



THE INFLUENCE OF THE PROPERTIES OF KNITTED FABRIC ON THE STRUCTURAL CHARACTERISTICS OF THE PRODUCT

Saidova Ziyoda Mirvasilovna

Senior lecturer of Kamoliddin

Behzod NIHD Institute

Аннотация: В данной работе рассматривается влияние свойств трикотажного полотна на конструктивные характеристики текстильных изделий. Исследование включает анализ различных видов трикотажных тканей, их структуры и технологии производства, а также их влияние на такие параметры, как комфорт, долговечность и эстетические качества одежды. Особое внимание уделяется взаимодействию свойств полотна с конструктивными элементами изделий, такими как швы, отделка и декоративные элементы.

Abstract: This article examines the influence of knitted fabric properties on the structural characteristics of textile products. The study includes the analysis of different types of knitted fabrics, their structure and production technology, as well as their influence on such parameters as comfort, durability and aesthetic qualities of garments. Special attention is paid to the interaction of fabric properties with structural elements of products, such as seams, trims and decorative elements.

Annotatsiya: Ushbu maqolada trikotaj mato xususiyatlarining to'qimachilik mahsulotlari dizayn xususiyatlariga ta'siri o'rganildi. Tadqiqot turli turdagi trikotaj matolarni, ularning tuzilishi va ishlab chiqarish texnologiyasini, shuningdek, kiyimning qulayligi, chidamliligi va estetik fazilatlarini kabi parametrlarga ta'sirini tahlil qilishni o'z ichiga oladi. Trikotaj mato xususiyatlari mahsulotlarning tikuv, bezak va bezak elementlari kabi konstruktiv elementlari bilan o'zaro ta'siriga alohida e'tibor beriladi.



In recent decades, knitted fabrics have become an integral part of the fashion and textile industry, playing a key role in the creation of a variety of products, from casual wear to specialized products. The relevance of the study of the influence of knitted fabric properties on the structural characteristics of the product is due to the growing consumer demands for comfort, functionality and aesthetics of clothing. Modern technologies of knitted fabric production allow creating materials with unique properties, which opens new horizons for designers and manufacturers. However, the lack of knowledge about how exactly these properties affect the final product can lead to inefficient use of materials and lower quality of products.

Knitted fabric is a textile material obtained by weaving threads into loops, which provides it with unique properties and characteristics. The main difference between knitted fabric and other fabrics is its structure, which allows to create products with high elasticity and wearing comfort. Depending on the method of production, knitwear can be either hand or machine-made, which affects its final characteristics and application.

The purpose of this article is to analyze in detail the influence of the main properties of knitted fabric - such as elasticity, density, breathability and durability - on the design characteristics of ready-made garments. The objectives of the research include identifying the relationships between the characteristics of knitted fabrics and their functionality, as well as studying the practical aspects of using different types of knitted fabrics depending on the purpose of the garment.

A review of existing research shows that the topic of knitted fabrics is actively discussed in scientific literature. The works of various authors consider both theoretical aspects and practical applications of knitted fabrics in the textile industry. For example, studies on the elasticity of fabrics emphasize the importance of this property for creating clothes that provide comfort and freedom of movement. Other works emphasize the strength and wear resistance of knitted fabrics, which is particularly relevant for sports and workwear. Nevertheless, there is a lack of comprehensive studies that combine all these aspects and offer recommendations on the optimal choice of knitted fabric for specific



garments. Thus, this study aims to fill this gap and provide useful information for textile manufacturers and designers.

Knitted fabrics are classified according to several criteria, including knitting method, structure, fiber composition and purpose. Based on the knitting method, knit fabrics are divided into single-ply and multi-ply. Single-layer fabrics, such as jersey, are typically used to create tight-fitting garments, while multilayer structures, such as interlock or ribana, are used for thicker, warmer garments. Depending on the composition of fibers, knitted fabric can be natural (cotton, wool) or synthetic (polyester, nylon), which also determines its operational properties.

The basic properties of knitted fabric play a key role in determining the structural characteristics of finished products. Elasticity and stretchability are among the most important parameters of knitted fabric. These properties allow the garment to fit loosely around the body, providing comfort and freedom of movement. For example, knitwear with high elasticity is ideal for sportswear where maximum mobility is required.

The density and weight of the knitted fabric also have a significant impact on the final product. Denser fabrics typically have better abrasion resistance and durability, making them ideal for casual wear. At the same time, lightweight knitted materials are used to create summer clothing and underwear, providing comfort in warm weather.

Breathability is another important property of knitwear, especially for sports and activewear. High air permeability allows the body to breathe and promotes the removal of moisture, which is especially important during physical activity. This property directly affects the comfort of wear and functionality of the product.

Wear resistance is a critical characteristic for many types of knitted fabrics. It determines the durability of the product and its ability to retain its original appearance even after repeated washing and wearing. Fabrics with high resistance to wear are especially demanded in the production of workwear and sportswear.



Finally, the thermal conductivity of knitted fabric has an impact on the temperature regime during wear. Fabrics with low thermal conductivity retain heat, making them ideal for winter clothing, while highly permeable materials provide cooling in hot weather.

Thus, the properties of knitted fabrics play a key role in shaping the structural performance of products. Understanding these properties enables designers and manufacturers to make better use of different types of knitted fabrics depending on the purpose and requirements of the final product.

In modern textile technologies knitted fabric occupies an important place due to its unique properties, which allow to create products for different purposes and conditions of use. Practical aspects of knitted fabric application can be considered through the prism of its use in sportswear, casual wear and specialty products such as medical and protective clothing.

