SOI: 1.1/TAS DOI: 10.15863/TAS

International Scientific Journal

Theoretical & Applied Science

p-ISSN: 2308-4944 (print) **e-ISSN:** 2409-0085 (online)

Year: 2022 **Issue:** 10 **Volume:** 114

Published: 20.10.2022 **http://T-Science.org**

Issue Article

Natalya Sergeevna Rumyanskaya
Institute of Service and Entrepreneurship (branch) DSTU
Ph.D. docent,

Artur Alexandrovich Blagorodov
Institute of Service and Entrepreneurship (branch) DSTU
master,

Vladimir Timofeevich Prokhorov
Institute of Service and Entrepreneurship (branch) DSTU
Doctor of Technical Sciences, Professor,
Shakhty, Russia

Stanislav Matveyevich Zverev
JSC «Roslegprom»
Ph.D., professor,
deputy CEO
Moscow, Russia

Galina Yurievna Volkova
LLC TsPOSN «Orthomoda»
Doctor of Economics, Professor
CEO
Moscow, Russia

ON THE PECULIARITIES OF FILLING THE MARKETS OF THE REGIONS OF THE RUSSIAN FEDERATION WITH COMFORTABLE EQUIPMENT FOR THE ENTIRE POPULATION (MESSAGE 2)

***Abstract**: in the message 2, the authors analyze the Strategy for the socio-economic development of the regions of the Russian Federation, the purpose of which is to propose a set of strategic directions, measures and steps aimed at reversing the negative trends in the economy and social sphere of the regions of the Russian Federation and its entry into a sustainable trajectory of socio-economic development , which is based on the model of accelerated economic growth and strengthening of the economic base of the Russian Federation for the subsequent improvement of the quality of life and well-being of the inhabitants of these regions. The mission (strategic goal) of the socio-economic development of the Russian Federation is the growth of the genuine well-being of the inhabitants of the regions of the Russian Federation, the creation of opportunities for their self-realization through the outstripping pace of creating new high-tech and knowledge-intensive jobs, increasing the level and quality of life, access to social and cultural benefits.*

The concept of true well-being comes from the assumption that today the content of the concepts of "development" and "progress" has acquired a new meaning. Development is becoming human-oriented (humanistic) and environmentally-oriented, based on investments in human capital, innovative sectors of the economy, and the preservation of ecosystems. This means an increase in the subjective feeling of personal happiness, including not only the level of income, but also non-economic indicators, including the value of leisure, eco-system services, and the quality of work.

Genuine well-being is assessed by an expanded set of indicators that characterize the quality of human life from all sides (opportunities for self-realization, wealth inequality and other indicators of inclusive economic growth, subjective happiness, quality of the urban environment, environmental indicators, healthy life expectancy, indicators of human development, development of democratic institutions and public participation, etc.). At the same time, not only the economic (level of income, volume of production and investment) is taken into account, but also the social, environmental, spatial and managerial (institutional) components. Economic development not only does not contradict the conservation of nature ("industrialization at any cost"), but also leads to a reduction in social disproportions,

the goal for the period up to 2026 (first stage) is to ensure rapid economic growth and development of the social sphere of the regions of the Russian Federation by strengthening the economic base, stimulating entrepreneurial initiative, sustainable spatial development and improving the efficiency of state and municipal government. At the first stage, due to outstripping growth rates, basic conditions will be created for entering the trajectory of sustainable development;

the goal for the period 2027-2030 (second stage) is the formation of a new development model of the Russian Federation based on the principles of sustainable development, including through the implementation of the provisions of the Decree of the President of the Russian Federation of May 7, 2018 No. 204 "On national goals and strategic objectives for the development of the Russian Federation for the period up to 2035". At the second stage, a new model of sustainable long-term development of the Russian Federation will be formed due to investments in human capital, ecology, and industrial renewal, which implies the harmonious development of economic, social and environmental components;

the goal for the period 2031-2035 (stage three) is to increase the true well-being of people and their subjective sense of happiness through the scaling up of the sustainable development model, the transition to a fundamentally new quality of economic growth, in which social, economic and environmental development complement each other, the introduction of best practices environmentally-oriented and human-oriented development.

Thus, by 2035, the Strategy is designed to realize the existing human potential of the regions of the Russian Federation, increase opportunities for self-realization, ensuring an increase in the level and quality of life, access to social and cultural benefits, creating an environment of equal opportunities for everyone. This will create conditions for the implementation of the catch-up development model with access to the model of sustainable long-term development by 2027. The implementation of the Strategy will make it possible to make a consistent transition from the old industrial model of extensive economic growth at the expense of natural resources to a sustainable development model that balances economic, environmental and social components. The new development model will be based on the concentration of value added in the regions, the development of innovations and human potential.

***Key words**: population, regions, comfort, equipment, livelihoods, safety, well-being, demand, profit, profitability, stable financial condition, stable TEP, priority, preference, competitiveness.*

***Language**: English*

Citation: Rumyanskaya, N. S., et al. (2022). On the peculiarities of filling the markets of the regions of the Russian Federation with comfortable equipment for the entire population (Message 2). *ISJ Theoretical & Applied Science, 10 (114)*, 239-275.

Soi: http://s-o-i.org/1.1/TAS-10-114-39 ***Doi***: https://dx.doi.org/10.15863/TAS.2022.10.114.39

***Scopus ASCC**: 2000.*

Introduction

UDC 684.35:685.37

The light industry market is also growing due to socio-cultural progress, in particular, thanks to the development of professional sports, an increase in demand for those who choose sports as a way to a healthy lifestyle. At the end of 2020, the Sport Express newspaper published an interview with A. Grebtsov, Chairman of the Board of the Russian Outdoor Group. "The outdoor market serves mountaineering, tourism, extreme sports, special forces, rescue units, polar services and troops. These are areas that require heavy-duty, frost-resistant, waterproof equipment that meets the latest global standards of safety and comfort." A. Grebtsov gave interesting details, in particular, he compared the technological base for the production of quality products in the Russian Federation, Europe and Asia. We are "somewhat behind", in his assessment, from the Asian potential, but with Europe "We can definitely compete ... in Russia there are about 30 (!) Enterprises that know how to sew well." After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the

development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important: but with Europe "We can definitely compete ... in Russia there are about 30 (!) Enterprises that know how to sew well." After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important: but with Europe "We can definitely compete ... in Russia there are about 30 (!) Enterprises that know how to sew well." After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important:) enterprises that know how to sew well. After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important:) enterprises that know how to sew well. After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important: After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important: After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important: In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important: In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials

for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important:

- make it clear to large retail chains the importance of acquiring and distributing goods produced in Russia, of course, taking into account their proper quality;
- to place first of all orders for production from those "who have already got on their feet and know how to sew." They were able to prove their worth;
- to assist enterprises in obtaining European certification, otherwise foreign firms will not be interested in them, and the goods produced by us will not get to the West;
- actively support enterprises in the provision of collective stands at international exhibitions;
- provide such enterprises with subsidies on loans for the purchase of raw materials and materials. The share of these loans in the total volume of lending should be from 50 to 85%;
- exempt modern imported equipment from import duties and VAT, such as equipment used in sewing shops, 90% is imported;
- implement preferential leasing.

