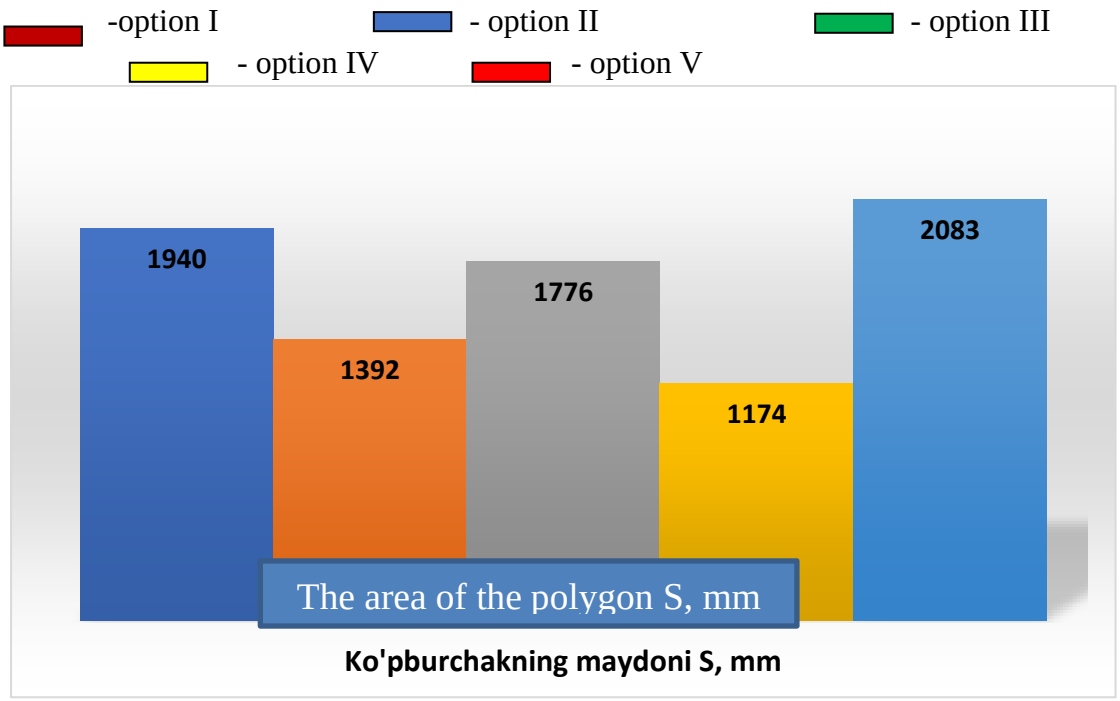

Figure 2. Comparative histogram of evaluation of quality indicators of two-layer porous knitted fabric.

Samples of this variant of two-layer porous knitted fabrics were recommended for application in production.

References

1. Senthil Kumar B., Ramachandran T. Influence of knitting process parameters on the thermal comfort properties of eri silk knitted fabrics. Fibers and Textiles in Eastern Europe Volume 26, Issue 5, 47-53p. (2018).

2.O'ralov Lazizbek Soyibnazar o'g'li, Qurbanov Bahodir Mamadaliyevich, Jo'rabayev Nozimjon Nizomiddin o'g'li, Tursunqulova Maqsuda Suyanqulovna, Xoliqov Qurbonali Madaminovich. "TIKUV-TRIKOTAJ SANOATIDA INNOVASION TEXNOLOGIYALAR, ISHLAB CHIQARISHDAGI MUAMMO, TAHLIL VA SOHANI RIVOJLANISH ISTIQBOLLARI" mavzusida xalqaro ilmiy-amaliy konferensiya. 3-Tom. 103-bet.

3.Kholikov, K.M; Zhuraboev, A.T; Shogofurov, Sh.Sh; Abduvaliev, D.M. (2020) Comprehensive assessment of the two-layer knitwear quality. The Way of Science. 2020.№1(71). http://scienceway.ru/f/the_way_of_science_no_1_71_january.pdf#page=24

4. Jurabayev, N., Shogofurov, S., Kholikov, K., & Meliboev, U. (2021). Study of the fabric structure influence on the physical-mechanical and technological properties of knitted products. In E3S Web of Conferences (Vol. 304, p. 03030). EDP Sciences.

5. Shogofurov, Sh. Sh., Kamalova, I. I., Xolikov, K. M. (2021). Study of the Effect of Changes on the Technological and Physical-Mechanical Properties of Knitting in a New Structure. Engineering, 13(6), 287-299.

6.Shogofurov, Sh.Sh., Xolikov, Q. M. (2021). RESEARCH OF PATTERN IN A NEW STRUCTURE KNITTING FABRICS. In ЭКОНОМИКА. СОЦИОЛОГИЯ. ПРАВО (pp. 26-28).