

Секция: Технические науки

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THE COEFFICIENT OF SEAM THICKNESS OF MULTIFUNCTIONAL CLOTHING

Today, multifunctional clothing is developed and promising. Manufacture of multifunctional clothing must express the needs of the user and the needs of the market, possibility of human adaptation to a variety of adverse environmental conditions. Multifunctional clothing is modular adaptative system with expanded possibilities.

The production methods of multifunctional clothing are: the transformation of garment [1]; the use of additional elements (components, overlays etc.) [2]; the use of new multifunctional textile materials [3]. These materials can to make clothing with predictable and desirable properties.

Multifunctional textiles are the new direction for development of fabrics and clothing that opens up expanded possibilities and creates a set of interrelated functions of multifunctional clothing. The expanded possibilities can be different: ergonomic, protective, adaptive or medical functions etc.

The results of manufacture of multifunctional clothing are the products that allow of adapting to the different conditions of environments. These products also can have therapeutic or other health helpful effects while wearing [4]. Technical specifications of multifunctional clothing should be based on a product's performance and also its characteristics.

The most significant in the manufacture garments are physical and mechanical properties of textile materials, such as stiffness, drape and thickness

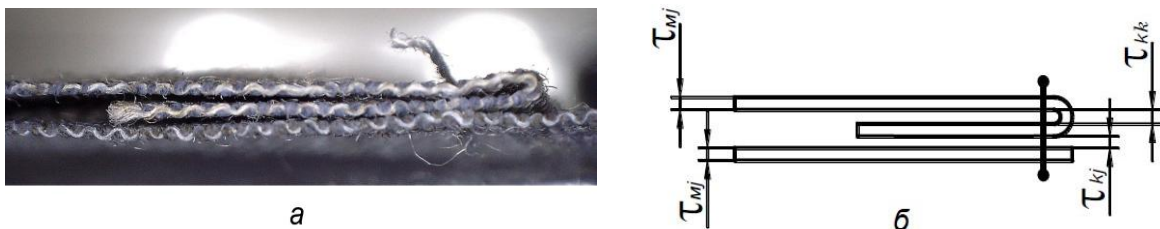
[5]. The multifunctional clothing often has several fabric layers with different features. These overlays increase the thickness of clothing.

The following parameters are used to evaluate the seam thickness of the clothing: the packet of seam thickness, the index "Seam puckering", compression fabric while sewing, and the coefficient of seam thickness [6]. However, these indicators do not take into account the following seams parameters: number of material layers, the presence of different materials in the seam structure, the air layers between the fabric layers, and therefore not allowed to receive predictable seams parameters at the stage of technological preparation of manufacture garments.

The seams of multifunctional clothing can be also multifunctional, namely be applied in the alternative methods of production.

The analysis of photographic images of seams (fig. 1) showed that there are fibers on the fabric surface which affect the seam thickness and the dimensions of air layers between the fabrics. The total seam thickness must include the thickness of all fabric layers and the thickness of all air layers between them.

To confirm this hypothesis developed the coefficient of seam thickness (Kt). This index is the value that indicates the ratio of the thickness of the clothing at the seam location and the total of thickness of all fabric layers of the seam [6].



**Fig. 1 Images of seam (class 2, lapped seam, the number of fabric layers = 3):
a – photographic; б – schematic.**

Experimentally installed, the coefficient of the thickness of the seam can be used for the selection of materials in the manufacture of garments. The dependence of the coefficient (K_t) from thickness fabric mounted for seams of different types ($K_t = 0,7...1,9$). The values of the coefficient (K_t) for seams of the same type have same diapason.

The received array of values of seam thickness for different seams types has parametric step 0,05 mm. The predicted values of the coefficient of seam thickness are used to calculate the seam thickness for different seams types of multifunctional clothing.

Thus, author recommending applying values of the coefficient of seam thickness for selection of the packet of multifunctional clothing and correcting choice of sewing methods.

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