As you can see, the program of D. Manturov systematizes the main and primary steps in the direction of the light industry in order to return it to its former meaning. However, Heraclitus was right when he said that you cannot step into the same river twice. The rise of the light industry can be carried out on a new technological, economic and legal basis.

The manufacturer is currently not interested in producing a quality product. “Sheepskin is not worth the candle” - the costs are high, the cost of products will increase, the real price will be significantly increased by the intermediary and the seller. As a result, the market for such a product will not “digest” and the manufacturer will be struck by the deadly disease No. 1 according to E. Deming. On a limited scale, clearly scanty for Russia, quality things are guaranteed to be made, manufactured, but this practice has nothing to do with the situation in production, it is exclusive.

The first experience of control intervention in the production process in order to give it stability and a certain increment can be found in the activities of workshops, individual industries, and schools of masters. Most of the famous sculptors of the Renaissance tried to work in teams of stonemasons, directly in the places where the material was mined. They looked in the quarries for the texture they needed to create the image. It was then that a joke appeared: it’s easy to make a masterpiece - you need to remove everything unnecessary, superfluous, but first you need to find the basis. In the workshops, in the interests of quality, the craftsmen carefully checked the products, observed the work of apprentices in the course of production, actively introduced the secrets of production to students, selecting the most capable of them. Despite the fact that each product was an individual, made by a master, it passed internal control, behind which there was also an external one from the side of the city guild organizations. Subsequently, such work was defined as the rejection phase.

In terms of content, it was much richer, synthetic, more like a "selection" than a "culling". Creativity moved the masters, the masters studied no less than the students. They were looking for paints, primers, foundations, ideal images, and they were wrong. Creativity spares no one - neither the great nor the beginners. Everyone had to work, and especially the masters, by sticking. The concept of "marriage" is not as simple as it seems from the outside. Marriage is not always in sight, the masters were taken out by its hidden forms, which appear over time. “Rejection” was not an act, as in mass production, but a technology. Today it is difficult for us to look beyond the achieved horizon in the development of mass production (Figure 1). What is clear is that its “zealous” form is still more of a direction of development than a phase. However, the logic of progress, built on continuity, does not exclude a return to some part, characteristic of the shop organization. Mass character should not be a brake on creativity. Over time, it will surely reveal the diversity under the common “roof” of the multiple result. Therefore, one should carefully examine the production process that has been perfected in the workshop form.

Figure 1. Footwear for the population of the regions of the Russian Federation: - internal multi-layer liner and porous insole; - rubber bottom Arctic; - EVA midsole - multi fastening on rings (D-ring); - ergonomic insulated leather; - upper: Timberwolf leather Diamond-Lite nylon with thermal insulation function.

Main part

When choosing packages of materials for the study, we took into account the physical, mechanical, thermophysical characteristics of the materials, information about the specifics of the operation of this clothing, which we obtained from open literary sources.

A feature of the reasonable choice of packages of materials for a suit for the population of the regions of the Russian Federation is the fact that they must not only provide him with a comfortable state due to the guaranteed temperature regime under the clothing space of at least 340C, but also meet all the requirements for the manufacture of heat-protective clothing.

For the study, packages of both imported polymeric materials for the production of jackets and packages of domestic polymeric materials were considered, which were evaluated for their satisfaction with the requirements for thermal protective clothing when military personnel are in climatic zones with temperatures of -200C, -300C and -400C. The results of previous studies using the software product developed by the authors for the reasonable choice of a package of materials in the manufacture of comfortable equipment for the population of the regions of the Russian Federation showed that at an initial weighted average temperature of the human body surface of +360C for all packages of materials using both domestic polymeric materials and imported polymeric materials, there is observed a sharp drop in body temperature at an air temperature of -200C, -300C and -400C, Provoking a feeling of discomfort during the first hour of their stay in these conditions, which implies the search for new materials that would guarantee them a comfortable state for at least two hours. Table 1 shows the characteristics of the package of imported polymeric materials for the production of jackets, and Table 6.5 shows the characteristics of the package of domestic polymeric materials.

Table 1. Characteristics of the package of imported polymer materials for the production of jackets

Model	Package materials	Thickness, mm	Coefficient of thermal conductivity λ,W/m ºC
1	2	3	four
Model 1	Synthetic fabric (100% PE)	1.6	0.042
	Promaloft insulation (main) Gasket materials: 1. TKPM "Picardy" 1242\17 2. TKPM "Kufner" R171G57 3. TKPM "Kufner" B141N77 4. TKPM AKR-622\AKR218	12.0 1.2 1.3 2.1 3.5	0.034 0.041 0.031 0.021 0.009
	Lining fabric	0.76	0.039
Model 2	Synthetic fabric (100% PE)	1.6	0.042
	Insulation "Hollofan" 2 layers basic Gasket materials: 1. TKPM "Picardy" 1242\17 2. TKPM "Kufner" R171G57 3. TKPM "Kufner" B141N77 3. TKPM AKR-622\AKR218	12.0 1.2 1.3 2.1 3.5	0.036 0.041 0.031 0.021 0.009
	Lining fabric	0.76	0.039
Model 3	Synthetic fabric (100% PE)	1.6	0.042
	Insulation "Combiwool" "250 + 150" basic Gasket materials: 1. TKPM "Picardy" 1242\17 2. TKPM "Kufner" R171G57 3. TKPM "Kufner" B141N77 3. TKPM AKR-622\AKR218	12.0 1.2 1.3 2.1 3.5	0.33 0.041 0.031 0.021 0.009
	Lining fabric	0.76	0.039

The packages of materials were selected in accordance with the requirements for thermal protective clothing and the materials used for its manufacture. When compiling the packages, the purpose of each layer and the thermophysical characteristics of the materials were taken into account.

On a number of materials. Therefore, the material packs for models No. 1-No. 3 are made up of the most famous imported materials, and the packs No. 1* - No. 3* are made up of domestically produced materials.

Table 2. Characteristics of the package of domestic polymeric materials for the production of jackets.

Model	Package materials	Thickness, mm	Coefficient of thermal conductivity λ,W/m ºC
1	2	3	4
Model 1	Membrane fabric	3.5	0.06
	Sintepon (100% PE) basic Gasket materials: 1. TKPM "Picardy" 1242\17 2. TKPM "Kufner" R171G57 3. TKPM "Kufner" B141N77 4. TKPM AKR-622\AKR218	15 1.2 1.3 2.1 3.5	0.035 0.041 0.031 0.021 0.009
	Fleece	1.2	0.039

Model 2	PE fabric (art. 06617-kv)	2.1	0.040
	Thermal insulation Termofinn Micro basic	15	0.036
	Gasket materials: 1. TKPM "Picardy" 1242\17 2. TKPM "Kufner" R171G57 3. TKPM "Kufner" B141N77 4. TKPM AKR-622\AKR218	 1.2 1.3 2.1 3.5	 0.041 0.031 0.021 0.009
	Visco-complex lining fabric	0.6	0.044
Model 3	Blended fabric (67% PE + 33% CL)	1.8	0.041
	Stitched fabric "wool" 2 layers (80% PE + 20% wool) main Gasket materials: 1. TKPM "Picardy" 1242\17 2. TKPM "Kufner" R171G57 3. TKPM "Kufner" B141N77 4. TKPM AKR-622\AKR218	 20 1.2 1.3 2.1 3.5	 0.038 0.041 0.031 0.021 0.009
	Lining fabric art. 32013	0.69	0.049

The difficulty of choosing a package of materials lies also in the fact that when choosing materials used for a particular product, it is necessary to take into account the region in which these products will be used, since specific products will be subject to different operating conditions in relation to climatic zones. This is especially true of heat-protective clothing operated in various regions of the Russian Federation.

