

PARTICULARITIES OF CONSTRUCTIVE DESIGN OF CLOTHING WITH SPECIAL DESTINATION

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REZUMAT. Lucrarea propune adaptarea metodei clasice MUPI CAER de proiectare constructivă a îmbrăcămintei [3, 4], pentru construcția tiparelor de bază a îmbrăcămintei cu destinație specială, pe tipuri de produse. Metoda este adaptată la proiectarea îmbrăcămintei de protecție, în baza existenței unor produse deja proiectate, prin modificarea unor segmente constructive, a principiilor și adaosurilor utilizate. Astfel, pentru construcția scurtei speciale de protecție, se utilizează ca tipar inițial cel al scurtei pentru bărbați destinată anotimpului cald [3, 4]. Tiparul de bază a pantalonului de protecție este realizat pe baza tiparului de pantalon clasic [3, 4]. Având în vedere condițiile de muncă concrete, specificul activității, tipul și caracteristicile materialelor textile considerate, au fost stabilite adaosuri de lejeritate pe principalele zone constructive. Din valoarea efectului dinamic, la elaborarea construcției s-a determinat valoarea adaosului de lejeritate și repartizarea acestuia pe zone constructive. În etapa de proiectare constructivă s-a ținut cont de modificarea dimensională a unor segmente corporale, în funcție de tipul mișcărilor [1, 2, 5, 6].

Cuvinte cheie: proiectare constructivă, îmbrăcăminte specială, tipar, adaosuri

ABSTRACT. The paper proposes to adapt the classical method MUPI CAER of constructive design of clothing [3, 4], for the construction of basic patterns of clothing with special purpose, by product types. The method is adapted to the design of the protective clothing, based on the existence of already designed products, by modifying some constructive segments, of the principles and additions used. Thus, for the construction of the special protective short, the short print for men for the hot season [3, 4] is used as the initial pattern. Considering the concrete working conditions, the specific activity, the type and characteristics of the textile materials considered, lightness additions were established on the main construction areas. From the value of the dynamic effect, the value of the addition of lightness and its distribution by constructive areas were determined when designing the construction. In the constructive design stage, the dimensional modification of some body segments was taken into account, depending on the type of movements [1, 2, 5, 6].

Keywords: constructive design, special clothing, printing, additions

1. INTRODUCTION

MUPI CAER is a universal method, because it is intended for the elaboration of different types of clothing, of different cuts and shapes, from different types of materials, for mass and individual production, for the elaboration of standards, etc. The method is scientifically argued, using as initial data:

- results of anthropometric research;
- the sculptural standards of the type figures and the mannequins performed;
- a complex of constructive and technological additions;
- analytical method of calculation for construction;
- constructive segments are determined on the basis of dimensional characteristics, which allow the rapid elaboration of a construction with a good positioning on the human body.

The method is a perspective method because it creates premises for:

- typing, unifying and standardizing the elements and benchmarks of the construction;
- perfecting and standardizing the construction documentation;
- shortening the design-manufacturing cycle of clothing products;
- reducing the quality of the products at the decisive stage of design;
- application of the automatic systems at the design stage of the garment;
- efficient use of the semi-automatic and automatic machine;
- elaboration and introduction into manufacture of new techniques, technologies and methods of organization based on a unique methodology of clothing construction. [3, 4].

Table 1. The values of the lightness additions

The product	Added [cm]	Fabrics	Specific activities
Short for men; year-round product	Additions for the semiperimeter of the bust		
	9	Cotton and blended fabrics	Light and medium activities
	12	Lightweight and heavy cotton fabrics, mixed with synthetic fibers	Light and medium activities
	14	Heavy cotton fabrics, mixed with other fibers	Medium and heavy activities
Men's trousers; year-round product	Added for the semi-perimeter of the waist		
	2,5	Cotton and blended fabrics	Light and medium activities
	5,5	Lightweight and heavy cotton fabrics, mixed with synthetic fibers	Light and medium activities
	7,5	Heavy cotton fabric, mixed other fibers	Medium and heavy activities

2. OPTIMIZING THE METHODS OF DESIGN OF BASIC TYPES

Within this paper it is proposed to adapt the classical method of constructive design of the MUPI CAER clothing [3, 4] for the construction of the basic pattern of the shorts and the protective pants. For this, the initial pattern of the short one for men will be used as the warm season of the year [3, 4], and the basic pattern of the protective pants will be made based on the classic pants pattern. [3, 4] In view of the concrete working conditions, the specific nature of the activity, the type and the characteristics of the fabrics, lightness additions were established on the main construction areas - table 1.

