SCIENTIFIC AND TECHNICAL JOURNAL
Namangan Institute of Engineering and Technology

«INFLUENCE AND CHARACTERISTICS OF DRYING MECHANISMS IN LEATHER PRODUCTION ON THE DERMA LAYER»

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https://doi.org/10.5281/zenodo.7941619

ISSN 2181-8622
Manufacturing technology problems

NAMANGAN MUXANDISLIK-TEXNOLOGIYA INSTITUTI

Scientific and Technical Journal Namangan Institute of Engineering and Technology

Volume 8
Issue 1
2023

ANALYSIS OF ELASTIC FABRICS FOR COMPRESSION SPORTSWEAR IN THE NEW ASSORTMENT

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Abstract:

Objective. The article considers the most important factors in the analysis of the modern range of materials with compressive properties. For the design of compression sports goods, fabric samples were selected and analyzed for hygienic indicators and mechanical properties with the results of experimental tests using standard methods. The characteristics of the analyzed fabrics are expressed in the table, and the YG026T device was used to evaluate the compressive strength of the fabrics. The analysis of the elasticity of the experimental samples was carried out under a force of 6N, and the results of the evaluation of the half-cycle deformations are presented in the elongation diagram.

Methods. A sample of knitted fabrics used for the production of compression sportswear was selected to study the type of knitting, fiber composition, surface density, thickness and structure of knitted fabrics. The YG026T device was used to evaluate the compressive strength of the fabrics, the analysis of the elasticity of the experimental samples was performed under a force of 6N, and the results of the evaluation of the half-cycle deformations are shown in the elongation diagram.

Results. Materials selected to study the type of knitting, fiber composition, surface density, thickness and structure of knitted fabrics. 15 samples were selected to analyze the elasticity of knitted fabrics used for the production of compression sports clothes, and the tensile strength, elongation at break , elongation and elongation under the influence of 6N force, friction resistance and the number of revolutions are expressed in the table.

Conclusions. Using the stock of existing knitting equipment, it is possible to get compression sportswear with good functional parameters from glad woven material with a fiber content of 95% cotton and 5% polyurethane, surface density 181.1. In order to increase consumer demand, it is necessary to conduct a wider survey of users and widely use linear density raw materials.

Keywords: elastic fabrics, compression sportswear, compression strength, compression pressure, deformation.

Introduction. Today, special attention is paid to improving the quality of textiles and ready-made sewing and knitting products through the introduction of new technologies.

A special place in the composition of the assortment of sports goods is occupied by compression items that provide medical requirements for comfort and in the process of operation. The share of the use of such items is constantly increasing.

Active participation in sports is an important part of a healthy lifestyle. Various injuries of the musculoskeletal system (muscles, joints, tendons, muscles) are possible during physical exertion. Therefore, all kinds of protective equipment are widely used to protect the human musculoskeletal system from overloading during sports, excessive tension and sudden movements. According to sports medicine, the main types of sports injuries are bruises, ligament injuries, muscle and tendon strains and sprains, and more severe injuries include dislocations and bone fractures [1].

In order to protect the athlete from the effects of injury factors, as well as to shorten the rehabilitation period, various human body compression products, including textile materials, are used [2].

All compression garments have the ability to compress the body. The force of compression of different parts of the human body is determined depending on the purpose of use of the items. Today, all of these products are exported by the world's largest manufacturers of compression sports products in a wide range. In the design of body compression products, materials should be selected, ordered and used taking into account the deformation characteristics of the material used.

In international and national level competitions, body compression products are used a lot. However, it is not advisable to use such products for amateur athletes. The price of such products is quite high and it is not always possible to achieve good results. There are also sports goods from some manufacturers at an affordable price level. They can have different designs and common features [3].

Namangan Institute of Engineering and Technology has sufficient laboratory equipment for studying the physical and mechanical properties of highly elastic knitted materials in the educational-scientific laboratory attached to the "Design and technology of light industrial products" and "Knitting technology" departments.

Methods. Nowadays, many materials, knitted and non-woven fabrics are produced from various fibers using modern technologies.