Let's repeat and name the main criteria for the comfort of clothes: skin temperature, which should not be lower than 33.3 ° C, and the temperature of the under clothing space should not be lower than 34 ° C, that is, the microclimate under the clothing space is an indicator of its comfort, including exposure to low temperatures. For a person, it is not indifferent which part of the body cools more while maintaining the total heat transfer, for example, a strong cooling of the legs cannot be fully compensated by heating another part of the body without disturbing the person's sense of comfort. Therefore, it was so important to develop a mathematical model to justify the choice of a package of materials in order to create comfort for a civil servant, taking into account the duration of exposure to low temperatures.

The concept of the mathematical model is based on the representation of clothing as a set of multilayer packages of materials of various shapes and compositions.

To calculate the temperature distribution, the authors used Maple mathematical packages.

The solution of the problem was reduced to finding such a combination of materials for the package, which would realize a minimum of heat flux from its surface while limiting the volume of the package. Thus, it can be concluded that with the help of the proposed mathematical model, it is possible to optimize the choice of materials for the manufacture of a heat-protective suit.

Consider the problem of temperature distribution T_i $i-$layer in the details of the suit, which is a cylindrical multilayer surface. The ambient temperature is maintained constant, equal to T_0. From the body to the inner surface of the clothing comes a heat flux of density q. On the outer surface of the clothing, heat exchange with the environment takes place according to Newton's law with a heat transfer coefficient α.

Let us introduce the following notation for basic criteria:

$t-$ time; $T_i(r,t)-$ temperature i -th layer; λ_i- coefficient of thermal conductivity i -th layer; α_i- coefficient of thermal diffusivity i -th layer; R_{i-1}, R_i- inner and outer radii i -th layer; $i=1,2\ldots n.$

Now consider $n-$layered hollow cylinder and boundary value problem

$$\frac{\partial T_i}{\partial t}=a_i\frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial T_i}{\partial r}\right),\quad R_{i-1}<r<R_i$$

$$i=1,2\ldots n. \qquad (1)$$

With boundary conditions:

$$\lambda_1\frac{\partial T_1}{\partial r}(R_0,t)+q=0;$$

$$\lambda_n\frac{\partial T_n}{\partial r}(R_n,t)+\alpha(T_n(R_n,t)-T_0)=0; \qquad (2)$$

Ideal contact is assumed between the layers:

$$T_{i-1}(R_{i-1},t)=T_i(R_{i-1},t);$$

$$\lambda_{i-1}\frac{\partial T_{i-1}}{\partial r}(R_{i-1},t)=\lambda_i\frac{\partial T_i}{\partial r}(R_{i-1},t), i=2,..,n. \quad (3)$$

Initial conditions

$$T_i(r,0)=\varphi_i(r), \quad i=1,..,n. \quad (4)$$

By solving the problem, it is possible to find the temperature distribution in the layers of the suit and, in particular, the change in the temperature of the under-clothing space depending on time.

The passage of heat through a multilayer spherical wall is described by a system of heat conduction equations:

$$\frac{\partial T_i(r_i,t)}{\partial t}=a_i\frac{1}{r_i}\frac{\partial^2(r_iT_i(r_i,t))}{\partial r_i^2}, \quad (5)$$

$R_{i-1}\le r_i\le R_i$, where R_{i-1}, R_i – inner and outer radii i – layer, t – time, a_i – thermal diffusivity i – layer, $(i=1,...,n)$.

On the inner surface of the spherical segment from the foot enters the heat flux q:

$$\lambda_1\frac{\partial T_1}{\partial r_1}(R_0,t)+q=0. \quad (6)$$

On the outer surface of the body, heat exchange with the environment occurs according to Newton's law with the heat transfer coefficient α:

$$\lambda_n\frac{\partial T_n}{\partial r_n}(R_n,t)+\alpha(T_n(R_n,t)-T_c)=0. \quad (7)$$

We will assume that there is an ideal contact between the layers, which is expressed by the following relations:

$$T_{i-1}(R_{i-1},t)=T_i(R_{i-1},t), \quad (8)$$

$$\lambda_{i-1}\frac{\partial T_{i-1}}{\partial r_{i-1}}(R_{i-1},t)=\lambda_i\frac{\partial T_i}{\partial r_i}(R_{i-1},t),$$

$i=2,...,n.$ At the initial moment of time, the body temperature is set

$$T_i(r_i,0)=\varphi_i(r_i), \quad (9)$$

$$i=1,...,n.$$

Thus, the process of heat passage through the spherical segment from the body to the outer surface is described by a boundary value problem with the initial conditions given above.

When calculating, we took into account the following criteria:

- the thickness of the layers of materials in the package;
- coefficient of thermal conductivity and thermal diffusivity of package materials;

is the density of the heat flux coming from the body;

- ambient temperature;
- initial temperature of the package of materials;
- coefficient of heat transfer from the outer surface of the package to the environment;
- the presence of an additional layer in the form of thermal underwear and a woolen sweater.

The calculation also took into account the fact that a person has guaranteed thermal protection of the legs, arms and head, that is, he is dressed in accordance with climatic conditions.

