



ANALYSIS OF THE AIR PENETRATION PROPERTIES OF OVERFLOW TRICKET AND DETERMINATION OF THEIR RELATIONSHIP WITH THE PARAMETERS OF THEIR STRUCTURE.

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***Abstract.** In this article, the air permeability index of five types of knitwear intended for imported outerwear was studied under laboratory conditions. The obtained results showed that the air permeability index in double-layer and blended knitted fabrics significantly depends on the design solution of the fiber structure and composition. Based on the research results, scientifically based conclusions were developed on the optimal range of air permeability and the parameters of the rational structure of outerwear knitwear.*

***Key words:** air permeability, upper knitwear, double-layer structure, blended fiber knitwear, rational structure*

Introduction. In the modern knitting industry, the requirements for outerwear knitted fabrics are increasing year by year. Such products require not only comfort and aesthetic appearance, but also strength, deformation resistance, shape stability, and hygienic properties. In the domestic market, the share of imported products in this segment is high, most of them have double-layered, blended-fibered, and complex-woven structures. Scientific analysis of the technological capabilities of imported products, identifying their structural advantages and factors related to raw material consumption, is relevant for domestic production. Therefore, the research was aimed at a comprehensive study of the technological parameters and physical and mechanical properties of imported samples under laboratory conditions.

The material's hygienic accessibility and the ability to create a microclimate in outerwear knitwear are among the important operational requirements. These



factors are primarily determined by the air permeability index of knitted fabrics. Air permeability ensures the release of heat and moisture from the human body to the external environment and performs the function of thermoregulation during wearing. In double-layered and blended upper knit fabrics, this indicator manifests as a complex dependence on the structure density, loop geometry, interlayer bonding, and raw material composition. Therefore, studying air permeability not only based on a single parameter but also in close connection with complex structural factors is relevant from a scientific and practical point of view. This study was aimed at determining the air permeability of imported upper knit fabric samples under laboratory conditions and assessing their relationship with structural parameters.

The air permeability index of fabric intended for upper knitwear was determined on a laboratory testing device according to the standard methodology. In the first sample, 16.657 sm^3 of air passes through 1 sm^2 of space per second, 25.231 sm^3 in the second sample, 40.442 sm^3 in the third sample, 29.469 sm^3 in the fourth sample, and 45.206 sm^3 in the fifth sample.

The analysis results showed that the air permeability of samples with high surface density showed lower values. A rational balance between air exchange and the operational stability of medium-density fabrics is ensured. From this, it follows that as the loop density increases, the fabric structure becomes denser, and the air ducts shrink. As a result, air permeability shows a downward trend.

Samples with a high content of cotton fiber showed high results in air permeability and hygienic properties. Samples with a high polyester content have a high degree of strength. However, the air permeability value turned out to be lower. In fabrics made from a mixture of cotton and liqueur, the optimal air exchange range was ensured while maintaining elasticity.

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