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INVESTIGATION OF THE PROPERTIES OF MATERIALS FOR GROUND SERVICE UNIFORM AND THE TEST RESULT

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The article discusses the results of testing various types of fabrics in order to confirm the compliance of textile products with established requirements. A set of checks for this category of goods is carried out taking into account the provisions of TR TS 017/2011 "On the safety of light industry goods", as well as current national standards. The relevance of the work is due to the fact that at the moment ensuring dynamic compliance with the designs of existing uniforms of ground employees does not correspond to the conditions of its operation, is also one of the priorities for the tasks set when designing a uniform for ground service supervisors. On the basis of a laboratory physical and mechanical test: the main factors that have a negative impact on workers and uniforms have been identified and systematized; also on their basis, the requirements for the design of uniforms for ground handling supervisors were identified.

Key words: package of materials, physical and mechanical properties, operational characteristics, supervisor, ground service.

ЖЕРДЕГІ ҚЫЗМЕТ КӨРСЕТУ УНИФОРМАСЫНА АРНАЛҒАН МАТЕРИАЛДАРДЫҢ ҚАСИЕТТЕРІН ЗЕРТТЕУ ЖӘНЕ СЫНАУ НӘТИЖЕЛЕРІ

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Мақалада тоқыма өнімдерінің белгіленген талаптарға сәйкестігін растау мақсатында түрлі маталарды сынау нәтижелері қаралды. Тауарлардың осы санатын тексеру кешені «Жеңіл өнеркәсіп

тауарларының қауіпсіздігі туралы» КО 017/2011 ТР ережелерін, сондай-ақ қолданыстағы ұлттық стандарттарды ескере отырып жүзеге асырылады. Жұмыстың өзектілігі қазіргі уақытта жердегі қызметкерлердің қолданыстағы униформаларының конструкцияларына динамикалық сәйкестікті қамтамасыз ету оны пайдалану шарттарына сәйкес келмейтіндігімен байланысты, сондай-ақ жердегі қызмет көрсету супервайзерлері үшін униформаларды жобалау кезінде қойылған міндеттердің бірі болып табылады. Зертханалық физика-механикалық сынақ негізінде жұмысшылар мен униформаларға теріс әсер ететін негізгі факторлар анықталды және жүйелендірілді; сондай-ақ, олардың негізінде жердегі қызмет көрсету супервайзерлеріне арналған униформаларды жобалауға қойылатын талаптар анықталды және жердегі қызмет көрсету персоналына арналған униформалардың жаңа түрлері талданды.

Негізгі сөздер: материалдар пакеті, физика-механикалық қасиеттері, эксплуатациялық сипаттамалары, супервайзер, жердегі қызмет көрсету.

ИССЛЕДОВАНИЕ СВОЙСТВ МАТЕРИАЛОВ ДЛЯ УНИФОРМЫ НАЗЕМНОГО ОБСЛУЖИВАНИЯ И РЕЗУЛЬТАТЫ ИСПЫТАНИЙ

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В статье рассмотрены результаты испытания различных видов тканей с целью подтверждения соответствия текстильной продукции установленным требованиям. Комплекс проверок данной категории товаров осуществляется с учетом положений ТР ТС 017/2011 «О безопасности товаров легкой промышленности», а также действующих национальных стандартов. Актуальность работы обусловлена тем, что на данный момент обеспечение динамического соответствия конструкциям существующих униформ наземных сотрудников не соответствует условиям их эксплуатации, что также является одним из приоритетов поставленных задачам при проектировании униформы для супервайзеров наземного обслуживания. На основе проведенного лабораторно физико-механического испытания выявлены и систематизированы основные факторы, оказывающие отрицательное влияние на рабочих и униформу; также на их основе выявлены требования к проектированию униформы для супервайзеров наземного обслуживания.

Ключевые слова: пакет материалов, физико-механические свойства, эксплуатационные характеристики, супервайзер, наземное обслуживание.

Introduction

Justification of the choice of the article, goal and objectives

The development of the aviation industry is an integral part of the economy of a successful state, and therefore Kazakhstan is steadily moving forward in the development of the state as a business transit airport in the Central Asian region. In general, in civil aviation, there is a steady growth in all indicators: passenger service at airports, indicators of passengers transported. But the active growth of passenger air transportation and cargo traffic is impossible without the development of the service infrastructure and the expansion of employees of the airport, the airline, and the development of new uniforms that will ensure the processing of passenger traffic and transit passengers with the provision of excellent service. In addition to the geographical location, it is necessary to pay special attention to organizational and technical issues that line up in a number of requirements for the formation of a successful airport on the territory of Kazakhstan [1].