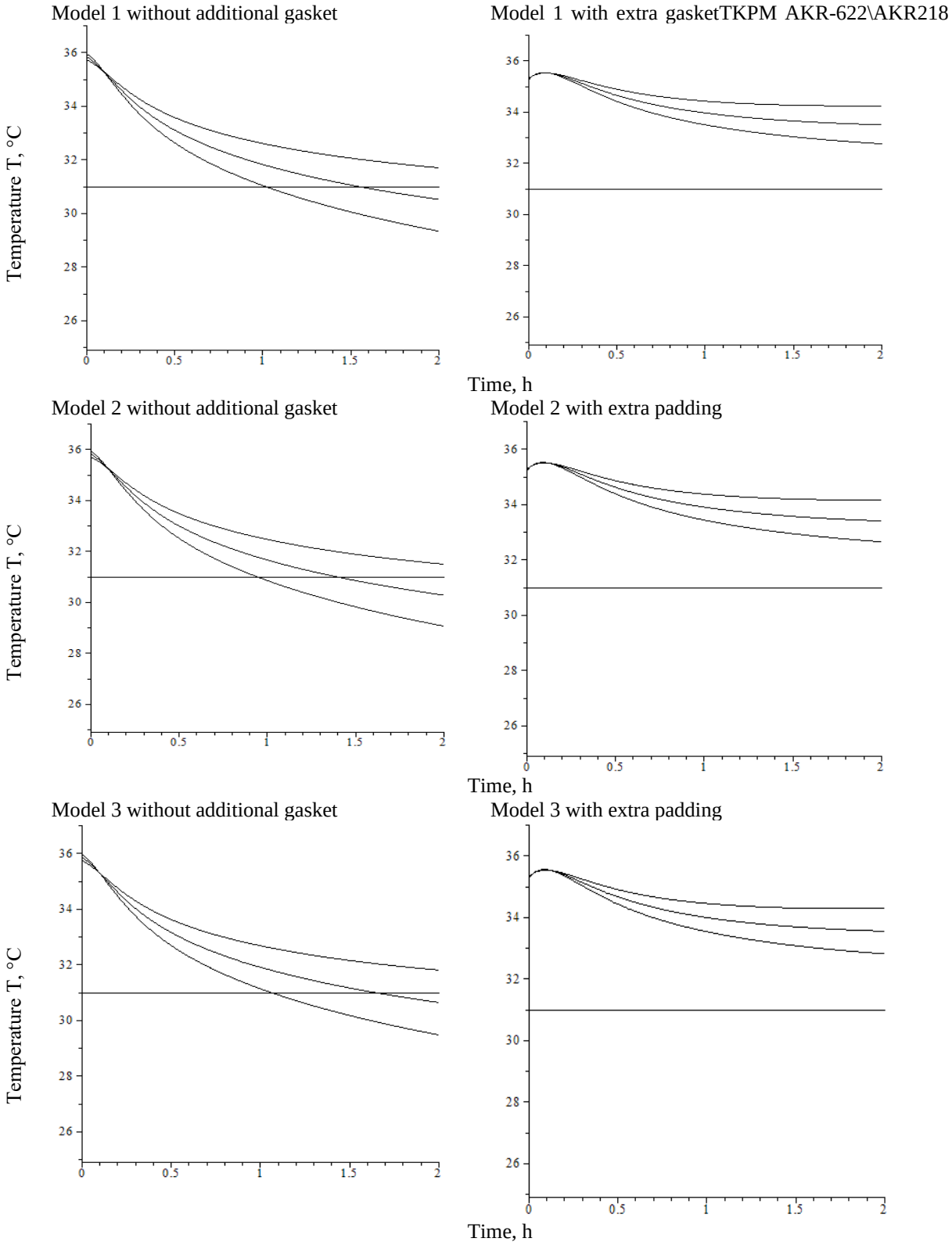


Figure 2 - The results of calculations of the weighted average skin temperature for packages consisting of imported materials at ambient temperatures: curve 1 -20°C, curve 2 - 30°C, curve 3 - 40°C.

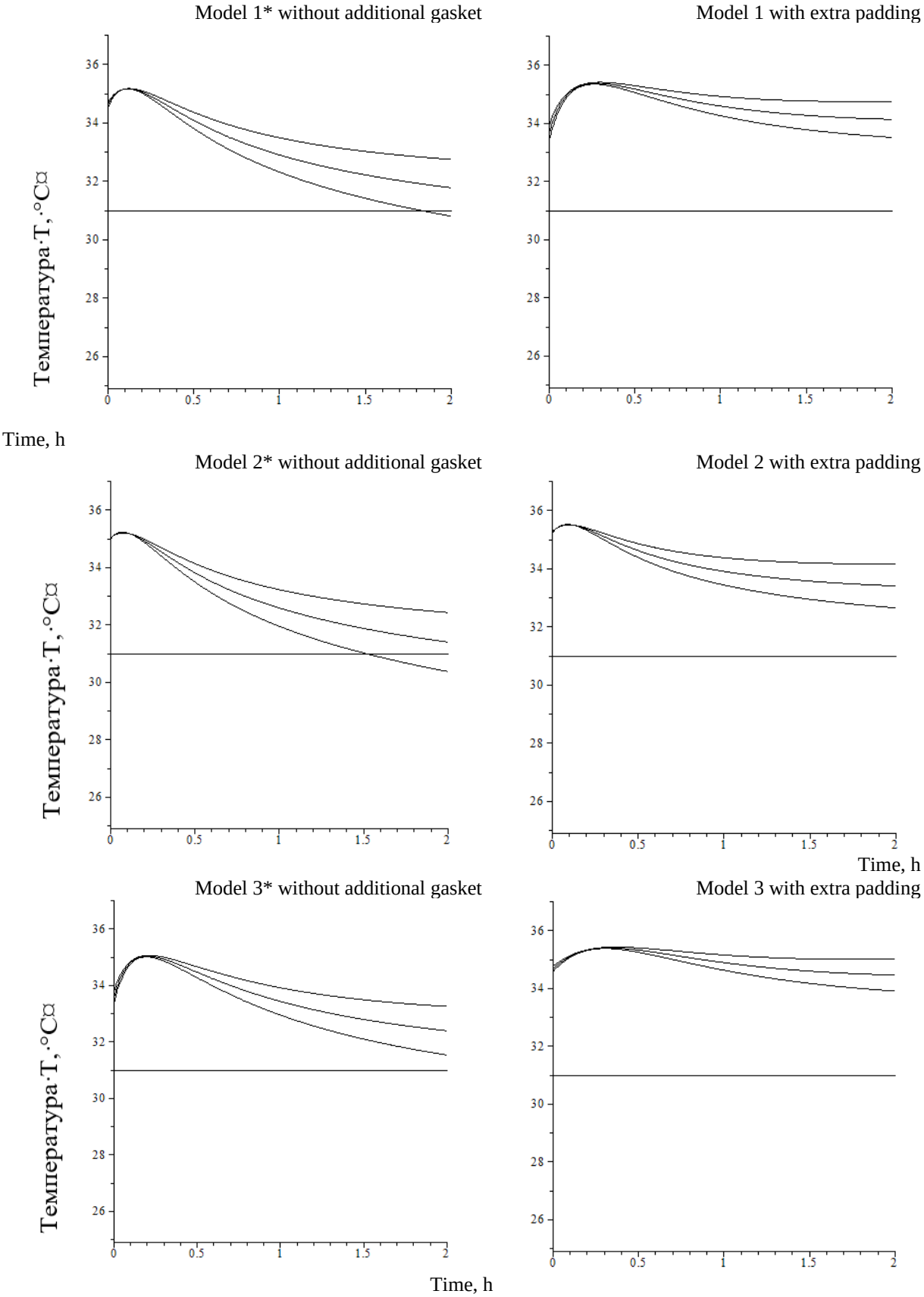


Figure 3 - The results of calculations of the weighted average skin temperature for packages consisting of materials of domestic production at ambient temperatures: curve 1 -20°C, curve 2 - 30°C, curve 3 - 40°C.

