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STUDY OF OPERATING MODES IN THE PROCESS OF SELECTION AND TAILORING OF PACKAGE MATERIALS IN THE PREPARATION OF MEN'S OUTERWEAR

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Abstract:

Objective. In this article, taking into account the natural and climatic conditions of Uzbekistan, the formation and study of a package of materials for men's outerwear that meets functional and operational requirements was carried out.

Methods. Under laboratory conditions, the types of insulating layers used for outerwear, their properties and physical and mechanical parameters of packaging samples were studied. At the same time, the characteristics of mineral wool, which is one of the natural raw materials as an insulation layer produced in Uzbekistan (suitable and cheap for the climatic conditions of uzbekistan), were studied and compared and compared with the performance of the existing insulation layer. packaging samples.

Results. Based on a comparative comprehensive analysis of various insulating materials, as well as requirements for working conditions and overalls for protection from the cold, it can be concluded that mineral wool showed the best results in terms of heat retention.

A model sample of men's outerwear was developed based on the use of mineral wool as an insulating layer of men's outerwear and the formation of a clothing package.

Conclusion. In the process of sewing a bag of clothes, the operating modes of the sewing machine were studied and the best option for the type of needle and needle pressure was recommended.

Keywords: packaging, polyester fiber, insulation material, natural fiber, mineral wool, sintepon, holofiber, tinsulet, slimtex, wool, feather, batting, cotton, wool, sherstepon, insulation layer, special reaction, reaction pressure.

Introduction: One of the main tasks facing the garment industry of our republic is to provide domestic markets with high-quality products of our own production and the production of competitive products for world markets. Decree no. pf-5989 dated May 5, 2020 of the president of the republic of uzbekistan “On urgent measures to support the Textile and clothing and knitwear industry” and “on measures to promote the further development of Light industry and the production of finished products” of 2019 in order to ensure the implementation of decision no. Pp-4453 of September 16, as well as further improvement of the textile and clothing and knitwear industry, an important task is assigned to the light industry and its largest industry - clothing production. As well as the properties of the raw materials used.

At present, there are almost no state-owned enterprises for the production of men's and women's outerwear in our republic, and finished products on the domestic market are produced by private entrepreneurs or imported. This clothing must meet functional, aesthetic, operational requirements, meet climatic

conditions, satisfy the needs of the consumer. Materials used for outerwear, lining and insulation layer are not always chosen correctly, the study of their physical, mechanical and technological properties and the formation of a set of clothing according to the assortment is one of the main tasks [1-2].

Consumer demand for high-quality thermal clothing is the development of bulk heat-retaining materials, such as synthetic winterizer, holofiber, tinsulate, downy mass of waterfowl. These materials have advantages and disadvantages depending on the application [3].

Many scientific studies have been carried out on the production and research of products using insulating layers in the packaging of outerwear [4-5].

A new range of clothing was developed and researched using a new range of textile materials in the formation of a package of children's and adult clothing [6-7]. In this case, a new fiber-containing material was recommended as emergency gas for packaging material.

Heat-preserving clothing package using bulk materials and evaluating the dimensional stability of a multilayer clothing package, the dependence of air permeability was established and the heat retention properties of the materials of the lining, lining and insulation layer were studied depending on the fibrous content of the material [8-9-10].

In the scientific study mentioned above, the selection of packaging material for outerwear, the properties of the lining, lining, insulation material for the package, taking into account the natural and climatic conditions of Uzbekistan, were not studied. Considering the climatic conditions of uzbekistan, the formation and study of a package of materials for outerwear for men that meets functional and operational requirements.

Material and methods. It is known that the climate of Uzbekistan is changeable, and outerwear used in the winter season must meet consumer requirements. In most of our country, the cold season lasts from october to march, and in this climate, comfortable and warm outerwear that meets functional and ergonomic requirements is recommended. When compiling a set of outerwear, it is first of all required that it be heat-preserving and at the same time light. For this purpose, various insulating layers are used at enterprises for the production of outerwear [11].

The main function of heat storage materials is to prevent the penetration of cold from the external environment and maintain the body's thermal balance. this process occurs due to the air between the fibers of the packaging material [12].

Are used in the manufacture of outerwear [13].

Natural fibrous material is superior to synthetic fiber in terms of heat-retaining properties, but does not retain its shape, so it is not recommended to use it for sewing children's clothing. In addition, as a result of the impact of biological factors (an increase in the number of moth larvae), the quality of products decreases [14].

Natural heat-retaining materials have been used for centuries, only as a result of the development of technology, the cleaning and processing of wool and cotton have improved. The properties of natural materials improve from processing and they inevitably become more expensive. Due to the difficulty of storing thermal insulation materials made from natural fibers in hot weather (moth larvae breed in hot weather), the demand for natural thermal insulation materials is low in regions not higher than -300c. But on a cold day with a temperature of -300 c, the need for natural insulating layer materials increases [15].