Compression sportswear has high aesthetic and ergonomic requirements. Physiological and hygienic indicators of textile materials will be designed to ensure the comfort and service life of compression sports clothes.

Thus, the analysis of the modern assortment of materials with compression properties shows the need to improve the processes and methods of creating compression products, taking into account the following most important factors:

- properties of new type of elastic fabrics made from local raw materials;
- to improve the quality of compression products by using natural fibers with unique natural properties;
- creation of new types of materials taking into account the requirements and consumption structure of athletes, as well as the conditions and parameters of the use of compression products.

A lot of heat is released from the body during sports. Therefore, it is necessary for sports goods to ensure the release of heat from the body. Woolen and semi-woolen yarns have low thermal conductivity, so they are widely used as materials for various heating items in everyday life and in medicine. The thermal conductivity of cotton thread is slightly better, so it is appropriate to use it in sports clothes. The use of natural thread gives the product good hygienic properties [4].

In addition to the natural thread, the following types of synthetic threads were selected: lycra, latex, polyester, nitron, polypropylene complex thread. Fabric samples were prepared from a combination of these types of raw materials of different linear densities. The selected fabric samples are analyzed for hygienic indicators, mechanical properties with the results of experimental tests according to standard methods. After the experimental test results, the fabric samples were selected for the production of body compression products. Product samples are made of cotton fiber and lycra, latex, polyester, nitron, polypropylene complex thread.

Results. The characteristics of the analyzed fabrics are presented in Table 1. Thus, for the study of the knitting type, fiber content, surface density, thickness and structure of knitted fabrics, a sample of knitted fabrics used for the production of compression sports clothes was selected.

The YG026T device was used to evaluate the compressive strength of fabrics (Fig. 1).

Figure 1. YG026T device

Table 1

Classification of elastic knitted fabrics

№	Type of knitting	Appearance of the fabric	Fiber content of fabrics (%)	Linear density, g/m2	Thickness, mm	A group of items
1	Glad		Cotton-95, PU-5	201,5	0,55	**t-shirt and underwear**
2	Glad		Cotton -92, PU-8	203,1	0,7	**t-shirt and underwear**
3	Lastik		Cotton -95, PU-5	232,2	0,8	**t-shirt and underwear**
4	Glad		Cotton -97, PU-3	179,9	0,5	**t-shirt and underwear**
5	Interlock		Cotton -90, PU-10	227,7	0,85	**t-shirt and underwear**
6	Glad		Cotton -95, PU-5	185,3	0,6	**sports underwear**
7	Glad		Viscose -90, PU-10	216,5	0,8	**t-shirt and underwear**
8	Lastik		Cotton -95, PU-5	433,3	1,2	sports suit
9	Glad		Cotton -92, PU-8	192,9	0,7	**sports underwear**
10	Glad		Cotton -95, PU-5	181,1	0,5	**sports underwear**
11	Lastik		Cotton -92, PU-8	251,6	0,6	**t-shirt and underwear**
12	Lastik (China)		PL- 92, PU-8	205,2	0,5	**t-shirt and underwear**
13	Glad (China)		PL-95, PU-5	190,4	0,4	**t-shirt and underwear**
14	Lastik (China)		PL-94, PU-6	351,2	0,8	sports suit
15	Lastik (Turkey)		PL-96, PU-4	450,7	0,9	sports suit

Note: Abbreviations used in the table: PL-polyester fiber, PU-polyurethane fiber.

Discussion. The analysis of the elasticity of the experimental samples was carried out under a force of 6N. Figure 2 shows the stretching diagram of the results of semi-periodic deformation evaluation.

The results of the experiment on the width and length of knitted fabrics under the influence of force (6N) showed that the addition of lycra does not always increase the elastic properties of the fabric. The stretch of fabrics is in the range of 20-60%. These knitted fabrics are elastic (Table 2).