The calculation results are presented in Figure 2 for imported materials and in Figure 3 for domestically produced materials. These figures show the dependence of the average weighted skin temperature of the human body on the time spent at low temperatures (-20°C; -30°C; -40°C). It can be seen from the above figures that at an initial weighted average skin temperature of +36°C for all packages of materials, a sharp drop in body temperature is observed at air temperatures of -20°C, -30°C, -40°C.

An analysis of the research results confirmed the justification for using TCPM as gasket materials in the manufacture of a suit for military personnel in the Arctic, since all TCPM provide comfort to a civil servant for 2 hours of his stay in climatic zones with an ambient temperature of -20 ° C and -30 ° C, but comfortable conditions when it is in the climatic zone at -40°C is provided only with the use of TKPM AKR-622/AKR218, the thermal conductivity coefficient, which has the lowest, namely, λ=0.009W/m·°C.

- it has been proved that the main criterion for the comfort of the suit of the military personnel of the Arctic when they are in different climatic zones is the coefficient of thermal conductivity;
- the possibility of using the software product to justify the choice of packages of materials for the costume of civil servants in the Arctic in various climatic zones was confirmed;
- a high coincidence of the calculated values of heat loss from the surface of the tested jackets with experimental data was achieved, which confirms the eligibility of using the software product developed by the authors for the reasonable selection of material packages for the suit of civil servants of the Arctic located in different climatic zones;
- it is proved that the use of domestic nanomaterials and nanotechnologies as pads for a suit for the population of the regions of the Russian Federation during the period of the need for import substitution due to sanctions, confirmed their high quality and efficiency, which allows expanding research and their production with the presence of the main criteria that form a comfortable state for him within two hours in any climatic zones.

If for footwear and clothing the software developed by the authors allows us to formulate requirements for a package of materials and provide a comfortable state for the population of the regions of the Russian Federation to perform their duties, then for the face, hand, and big toe, comfortable conditions are guaranteed without additional research on the choice of packages materials are not yet available.

Characteristics of materials for gloves, the use of which would be justified, is given in table 4.

An analysis of foreign experience has shown that the so-called mitts are used in conjunction with gloves.

There are different types of mitts: ordinary fingerless mitts; mittens with a fastened mitten; "pipes" without compartments for fingers and palms.

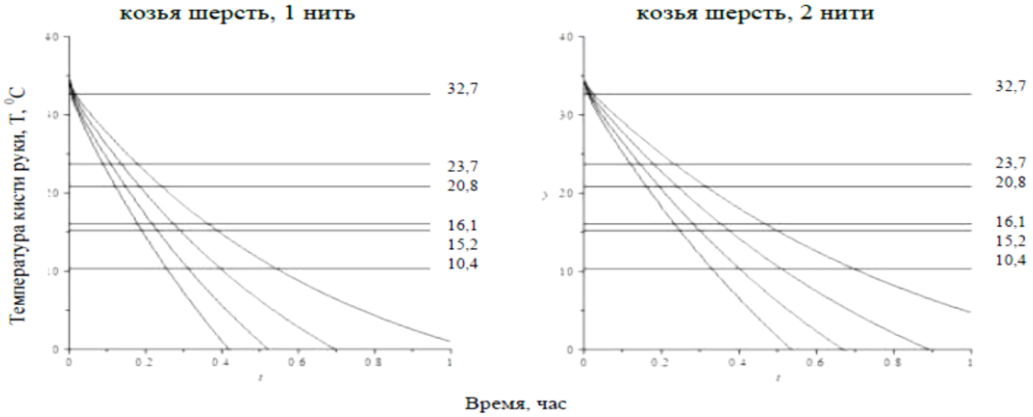
The peculiarities of the choice of materials for gloves for the population of the regions of the Russian Federation are provoked by the climatic conditions of this zone in order to guarantee them comfortable conditions during the entire period of use or their military duties. At the same time, special attention was paid to ensuring the comfort of not only the soldier's hand, but especially the right index finger if he is right-handed, and the left hand, of course, if he is left-handed. This need is dictated by the specifics of the performance of their duties by civil servants, namely, to carry out shooting, which provokes a more intense cooling of the index finger.

The use of mitts provides the population of the regions of the Russian Federation with additional protection for the hands, and, most importantly, for the index finger, while the main protection is provided by a glove, and here the authors test not only different wool, but also yarn, forming it from a single or double thread. Possibilities of using nanomaterials that are able to carry out thermal regulation and provide the skin of the hand with a comfortable temperature, namely, not lower than 32 ° C. Such studies are possible using the same software that the authors developed and used for materials, the characteristics of which are given in Table 4.

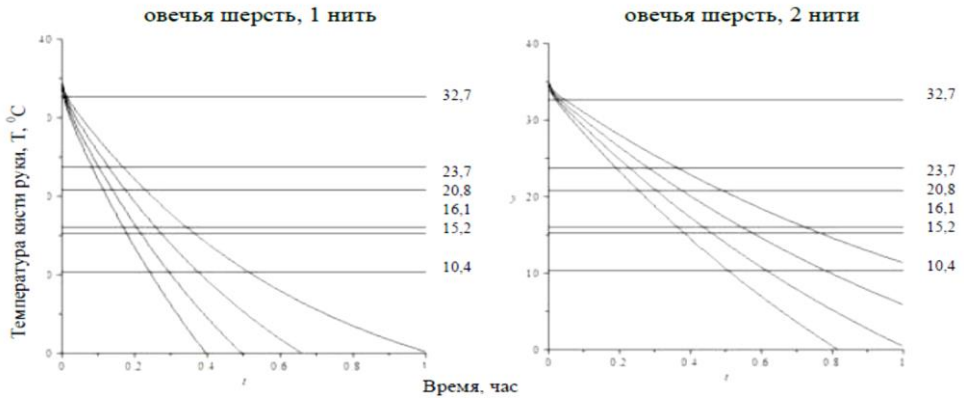
Table 3. Characteristics of materials in the manufacture of gloves for the population of the regions of the Russian Federation

Materials used to make gloves	Thickness mm	Coefficient of thermal conductivity, λ, W/ m° C
1 Yarn from one thread:		
1.1 Goat wool	0.7	0.015
1.2 Sheep wool	0.8	0.020
1.3 Camel	0.9	0.005
1.4 From dog hair	0.8	0.010
2. Two-strand yarn:		
2.1 Goat hair	1.4	0.015
2.2 Sheep wool	1.6	0.020
2.3 Camel	1.8	0.005
2.4 From dog hair	1.6	0.010
3. A package of materials for the index finger of the hand, suede + yarn from one thread		
3.1 when using goat hair	1.7	0.02/0.015
3.2 when using sheep's wool	1.8	0.02/0.020
3.3 when using camel hair	1.9	0.02/0.005
3.4 when using dog hair	1.8	0.02/0.010
4. A package of materials for the index finger of the hand, suede + two-strand yarn		
4.1 when using goat hair	2.4	0.02/0.015
4.2 when using sheep's wool	2.6	0.02/0.020
4.3 when using camel wool	2.8	0.02/0.005
4.4 when using dog hair	2.6	0.02/0.010
5 Material for the fingertip of the index finger of the soldier's hand - "genuine suede leather" and for mitts	0.8	0.020