Based on the above considerations, the types of heating layers used for outerwear, their properties, and physical-mechanical indicators of package samples were studied in laboratory conditions. At

the same time, the characteristics of mineral cotton, which is one of the natural raw materials as a heating layer, produced in Uzbekistan (suitable and cheap for the climatic conditions of Uzbekistan), were studied and the task of analysis was determined in comparison with the indicators of existing heating layer package samples. Mineral cotton is mainly used in the construction industry for heat preservation and for the preparation of heat preservation products. It is the cheapest material used for heating the rooms in the mansards, on the walls between the rooms in residential buildings, on the ceilings. According to gost 52953-2008, 3 types of heating layers are used: basalt cotton, glass cotton, slag cotton, that is, it is named mineral heater because it is made from various mineral raw materials and production slag [16].

Fibers prepared in 3 stages using waste from the manufacturing industry are treated with a component containing polymer phenolaldehyde. For the production of modern mineral cotton materials, inert compounds are used, based on a high level of stability, which ensures that toxins are not released. In the end, the finished large canvas is wrapped in a film to protect it from moisture and reduce its size. Mineral cotton has the following characteristics:

- heat retention rate - 85.5 w/m*k, which shows how much heat can pass through the heating layer at a specific temperature;

-density. it shows the total amount of mineral fibers in one cubic meter of cotton. average density 11-14 kg/m3. it depends on the area of application of the material and the type of formation of layers;

- size, shape, thickness. depending on the area of application, mineral cotton is produced in different sizes and thicknesses. plates are mainly made 20-200 mm thick, 600 * 1000 in size, and mats - 600-1200 wide, 50-150 mm thick and 9 m long. mineral heating layers are made in the form of cylinders 1 m long and 2-27 cm in diameter;

- the ability to absorb moisture. Moisture permeability of mineral cotton is high, equal to 0.48 g/m*s*hpa. it provides a fibrous structure that does not absorb steam, moisture does not accumulate in the fiber. This property protects structural elements from getting wet, designed for air temperature from -15 to 180 c, material weight 56 g/m2.

The advantages of mineral cotton are that it is cheap, only natural raw materials are used in production, no harmful and toxic fumes are emitted during operation. keeps heat well, the insulating layer breathes well, therefore it has high vapor permeability, water resistance, long service life.

In the SENTEX.UZ certification laboratory at the Tashkent Institute of Textile and Light industry, samples of bags were made from materials used for men's outerwear, and their properties, such as thickness, breathability, and heat retention, were studied (table 1). For the main material, a dyuspo fabric was used - dyuspo (surface density of the fabric - 113 g / m2, thickness - 0.2 mm), for the lining - polyester (surface density - 57.0 g / m2, thickness - 0.2 mm). While the total thickness of mineral wool was used in a ratio of 1:1, thicknesses 1:2 and 2:3.

The results of the study showed that the thickness of mineral wool samples has a lower indicator: 1.5 times compared to wool, 1.6 times compared to synthetic insulation layers, 1.3 times for batting and 1.4 times for cotton.

Mineral cotton 1:1 (85.5%), mineral cotton 1:2 (51.6) and mineral cotton 2:3 (73.2) showed the result of heat-saving properties, steam (63%) and holofiber (61%), wool (55%). %) and sherstepon (50%). in terms of heat saving, mineral wool has 2 times higher results than synthetic insulating layers, and 1.4 - 2.0 times higher than other samples [17].

table 1

Physical and mechanical parameters of samples of packages with a heating layer

№	The name of the heating layer	Package thickness, mm	Air permeability, dm^3/cm^2 s	Heat preservation indicator, %
1	Sintepon	3,35	32,4	39
2	Holofiber	1,5	39,8	61
3	Slimtex - 200	4,0	64,3	46
4	Steam	2,7	32,4	63
5	Cotton	4,3	70,7	51
6	Motherland	3,9	28,12	46
7	Wool	5,1	37,7	48
8	Sherstin	1,2	45,0	55
9	Sherstepon	4,5	42,4	50
10	Mineral cotton 1:1	4,3	70,0	85,5
11	Mineral cotton 2:3	2,86	108,0	73,2
12	Mineral cotton 1:2	2,12	90,0	51,6

Research results. Ensuring the specified characteristics of the clothing package depends on a number of factors that determine the characteristics of thermal protection. such factors include the features of the preparation of heat storage materials and their design. Its complexity and layering is associated with the need for the material to retain heat in places. in the process of manufacturing heat-retaining materials, a natural or synthetic insulating layer is glued between two layers of material or the layers of material are stitched together with additional elements voids are filled with a heating layer of down mixture [18].