It should be noted that in recent years, the requirements for uniforms on the part of consumers have increased significantly in terms of a set of protective, operational, hygienic and aesthetic properties. In this regard, ensuring the safety of workers due to the high quality of uniforms and high protective properties of materials, based on the use of new materials with high physical, mechanical and protective properties, is undoubtedly relevant, which is explained by the need to develop new approaches to improve the efficiency of aviation production. industries. At the same time, it is necessary to take into account the latest innovations in the world of fashion and the normal

functional state of a person, and his performance during the entire period of wearing a uniform [2].

According to the requirements of the Law of the Republic of Kazakhstan dated December 30, 2020 No. 553, in accordance with Article 125 of the Labor Code of the Republic of Kazakhstan "On Safety and Labor Protection", collective protective equipment, sanitary facilities and devices must meet the requirements of state standards and sanitary norms [1]. According to the requirements, the quality of the uniform should be assessed by the quality indicators of the materials for the uniform, its design, as well as the requirements for the uniform manufacturing technology.

However, at present, ensuring dynamic compliance with the designs of existing uniforms of ground personnel does not correspond to the conditions of its operation is also one of the priorities in the design of uniforms for ground service supervisors.

The purpose of this work is to study the physical, mechanical and operational properties of packages in order to select the most effective option for designing uniforms for ground handling supervisors.

Materials and Research Methods

The objects of research are modern materials were chosen as the object of the study: suit fabric, lining fabric and blouse fabric. Experimental studies have been carried out in the Tashkent Institute of Textile and Light Industry. (Tashkent, Uzbekistan), in the laboratories of the Department "Design and technology of garments".

For the study, several samples of fabrics from modern materials were selected: suit fabric, lining fabric and blouse fabric. The main part of the experimental studies were carried out using standard indicators, such as: air permeability, surface density, wash resistance, resistance to breaking loads, durability, change in the original color, shading of adjacent fabric to dry friction, shading of adjacent fabric to ironing, change in initial color to organic solvents, changing the original color and staining the white material with sweat. Confirmation of compliance with the requirements of TR TS 017/2011 "On the safety of light industry products", approved by the decision of the Customs Union Commission dated December 09, 2011. No. 876, GOST 29223-91 "Dress fabrics, dress-suit and suit fabrics made of chemical fibers. General technical conditions"[4].

Main part

Results and their discussion

One of the conditions for obtaining a high-quality product is the correct and reasonable choice of materials. As part of the conceptual model for creating a uniform for the ground department, an assortment of materials was investigated to assess its quality for the design of uniforms for ground services staff.

According to the requirements, the quality of the uniform should be assessed by the quality indicators of the materials for the uniform, its design, as well as the requirements for the uniform manufacturing technology.

During the operation (exploitation), uniform is exposed to a complex set of wearing factors, including various household treatments: washing and rinsing with the use of auxiliary synthetic agents. As a result, there is a change in the structure of materials and a possible deterioration in their consumer and hygienic properties. This directly refers to the fact that operational safety indicators change. The materials, the properties of which are investigated in this work, are presented in Figures 1-3.

The characteristics of the selected textile materials are presented in Table 1. To determine the package of materials, laboratory physical and mechanical tests (LPMI) were carried out on the package of materials for the current uniform and the new uniform being developed [4]. Test conditions - temperature 22C, humidity 61%. Samples of recommended materials 40 mm wide and 150 mm long were subjected to the test. Number of samples - 3.

Sewing products during operation are constantly exposed to external mechanical and physical influences, which affects the consumer properties of products. To determine the resulting deformations and destruction of the structures of garments, methods are used to evaluate the breaking load and elongation at break. According to this method, an experiment was carried out, the result of which is shown in Figure 1.