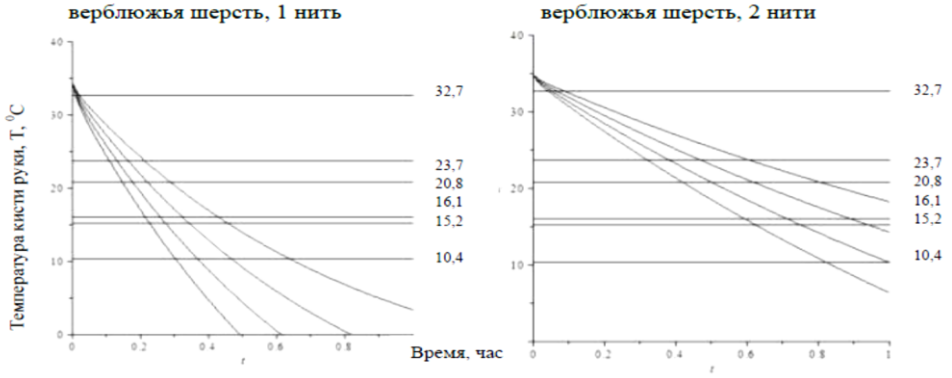
Using the software developed by the authors, graphs were constructed characterizing the condition of the skin of the hand of a soldier for four ambient temperatures, namely: - 100C, -200C, -300C, -400C from the time he was on duty, but not less than 1 hour. The figures indicate the temperature values of the skin of the hand, characterizing the various warm sensations of a soldier, namely comfort 32.7°C, slightly cool 23.7°C, cool 20.8°C, cold 16.1°C, very cold 15, 2°C, pain 10.4°C (frostbite). At -10°C, a comfortable state is provided only by a package of suede-dog hair (double thread), and for -20°C, -30°C, -40°C none of the studied materials and their packages together with natural fur "winter" do not guarantee comfortable conditions for military personnel.



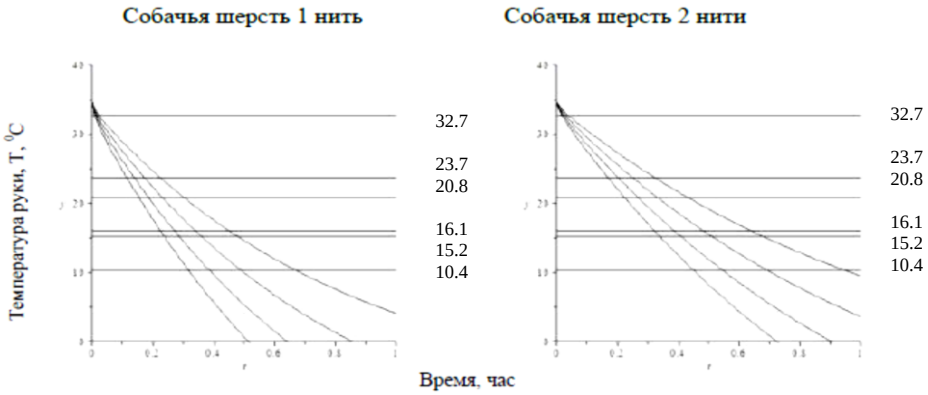
a) Change in the temperature of the skin of the hand when using goat wool yarn from 1 thread and 2 threads for gloves



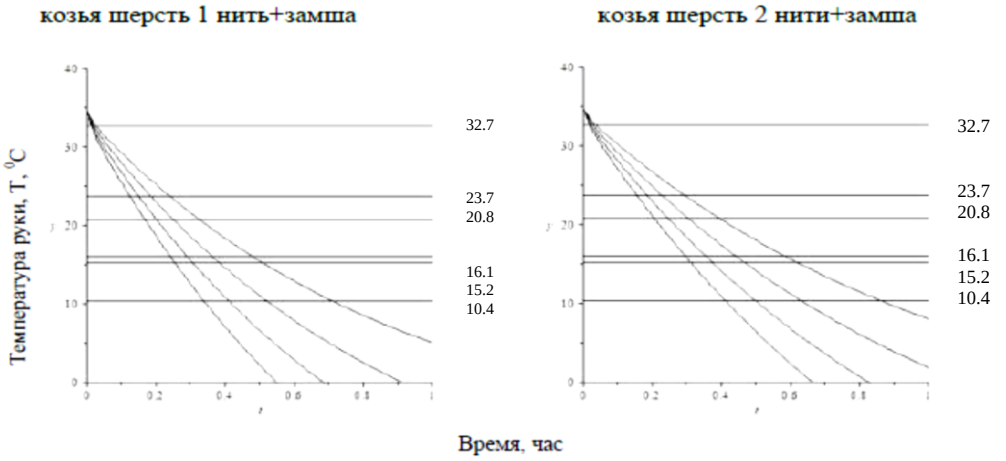
b) Change in the temperature of the skin of the hand when using yarn from sheep wool for gloves from 1 thread and 2 threads



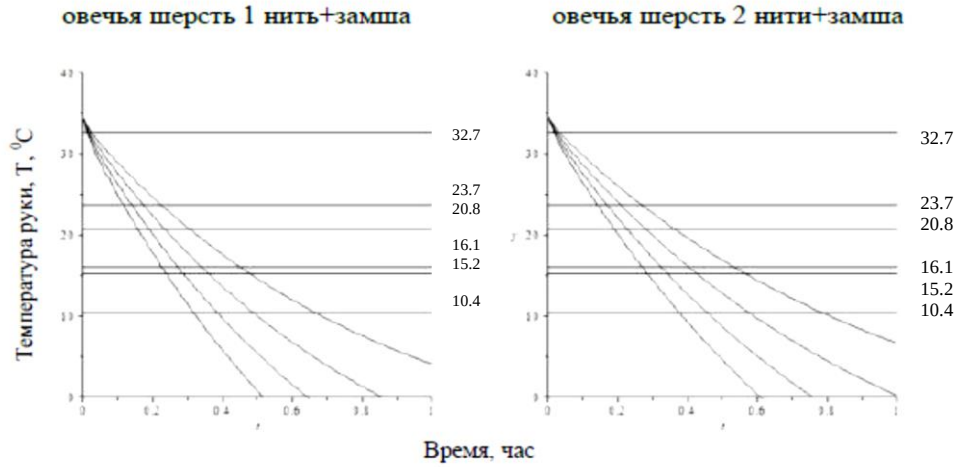
c) Change in the temperature of the skin of the hand when using camel wool yarn from 1 thread and 2 threads for gloves