The basic changes made in the construction of the patterns are:

For short:

- improvement of the addition of lightness on the bust line by 3 cm;
- drawing the lateral line of the product on the middle of the line of the sleeve;
- decrease the inclination angle of the humeral line ($|33-13| = 0,6 T38 + \Pi$; $|35-15| = 0,55 T38 + \Pi$);
- the design of the humeral line without shoulder blades;
- designing the face of the product without any thoughts in the abdomen and bust area;
- design of sleeves without elbow.

For trouser:

- improvement of the addition on the waist line by 1.5 cm;
- improvement of the width of the product on the line of the hip, knee and termination;

The basic patterns were developed for the type size 170, 176 – 96, 100. (fig. 1a, 1b, 1c, fig. 2a, 2b, 2c).

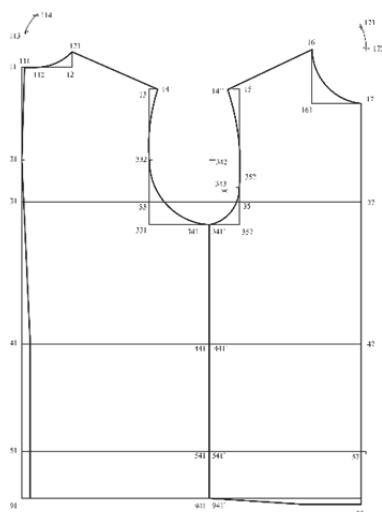


Fig.1a. Short protection basic pattern.

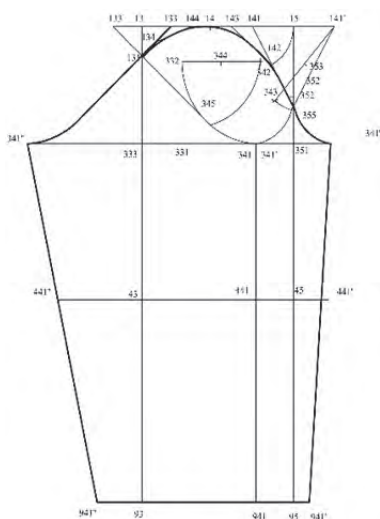


Fig.1b. Sleeve - basic pattern.

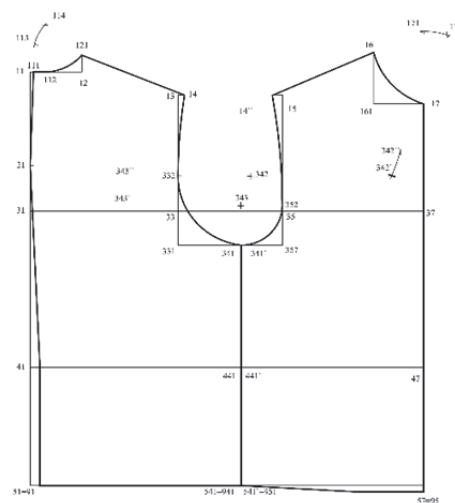


Fig. 1c. Basic pattern - protective vest.

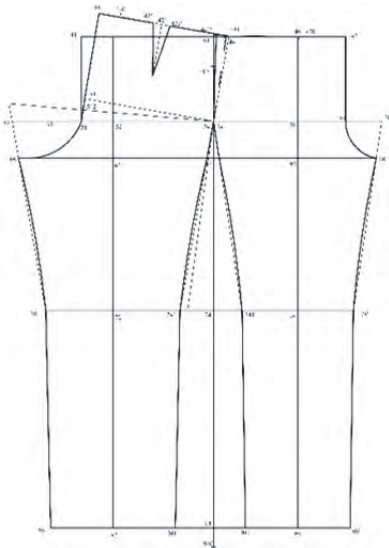


Fig. 2a. Basic pattern - men's protective trousers.