Sportswear is one of the most demanded product categories where the properties of knitted fabrics play a crucial role. For the production of sportswear, fabrics with high elasticity and breathability are used, which provides freedom of movement and comfort during physical activity.

For example, knitted materials with added elastane (Lycra) provide excellent stretchability and shape return, which allows the creation of tight-fitting models such as leggings and T-shirts. In addition, moisture-wicking technologies used in the production of sports jerseys promote rapid evaporation of sweat, which is especially important during intensive training.

Clothing for everyday wear also makes extensive use of knit fabrics, but here the focus shifts to comfort and style. Fabrics with a soft texture, such as cotton or interlock, provide pleasant tactile sensations and comfort in wear. This category includes items such as sweatshirts, dresses and cardigans, which are often made of jersey with different patterns and textures. Fashion trends also influence the choice of knitwear: using prints, color schemes and combining different textures allows you to create unique and stylish items.



Specialty items, such as medical and protective clothing, require a special approach to the selection of knit fabrics. For medical clothing, antibacterial and hypoallergenic fabrics are often used to ensure patient safety and comfort. Knitwear with a high level of breathability and moisture absorption allows you to maintain the hygiene of products. Protective clothing, in turn, can include knitted components with resistance to tears and mechanical damage. For example, the use of multi-layer knitted structures in combination with protective coatings provides reliable protection in hazardous working conditions.

Successful garment designs based on knitted fabric can be seen in various market segments. In the sports industry, one prominent example is the use of seamless knitting technology to create lightweight and comfortable sportswear. Such designs minimize friction against the skin, which significantly increases comfort during workouts. In addition, the development of specialized models taking into account the anatomical features of the athletes' body allows to improve the functionality and aesthetics of products.

In everyday fashion we can note the successful use of knitwear with the effect of “smart” material, which changes its properties depending on the ambient temperature. Such technologies allow to create universal things that can be used both in warm and cold weather. For example, thermoregulated knitted sweaters are becoming increasingly popular due to their ability to maintain optimal body temperature.

In the field of medical clothing, a successful example is compression garments, which are made of special knitwear with preset pressure parameters. These products help to improve blood circulation and prevent blood clots in patients after surgery or during long journeys.

Thus, the practical aspects of knitted fabric applications demonstrate its versatility and adaptability to different operating conditions. Successful knitted fabric-based designs emphasize the importance of selecting the right materials and technologies to maximize the comfort and performance of the final product.



Technological aspects of knitted fabric production play a key role in determining its properties, which in turn have a significant impact on the design characteristics of the final products. In the knitted fabric production process, an important factor is the choice of knitting technology, which can range from simple single-font knitting to complex multilayer structures. Each technology has its own characteristics that affect the elasticity, density and breathability of the fabric. For example, the use of circular knitting machines allows you to get seamless products, which significantly increases comfort and reduces the likelihood of chafing on the skin. At the same time, flat knitting machines provide high precision in the production of complex patterns and textures, which opens up new opportunities for designers.

The selection of raw materials is also a critical step in the production of knitted fabrics. The variety of fibers - from natural fibers such as cotton and wool to synthetic fibers such as polyester and nylon - determines not only the tactile properties of the fabric, but also its performance. For example, cotton knits have good breathability and hygroscopicity, making them ideal for casual wear. At the same time, synthetic fibers provide high strength and wear resistance, which is especially important for sports and workwear. Combining different types of fibers makes it possible to create fabrics with unique properties that can meet specific consumer requirements.

A summary analysis of the influence of knitted fabric properties on the structural characteristics of products shows that the production technology and the choice of raw materials directly affect the functionality and comfort of the final product. Knitted fabrics with different properties can be customized to meet specific requirements, making them versatile for different market segments.

For garment manufacturers, it is recommended to carefully select knitted fabrics depending on the intended use of the product. It is also worth paying attention to environmental aspects when selecting raw materials, as the growing consumer interest in sustainable fashion requires the use of environmentally friendly materials.



Prospects for further research in the field of knitted fabrics include the study of new production technologies and the development of innovative materials with improved characteristics. Research into functional fabrics, such as smart textile technologies with the ability to regulate temperature or moisture management, opens up new horizons for the creation of highly functional garments.

Thus, further development of technologies and materials will significantly expand the application possibilities of knitted fabrics in various areas of the textile industry.

LIST OF LITERATURE:

1. Людмила Маслова. (2015). ВЕРХНИЙ ТРИКОТАЖ. Конструирование и моделирование. Библиотека журнала «Ателье». Издательский дом «КОНЛИГА МЕДИА» Москва, 252 стр.
2. Сафронова, И. Н., & Балланд, Т. В. (2020). Влияние пластических свойств тканей на характер форм одежды. Евразийское Научное Объединение, (2-6), 409-412.
3. Saidova, Z. M. (2024). MANUFACTURING OF CLOTHES WITH DIFFERENT STRUCTURES OF ARTISTIC FELT. *Oriental renaissance: Innovative, educational, natural and social sciences*, 4(1), 69-75.
4. Saidova, Z. (2022). Principles of Development of Uzbek Folk Applied Decorative Art. *International Journal of Multidisciplinary Research And Analysis*, 5-6.
5. Abdullayeva, F. S., Nishanova, S. D., Rashidov, A. Z., Zaripova, M. A., & Dehkanova, R. E. (2020). Factors influencing the formation of clothes as a component of ethnic culture in the territory between two rivers in central Asia. *Elementary Education Online*, 19(4), 832-836.