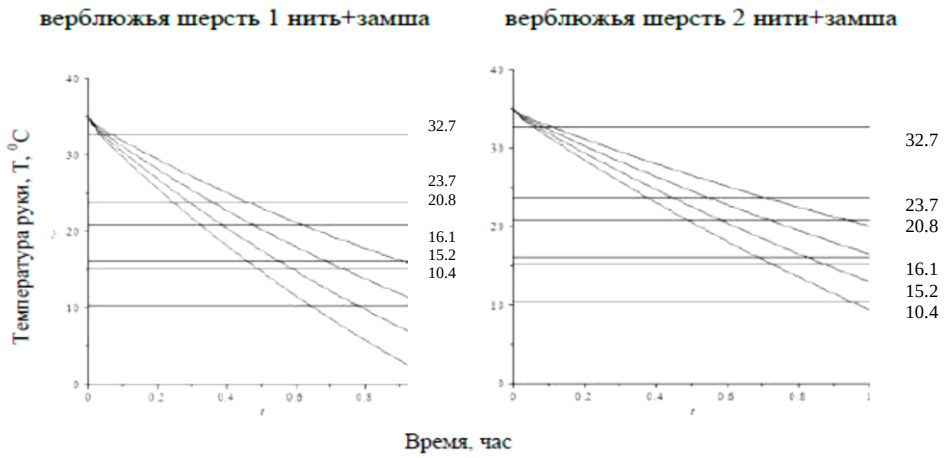
d) Change in the temperature of the skin of the hand when using yarn from dog wool for gloves from 1 thread and 2 threads



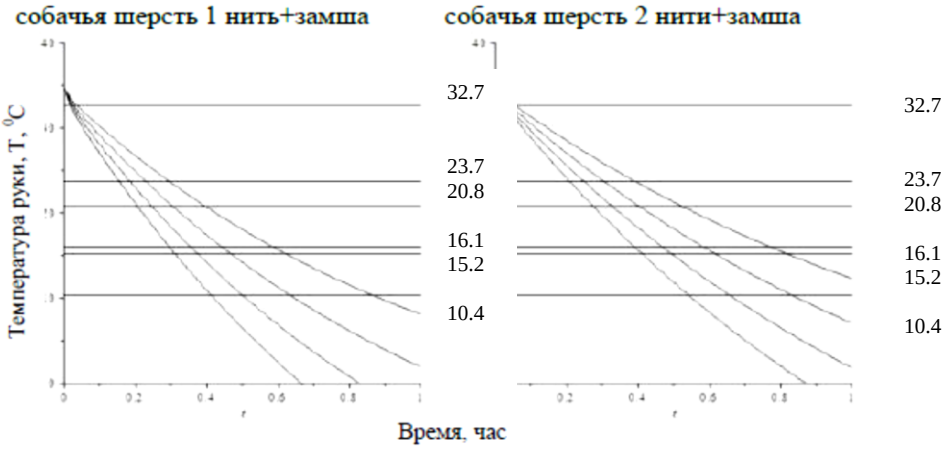
e) Change in the temperature of the skin of the hand when using goat wool yarn for gloves from 1 thread + suede and 2 threads + suede



f) Change in the temperature of the skin of the hand when using yarn from sheep wool for gloves from 1 thread + suede and 2 threads + suede



g) Change in the temperature of the skin of the hand when using camel wool yarn for gloves from 1 thread + suede and 2 threads + suede



h) Change in the temperature of the skin of the hand when using yarn from dog wool for gloves from 1 thread + suede and 2 threads + suede

Figure 4. - Characteristics of the state of comfort of the hand (skin) of a civil servant when he is in different climatic conditions: curve 1 - at -10°C, curve 2 - at -20°C, curve 3 - at -30°C, curve 4 – at -40°C

Therefore, the results obtained substantiated the high efficiency of using software for the reasonable selection of material packs for gloves and other sets of suits for Arctic military personnel and confirmed the need to continue research on the choice of such materials that would provide them with a comfortable state in a given temperature regime for at least one hour.

For the packages and materials shown in Table 3, curves were constructed that characterize the state of comfort of the soldier's hand for the following ambient temperatures, namely, curve 1 - at -10°C, curve 2 - at -20°C, curve 3 - at -30°C, curve 4 – at -40°C (Figure 4).

The software developed by the authors allows the manufacturer to have a tool for an informed decision on the choice of packages of materials for the suit of civil servants in the Arctic, including the production of gloves to protect the hand from exposure to low temperatures in the performance of their statutory duties.

Confirmation of these conclusions is the analysis of the properties of the most effective in terms of comfortable conditions for the skin of the hand, carried out by the authors, providing a constant temperature within 32.5°C.

Unfortunately, gloves made from wool of various animals, made from both one and two threads, do not guarantee civil servants such a comfortable state even at a temperature of -10 ° C, not to mention that the air temperature can be even lower. In this case, the surface of the skin of the hand is cooled below the critical value, i.e. below 10.4°C and can lead to frostbite and irreversible processes.

The use of mitts to protect the hand also does not guarantee the population protection from exposure to low temperatures, suggesting the search for such materials and the formation of bags for making gloves from them that would provide them with comfortable conditions, which is possible when using nanomaterials capable of allowing the population of the regions of the Russian Federation to fulfill their statutory duties within the required time period.

If for footwear and clothing the software developed by the authors allows us to formulate requirements for a package of materials and provide a comfortable state for the population to perform their official duties, then for the face, hand, for the big toe, it guarantees comfortable conditions without additional research on the choice of packages of materials. fails.

Characteristics of glove materials that would be justified are shown in Table 4.

An analysis of foreign experience has shown that the so-called mitts are used in conjunction with gloves.

There are different types of mitts: ordinary fingerless mitts; mittens with a fastened mitten; "pipes" without compartments for fingers and palms.

Features of the choice of materials for gloves by civil servants of the Arctic are provoked by the climatic conditions of this zone in order to guarantee him comfortable conditions during the entire time of use or his official duties. At the same time, special attention was paid to ensuring the comfort of not only the hand of a civil servant, but especially the index finger of the right hand, if he is right-handed, and the left hand, of course, if he is left-handed. This need is dictated by the specifics of the performance of their duties by civil servants, namely, to carry out shooting, which provokes a more intense cooling of the index finger.

The use of mitts provides the civil servant with additional protection for the hand and, most

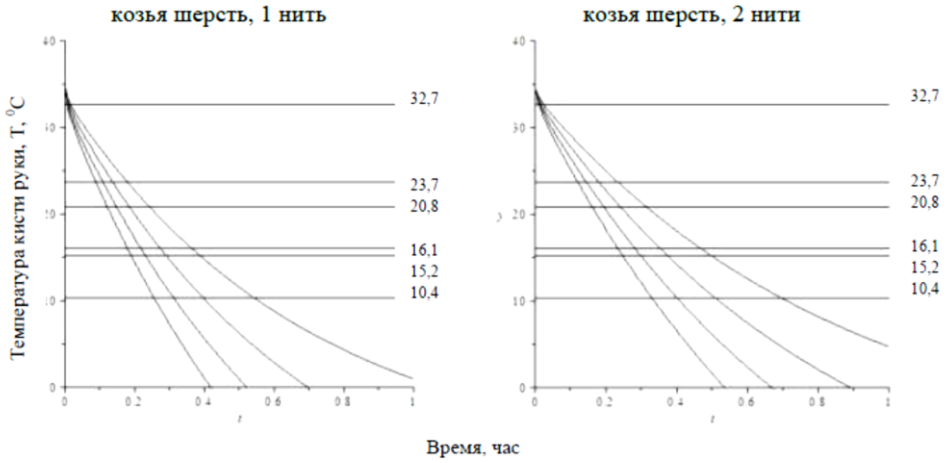
importantly, the index finger, while the main protection is provided by the glove, and here the authors test not only different wool, but also yarn, forming it from one or double thread.