A comprehensive comparative analysis of various heating materials, as well as operating conditions and protection from the cold from the above points, it was concluded that it is possible to design a model sample based on the use of mineral cotton obtained from the natural resources of uzbekistan as an insulating layer of men's outerwear.

Studying modern fashion trends, a sketch pattern of men's outerwear (jacket) was developed.

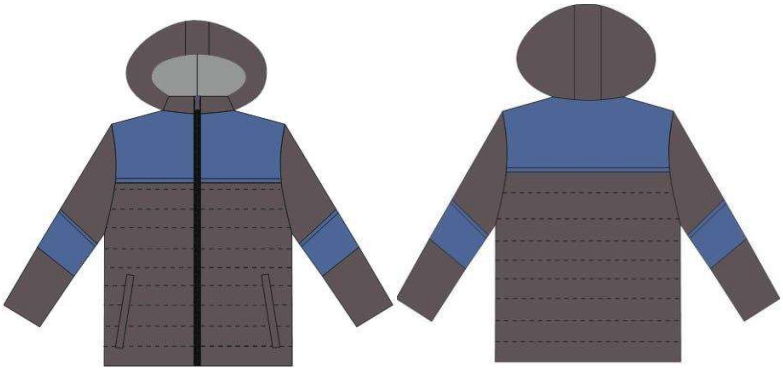

Figure 1. Men's jacket

Due to the fact that mineral cotton was not previously used in the garment industry, experimental tests were carried out to study the bonding of mineral cotton and fabric and the processing mode of the sewing machine. While the main parts in

the manufacture of the product are mounted on a two-thread smooth universal machine. During the sewing process, the packaging materials are in contact or stretched by sliding between the parts of the sewing machine, namely the feed dog.

Shrinkage and shrinkage refer to the percentage shrinkage of the gas layer. Tension and tension are affected by jet pressure which creates friction between the throttle and guide during throttle travel it is necessary to reduce friction on the pressure gear surface so that the gasket moves smoothly along the rack.

The friction coefficient is the ratio of the impact force to the pressure force [21].

$$F=f\,N \qquad f=F/h$$

here,
F - impact force (n)
f - coefficient of friction (%)
F - pressure force (Pa)

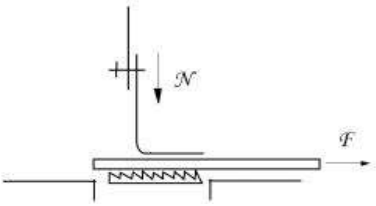

Figure 2. Influence of the reaction material on the technological process

Special coat for scientific research work article: 941-635-000 and with the help of a coat of steel 15, on the sewing machine of the company "jack" made avralik - flushbop from the fabric "duspo", polyester fiber fabric lining, padding polyester heating layer and mineral wool heating layer 300x50. The experiment was carried out on packing samples of size. The speed of rotation of the main shaft of the sewing machine is 5000 min-1, the length of the needle is 3.0 mm. The tests were carried out at high, medium and low reaction pressures.

During the experiment, heating layers were attached to the aura and lining, and the results were compared.

Of great importance is the speed of gas movement and the time of its impact on the reaction of the car. at high speed, the gas can move along a width equal to the length of the shell. this is caused by the interaction of the tire with the car's strut at the moment of starting the movement.

Analysis of research results. The results of the research show that in the manufacture of a sample of a bag with synthetic winterizer, when steel rods 15 were used, when attaching the heating layer to the lining, a good result was observed at low pressure, that is, the normal state at low pressure (30 cm), stretched at medium pressure (31 cm), stretched at high pressure (33.3 cm). In the manufacture of a package sample using a special tool art. 941-635-000 (designed for crimping fabrics with an insulating layer), it can be observed that it was pierced at low pressure (29 cm), stretched at medium pressure (34 cm) and stretched under high pressure (33.9 cm). When sewing a heating layer onto a steel rod with aura, it stretched at low pressure (30.8), the normal state was observed at medium and high pressure (30 cm). When a packaging sample has been prepared using the special tool art. 941-635-000, it can be seen that it penetrated at low and medium pressure (29 cm) and stretched at high pressure (34.5 cm).

In the manufacture of a sample package of mineral cotton using a rod of steel 15 when attaching the heating layer to the lining, almost normal condition (30.1;

30.5; 30.5 cm) at low, medium and high pressure package using a special rod art. 941-635-000 during the manufacture of the sample, an almost normal state (30; 30.4; 30.6 cm) was observed at low, medium and high pressure. When attaching the heating layer with avra, when sewing on a steel rod 15, the condition is almost normal at low, medium and high pressures (30.5; 30.6; 30.6 cm), the condition is almost normal when making a bag sample using a special core product 941 -635-000 (29.5; 30.2; 30.3 cm).