Table 1 - Indicators of the characteristics of selected textile materials:

Fabric name	Article	Composition, %	Type of fabric weave	Density of fabric. g/m2	Scope of textile using
• Recommended suit fabric #1 “Prince Wales” •	732725	78PE 22VI	Satin weave	269	It keeps its shape perfectly due to its density. However, the fabric is soft. The properties make it possible to make flowing dresses from practical matter, as well as summer and winter corporate clothes.
• • Recommended suit fabric #2 "Classic" •	• • 16054	• 57PE 40 VI 3EL •	• • atin weave •	• • 45	• It is widely used for sewing home textiles. The fabric is chosen for practicality, moisture and dust repellency, and for a wide range of colors.
• • Suit fabric «Fabric Art»	• • 5468	53 PE 45 SE 2LY	• • will weave	• • 19	• Production of business suits and school uniforms. It is often used as a dress fabric.
• Blouse material “Cotton primer”	• • 5279	• 55COT 45 PE	• • lain weave •	• • 30	• • For the manufacture of blouses and shirts.
• Recommended blouse material “Armani Silk”	• • 6019/31	90PE 10 EL	• • atin weave	• • 0	• Soft, pleasant to the body. The fabric is flowing and drapes well. Excellent quality for creating base products. Ideal for a blouse that can be combined with trousers, a skirt.
• Recommended lining fabric #1 • •	• • 88753	100VI	• • atin weave	• • 0	• Lining type material, consisting of natural, without synthetic impurities. Provides comfortable wearing, ventilation and warmth. Perfect for classic suits/jackets, raincoats, light coats.
• • Lining fabric #2 •	• • 28614	70VI 30PE	• • atin weave	• • 00	• For linings, durable, breathable, elastic. Suitable for a variety of products, both industrial and hand-knitted: for coats, raincoats, suits, jackets, light windbreakers.

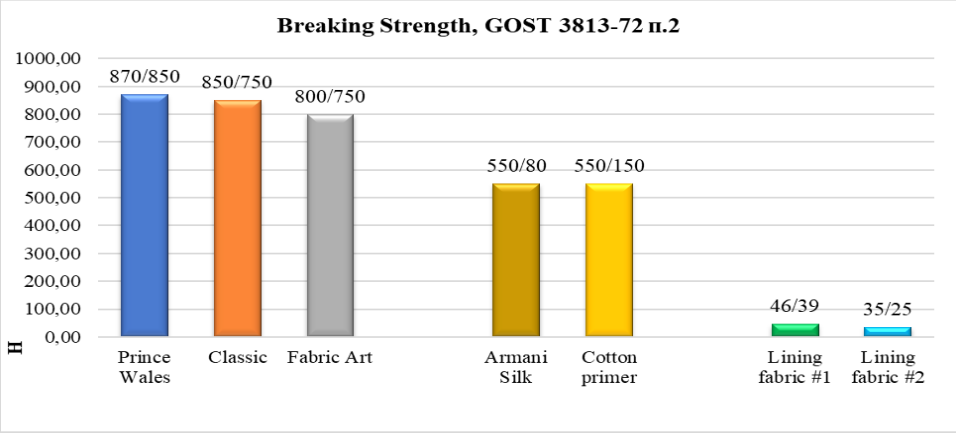

Figure 1 – Bar chart of indicators of the package of materials by fabric breaking strength

From the result on the breaking load, which is shown in the figure above (Figure 1), it follows that the nature of the change in the breaking load for the fabrics of the selected assortment during operation is more stable than the fabrics of the current uniform.

