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7<sup>th</sup> July, 2025

## **LOCAL RAW MATERIALS NEWLY REFORMED RESEARCH METHOD OF DOUBLE - LAYER KNITTED FABRICS**

S. Saparova

M. Mirsadikov

prof. M. Mukimov

V. Kenjayeva

### **Abstract:**

In order to effectively use local raw materials in scientific work, research was conducted on the physical and mechanical properties of two-layer knitted fabrics with a new structure made of pan yarn.

**Keyword:** Raw material, pan, knitting, flat needle machine, double layer, air permeability, deformation.

Foreign and domestic scientists are conducting scientific research on the production of knitted fabrics from various types of raw materials [1]. It is known that pan yarn is used in the production of upper knitted products, when knitted products are produced from these yarns, the knitwear has high hygienic properties, as well as high shape retention and purchaseability. Therefore, in the scientific work, the physical and mechanical properties of the fabrics possible in the production of knitted products were studied using double-layer knitted fabrics .

The physical properties of knitted fabrics include: air permeability, water absorption, hygroscopicity, heat resistance, heat retention, as well as electrification.

The following are accepted indicators of the mechanical properties of knitted fabrics: strength, elongation at break, elongation under tension less than the breaking strength, resistance to single and repeated stretching, creasing, abrasion resistance, and shrinkage when processed in hot and humid conditions.

In order to study the physical and mechanical properties of 10 variants of double-layer knitted fabrics, the “SENTEX-UZ” certification laboratory located near TTESI was established. was determined experimentally using modern equipment installed



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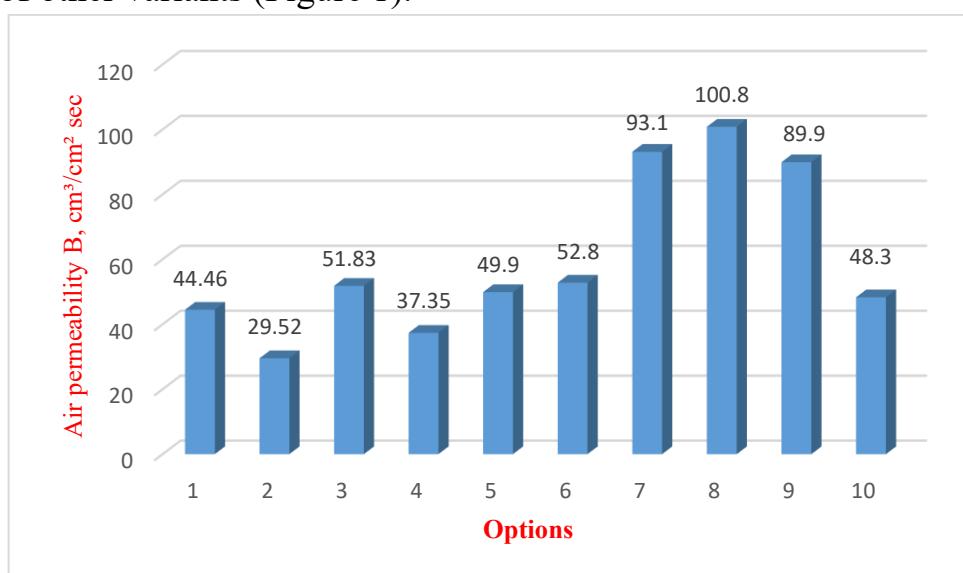
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Air permeability refers to the ability of materials to allow air to pass through them. Air permeability is characterized by the air permeability coefficient, which is the amount of air that passes through 1 cm<sup>2</sup> of fabric in 1 second at a given pressure difference on both sides of the material. The air permeability coefficient is expressed as V (cm<sup>3</sup>/cm<sup>2</sup> sec). [2-6].

varies in cm<sup>3</sup>/cm<sup>2</sup> sec, depending on the type of weave, thickness, and density.

A particularly important property for knitted products is the hygienic properties of knitted fabrics. It was found that the air permeability of the 1st basic variant sample obtained from a two-layer pan yarn was 34% higher than that of the 2nd variant sample, 14% lower than that of the 3rd variant fabric sample, 16% higher than that of the 4th variant fabric sample, 12% lower than that of the 5th variant fabric sample, 16% lower than that of the 6th variant fabric sample, 52% lower than that of the 7th variant fabric sample, 14% lower than that of the 8th variant fabric sample, 64% lower than that of the 9th variant fabric sample, and 51% lower than that of the 10th variant fabric sample.

The study shows that these indicators of air permeability properties in samples of variants 2 and 5, woven from two-layer pan yarn, have higher air permeability properties than the base variant 2, as well as higher hygienic properties than the samples of other variants (Figure 1).



**Figure 1. Two Variation in air permeability of layered knitted fabrics**



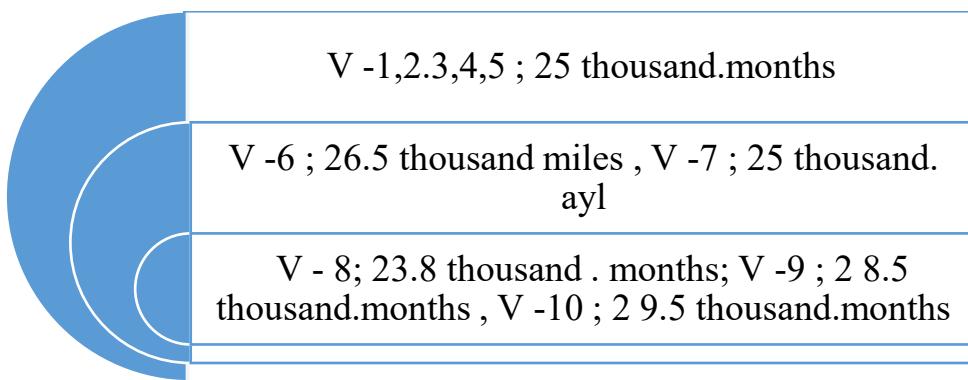
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of the knitwear is determined by its abrasion resistance and breaking strength. Analysis of the change in the abrasion resistance of the studied knitwear samples shows that the abrasion resistance of the 1st basic, 2,3,4,5 and 7th variants obtained from pan yarn is lower than the other variants, the abrasion resistance of the 6th variant is 6% higher than the sample knitted from the 1st basic variant pan yarn, the abrasion resistance of the 8th variant is 5% lower than the sample knitted from the 1st basic variant pan yarn, the abrasion resistance of the 9th variant is 12% higher than the sample knitted from the 1st basic variant pan yarn, and the abrasion resistance of the 10th variant is 15% higher than the sample knitted from the 1st basic variant pan yarn (Figure 2).



**Figure 2. Variation in abrasion resistance of two- layer knitted fabrics .**

## Conclusion

1. It was found that the air permeability properties of the proposed two-layer knitted fabric samples in variants 2 and 4 are lower than in the base variant 1, which indicates the higher heat retention properties of these variants.
2. The abrasion resistance properties of the 8th, 9th, and 10th variant samples of double-layer knitted fabrics have a higher coefficient compared to the other samples and the 1st base sample , which reflects the fact that these variants are more mature than the other variant samples .
3. The scientific research of new double-layer knitted fabrics made of cotton yarn creates the opportunity to use local raw materials on a large scale.



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4. production of double - layer knitted fabrics on flat-needle machines increases the technological capabilities of the machine and expands the range of fabrics and products.

5. Newly developed double - layer knitted fabrics are recommended for upper knitted products.

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