From the results of the analysis it can be seen that 7% better results can be achieved when sewing heating layers to the aura using a special tool article 941-635-000, because: because the special tool article 941-635-000 is designed for sewing, friction between the fabric and fabric, and the heating layer is pressed through, does not leave and does not affect the quality of the product.

table 2

Dependence of shock pressure on the type of packaging

№	Mutual location of the heating layer and gasification samples	Reaction pressures	After merging (steel reaction)				After merging (special reaction Article: 941-635-000)			
			1	2	3	Avegade	1	2	3	avegade
1	Lining is above, sintepon is belov	small	30	29	30	30	29	29	29	29
		medium	30	31	31	31	33	34	34	34
		high	33	34	33	33,3	33	33	33,9	33,5
2	Sintepon above living below	small	31	31	29	31	29	29	28,5	28,7
		medium	33,1	33,2	33,5	33,5	30,5	30,1	30,6	30,8
		high	31	30	31	31	31	32	32	32
3	The main material is above, the sintepon is below	small	30	30,4	30,6	30,8	29	28	29	29
		medium	30	30	30	30	29,8	29	29,9	29,8
		high	30	29	30	30	34,3	34,4	34,5	34,5
4	Sintepon above, the main material is below	small	30	30,5	30	30,5	29	30	29,5	29,5
		medium	30,1	30,5	30	30,3	30,5	30,5	30	30,5
		high	31	32	32	32	33	34	33	33,5
5	Lining is above, Mineral cotton is belov	small	30	30,5	30,1	30,1	30	29	30	30
		medium	30	30,5	30,1	30,5	30	30,4	30,4	30,4
		high	30,5	30,1	30	30,5	30,6	30,6	30,5	30,6
6	Mineral cotton is above, lining is belov	small	31	30	30	31	30,2	30,5	29	30,2
		medium	32	32	31	32	29	29,5	29,5	29,5
		high	29	29	29	29	29	29,5	29,5	29,5
7	The main material is above, the mineral cotton is below	small	30,6	30,4	30,5	30,5	29,5	29	29	29,5
		medium	30,8	30,6	31	30,6	30,2	30	30,5	30,2
		high	30,6	30,4	30,8	30,6	30,3	30,1	30,5	30,3
8	Mineral cotton above, the main material is below	small	31	32	31,5	31,5	30	30	30	30
		medium	31,7	31,3	31,5	31,7	30	30	30	30
		high	32	32,2	32,1	32,2	30,4	30	30,5	30,3

In short, the natural insulation layer has a higher thermal capacity, volume recovery rate and breathability, while the synthetic insulation layer has higher heat retention, durability and moisture resistance. The natural heating layer is mainly designed for dry conditions, while the synthetic heating layer is designed for wet conditions. as a result of the analysis, we can say that it is advisable to develop a sample of men's outerwear, taking into account the compatibility of mineral cotton materials with the climatic conditions of uzbekistan, a high level of heat retention, low weight, dimensional stability and affordable cost.

Thus, it can be seen that the fabric and the heating layer are stretched more when using rods of steel 15 in the manufacture of samples of synthetic winterizer packaging. when using the special rod 941-635-000, a partially extended and partially inserted state can be observed. In the manufacture of a sample package with mineral wool, a normal state was observed when attaching a steel 15 rod to the lining, i.e. (30.1; 30.5; 30.5 cm), when making a bag sample using a special rod 941-635-000 (lining) (30; 30, 4; 30.6 cm).

When stitching the heating layer on a mold made of steel 15 with avra, the state is practically normal at low, medium and high pressures (30.5; 30.6; 30.6 cm), when manufacturing a package sample using a special form art. 941-635-000, at low, medium and high pressures, an almost normal state was observed (29.5; 30.2; 30.3 cm) .

Taking into account the above points, it is recommended to use mineral cotton as an insulating layer when sewing outerwear, and attach sample bags on a special needle sewing machine art. lower.

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ANALYSIS OF THE PROTECTIVE PROPERTIES OF FABRICS FOR SPECIAL CLOTHING OF OIL AND GAS EXTRACTION FIELD WORKERS AT HIGH TEMPERATURES

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Abstract: The article studies the protective properties of fabrics intended for special clothing for workers in the oil and gas industry in Uzbekistan. Based on the conditions for the production of special clothing fabrics, the requirements for them are formed based on the norms specified in individual state standards.

Keywords: Hydrocarbons, oil and gas production, drilling, technical requirements, overalls, desert areas, workers, requirements, leading countries, catalogs, oil fields, climate parameters, sun exposure

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