Table 2

Physico-mechanical characteristics of elastic knitted fabrics

Sample number	Breaking strength (sN)		Elongation at break (%)		Elongation of the sample under the influence of 6N force (%)		shrinkage (%)		Friction resistance number of revolutions
	By length	By width	By length	By width	By length	By width	By length	By width	
1	198,3	224,8	62	67	28	31,2	4	3	20000
2	186	193,1	111	123	51	54	3	4	16500
3	190	236	93	109	49	52	3	2	18000
4	181,7	176,6	25	32	10	9	4	4	14500
5	201,3	178,9	36	41	16	14	3	5	18000
6	322,6	345	14	12	23	21	5	3	16500
7	316	367	15	12	54	51	2	3	25000
8	204,3	201,8	54	63	31	36	4	5	18000
9	196,6	213	26	24	11	14	2	3	18000
10	194	237,6	82	97	58	61	3	4	14500
11	130	118,2	226	221	32	60	2	2	17400
12	734	284	284	151	11	47,4	2	3	21000
13	281	330,3	126	244	17	38	2	2	15500
14	404	524	208	347	13	34	3	2	27500
15	393	456	199	306	15	32	2	2	24000

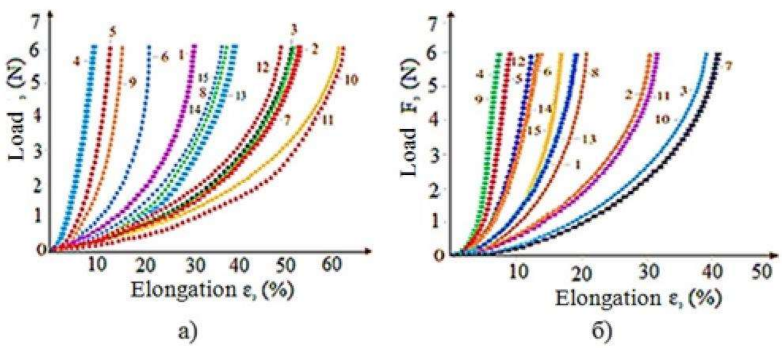

Figure 2. Stretch diagram of various knitted knitted fabrics:
a) by width; b) by length

Conclusion. The results of the work show that, using the stock of available knitting equipment, it is possible to obtain compression sports items with good functional parameters from a material with a fiber content of 95% cotton and 5% polyurethane, a glade texture with a surface density of 181.1. To increase consumer demand, it is necessary to conduct a wider survey of users and widely use linear density raw materials. The current technology is universal, firstly, it allows you to produce a number of compression items, and secondly, this range is in great demand, and newly acquired items without seams on the paintwork can compete with imported analogues.

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INVESTIGATION OF THE INFLUENCE OF SPEED MODES OF THE COMBINED DRUM ON THE QUALITY INDICATORS OF THE TAPE

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Abstract:

Objective. In this research work, using the system of modern technological equipment, the effect of the parameters of the main working organs of the combed machine on the quality indicators and fiber length of the wick obtained from the selection of medium fiber cotton was studied. It was determined that the staple length of the fiber increased by 2.07 mm at a speed of 350 min^{-1}. The purpose of the study is to study the influence of the comb speed of the combed drum on the quality parameters of the sliver and the staple length of the fiber.

Results. In the experiment, the influence of the speed of rotation of the comb drum on the quality parameters of the combed sliver was studied. As a result, when the rotation speed of the combed drum is 350 min^{-1}, the coefficient of variation of the combed sliver is improved, the staple length of the fiber is increased by 2.07 mm.

Conclusion. The distribution of the mass of fibers over the cross section of the tape tape corresponds to the normal distribution law Cm/Um=1.25 (2.72/2.32). Unevenness of the combed sliver in 1 m segments decreases with a decrease in the speed of the combed drum, and with an increase in its speed it increases by 12%. The clogging of the batt decreases with an increase in the speed of the drum, in which the number of defects per 1g of tape is 26 i.e. the minimum value of the compared options.

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“SCIENTIFIC AND TECHNICHNICAL JOURNAL OF NAMANGAN INSTITUTE OF ENGINEERING AND TECHNOLOGY”

The editorial was typed and paginated in the computer center
Paper format A4. Size 20 conditional printing plate

The copy must be taken from the "Scientific and Technical Journal of the Namangan Institute of Engineering and Technology"