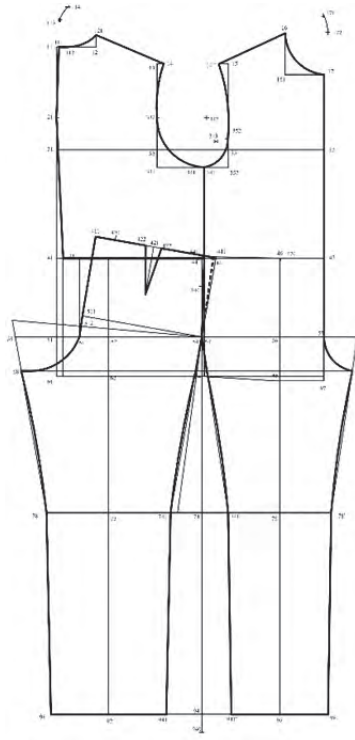


Fig. 2b. Basic pattern for protective jumpsuit.

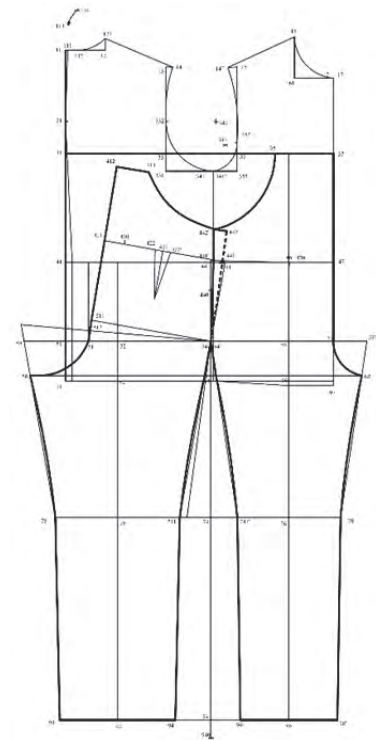


Fig. 2c. Basic pattern for semi protective semi-jumpsuit.

Basic patterns for men: short, trousers, semi-jumpsuit and jumpsuit - were verified by making product models for the size 170, 176 - 96, 100, resulting in good anthropometric correspondence. Also, the basic patterns elaborated were used as the basis for the elaboration of the models of complexes of protective clothing against the environment with production impurities. They were subjected to experimental behavior, resulting in good ergonomic correspondence.

3. FUNCTIONAL CONSTRUCTION SOLUTIONS FOR CLOTHING WITH SPECIAL DESTINATION

Elements of wind protection: special flaps on the lines of the system of closing the shorts and the pants; hood; elements to streamline the termination; constructive elements that protect the face; webbing; elastic ribbons.

Moisture protection elements and clothing requirements: special flaps on the lines of the shorts and pants closure system; minimum number of stitches; the product should not stop the spillage (leakage) of liquids; positioning the pockets on the reverse side of the product, in seams (decorative-constructive, lateral), or with flap. Dust protection construction elements: wedge mounted in the closing system; cuffs; webbing; keyboards; termination sealing elements; belts; cloaks; elastic ribbons; closure systems, made of textile materials.

Constructive elements for ventilation of the underwear space: detachable pilers in the back and face region (there may be 2-3); pave in the lower region of the sleeve, which has a special construction and works according to the fur principle; holes in the form of a rhombus, a crack, a circle, etc. below the crease, in the region of the underfold fold, along the entire length of the lateral, inner seams, etc. (depending on the surface of the holes, they can be provided with mesh-type planks); ventilation holes in the form of a crack with a zipper or a flap (the length of the ventilation holes, which are finished with a zipper can be modified, therefore, the amount of air that enters from the outside can be adjusted).

The choice of the location of the ventilation elements is determined according to the topography of the elimination of perspiration, as well as according to the ventilation effect, which can be achieved under certain conditions of operation of the garment (for example, during walking, when tilting the body in front, etc.).

4. CONCLUSIONS

The constructive design of clothing with special purpose represents a priority direction of scientific research worldwide, being the object of research of some research projects and scientific and theoretical and applied investigations.

Developing models of multifunctional protective clothing, which correspond to the concrete situations of a job, but which still has a high frequency of use, is a relatively new approach both nationally and internationally or Europeanly. This is in accordance with the principles set out in the main regulations regarding the personal protective equipment.

The models of high-performance protective clothing can only be achieved by the simultaneous cooperation of the teams of specialists in the field of chemistry, spinning, weaving, designing, and manufacturing and with the direct input of the research laboratories.

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