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ANALYSIS OF THE STRUCTURAL CHARACTERISTICS OF TEXTILE-POLYMER COMPOSITIONS USED IN THE FORMATION OF HEADWEARS.

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Abstract. This article presents the results and analyses of research on the structural characteristics of textile-polymer composites used in shaping headwear.

Introduction. The article examines the features of the structure and properties of textile-polymer composites used in headdress forming technologies. The types of reinforcing textile bases, the nature of polymer binders, and the mechanical and operational characteristics of materials were analyzed. The influence of the structure of composite systems on the stability, plasticity, and preservation of the given geometry of products has been shown [1]. The modern production of headwear is developing in the direction of improving the quality, comfort, durability, and aesthetic expressiveness of products. One of the key factors ensuring these requirements is the use of textile-polymer composite materials. Due to the combination of textile reinforcement and functional polymer binders, materials with high shape stability, elasticity, sufficient strength, and resistance to climatic and mechanical loads are formed[2].

Today, textile-polymer composites are widely used in the manufacture of headwear elements such as backs, pads, visors, rims, and sealing inserts. However, the effectiveness of their application directly depends on the structural characteristics of the material: the type of fibrous base, the morphology of the polymer matrix, the degree of impregnation, porosity, and homogeneity. Therefore, analyzing the structure and properties of such composites is a pressing scientific and practical task [3-4]. The relevance of the research is determined by the need to develop and optimize a new generation of composite materials adapted to modern technological processes of forming, as well as increasing the requirements for the quality and operational properties of headwear. The research is based on the fact that the shape-forming quality of headwear directly depends on the parameters of the composites. The correct choice of material structure allows optimizing the manufacturing technology, increasing the durability of the product, and expanding the range of forms and models.

Objects and methods of research. To comprehensively analyze the structural characteristics of textile-polymer composites, microscopic, physical-mechanical, and thermophysical methods are used [5]. Porosity determines the comfort of wearing the product. For headwear, composites with medium porosity are used, allowing the ventilation to be maintained with a sufficient density to retain the shape.

For the real application of such systems in the fur product design process, it is necessary to prepare and form initial information and create a software environment specific to the fur industry. At the same time, the cutting properties of fur are of great importance[6].

The purpose of the research is to comprehensively analyze the structural characteristics of textile-polymer composites and determine their influence on the shaping processes and operational properties of headwear.

Results and their discussion. Textile-polymer composites are multilayered structural systems in which the textile base performs a reinforcing function, and the polymer binder ensures structural integrity, rigidity, and shape stability. The effectiveness of such materials is determined by the combination of the properties of both components, as well as the specifics of their interaction.

Setting up skins for a given product (taking into account the utilization factor) and folding - determining the place of each skin in the product. In order to better utilize fur hide residues and expand the range of manufactured products, it is permissible to assemble different (or similar) sizes, defects, colors, and shades of hides into a single product.

Conclusion. Analysis of the structural characteristics of textile-polymer composites confirmed that these materials are optimal for shaping the structural elements of headwear. The composite structure - the type of textile base, the properties of the polymer matrix, the degree of impregnation, porosity, and homogeneity - largely determines both the technological features of forming and the operational parameters of the finished product. Analysis of the structural characteristics of textile-polymer composites shows that their use significantly expands the technological capabilities of headwear production.Textile-polymer composites are the main material for shaping modern headwear.

Thus, textile-polymer composites are promising materials for the further development of headwear manufacturing technologies. A scientifically based approach to their selection and evaluation allows for improving product quality and implementing innovations in the light industry.

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