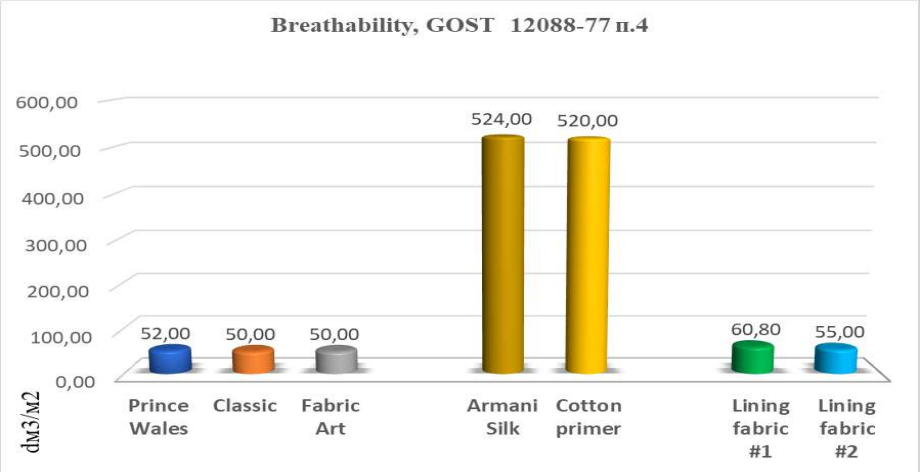

Figure 2 – Bar chart of indicators of the package of materials by breathability

Figure 2 defines breathability with according to GOST 12088-77 [5]. The breathability of a material is its ability to let air through. The air permeability coefficient of a material indicates the amount of air passing through $1м^2$ fabric, knitwear or non-woven material in 1 second at a certain pressure difference on both sides of the material [6]. The test result complies with the requirements of TR CU 017/2011.

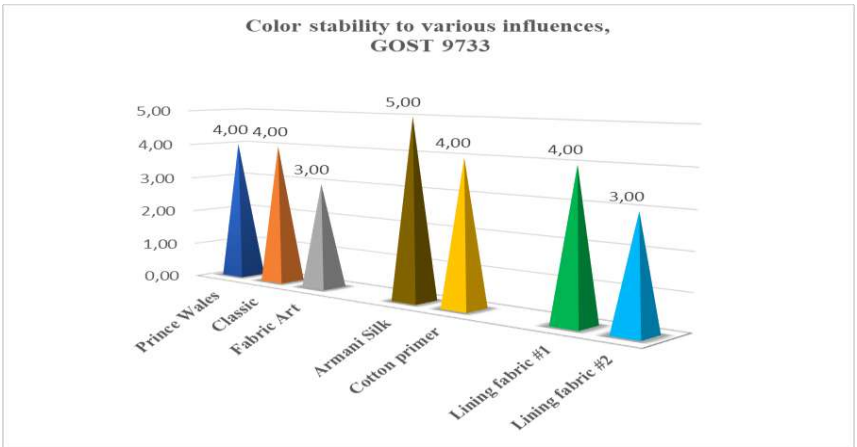

Figure 3 - Bar chart of indicators of the package of materials by color stability to various influences

As shown in figure 3, the result of testing such indicators as color fastness:

- for washing GOST 9733.4-83,
- for sweat GOST 9733.6-83,
- for dry friction GOST 9727.4-83,
- for ironing GOST 9727.4-83.

and change to the original color [7].

Thus, the indicators of characteristics of color fastness to different types of exposure obtained as a result of tests are presented in Figure 1.3. In accordance with GOST, norms for ND must be at least 4.

Conclusions

In the course of the research, it was found that suit fabric #1 "Prince Wales" (Art. 732725) and blouse fabric "Armani" (Art. 06019/31) are textile fabrics of highest quality for designing uniforms of ground handling supervisors, as they have the following characteristics:

- Increased wear resistance due to improved density.

•Preservation of a form and color when washing

•Do not wrinkle even with an active wear.

•Low price.

•Ease of ironing.

•Breathability - do not create a greenhouse effect [8].

As a result of the research, we have identified a package of recommended materials for the development of uniforms for ground handling supervisors.

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ПРОБЛЕМЫ ПРОЕКТИРОВАНИЯ ЭРГОНОМИЧНЫХ КОРСЕТНЫХ ИЗДЕЛИЙ

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Рассмотрены проблемы проектирования импортозамещающих корсетных изделий бюстгальтерной группы. В материале рассматриваются всесторонне аспекты, влияющие на качество посадки корсетных изделий на разные размеры и типы груди. Проведена сравнительная характеристика импортных аналогов и отечественной продукции с точки зрения бра фитинга. Выявлены основные особенности форм груди и размеров, которые влияют на построение моделирующих чашек, и доработана методика построения конструкции, позволяющая ускорить процесс проектирования бюстгальтеров с качественной посадкой.

Ключевые слова: корсетные изделия, бюстгальтеры, размерная сетка, модели-аналоги, качество, посадка.

PROBLEMS OF DESIGNING ERGONOMIC CORSET PRODUCTS

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The problems of designing import-substituting corset products of the bra group are considered.The material comprehensively examines the aspects that affect the quality of the fit of corset products on different sizes