Possibilities of using nanomaterials that are able to carry out thermal regulation and provide the skin of the hand with a comfortable temperature, namely not lower than 32 ° C. Such studies are possible using the same software that the authors developed and used for materials, the characteristics of which are given in Table 4.

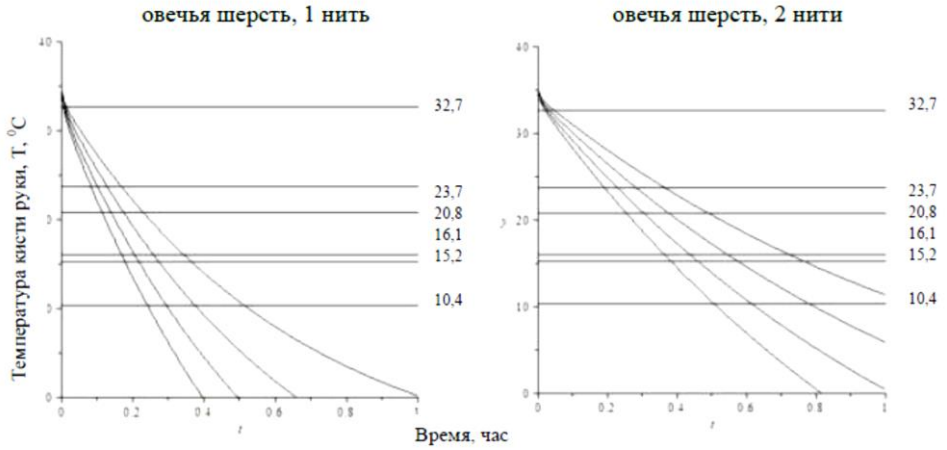
Table 4. Characteristics of materials in the manufacture of gloves for the population of the regions of the Russian Federation

Materials used to make gloves	Thickness mm	Coefficient of thermal conductivity, λ, W/ m° C
1 Yarn from one thread:		
1.1 Goat wool	0.7	0.015
1.2 Sheep wool	0.8	0.020
1.3 Camel	0.9	0.005
1.4 From dog hair	0.8	0.010
2. Two-strand yarn:		
2.1 Goat hair	1.4	0.015
2.2 Sheep wool	1.6	0.020
2.3 Camel	1.8	0.005
2.4 From dog hair	1.6	0.010
3. A package of materials for the index finger of the hand, suede + yarn from one thread		
3.1 when using goat hair	1.7	0.02/0.015
3.2 when using sheep's wool	1.8	0.02/0.020
3.3 when using camel hair	1.9	0.02/0.005
3.4 when using dog hair	1.8	0.02/0.010
4. A package of materials for the index finger of the hand, suede + two-strand yarn		
4.1 when using goat hair	2.4	0.02/0.015
4.2 when using sheep's wool	2.6	0.02/0.020
4.3 when using camel wool	2.8	0.02/0.005
4.4 when using dog hair	2.6	0.02/0.010
5 Material for the fingertip of the index finger of the soldier's hand - "genuine suede leather" and for mitts	0.8	0.020

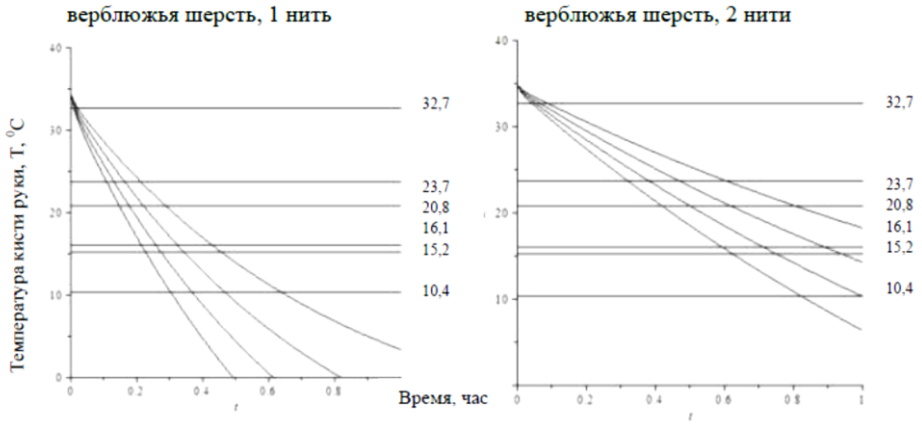
Using the software developed by the authors, graphs were constructed characterizing the condition of the skin of the hand of the population for four ambient temperatures, namely: - 100C, -200C, -300C, -400C from the time he was on duty, but not less than 1 hour. The figures indicate the temperature values of the skin of the hand, characterizing the various warm sensations of a soldier, namely comfort 32.7°C, slightly cool 23.7°C, cool 20.8°C, cold 16.1°C, very cold 15, 2°C, pain 10.4°C (frostbite). At -10°C, a comfortable state is provided only by a package of suede-dog hair (double thread), and for -20°C, -30°C, -40°C none of the studied materials and their packages together with natural fur "winter" do not guarantee comfortable conditions for military personnel.



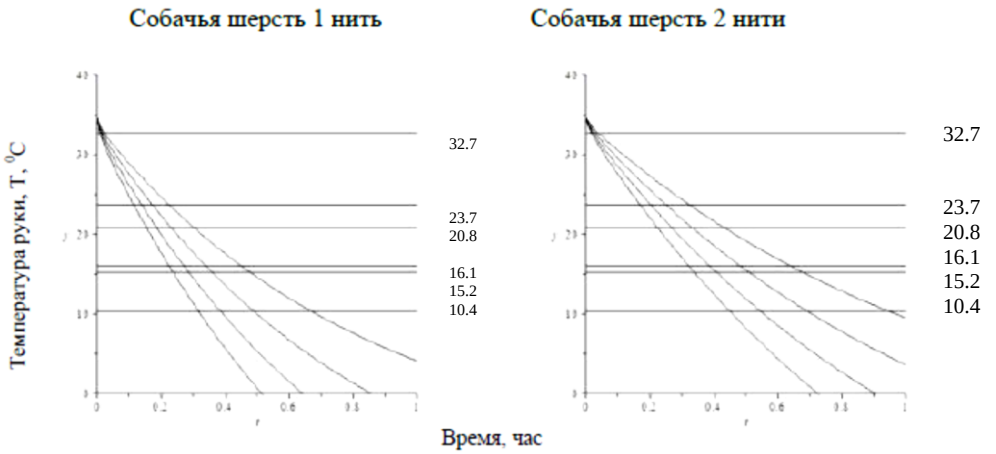
a) Change in the temperature of the skin of the hand when using goat wool yarn from 1 thread and 2 threads for gloves



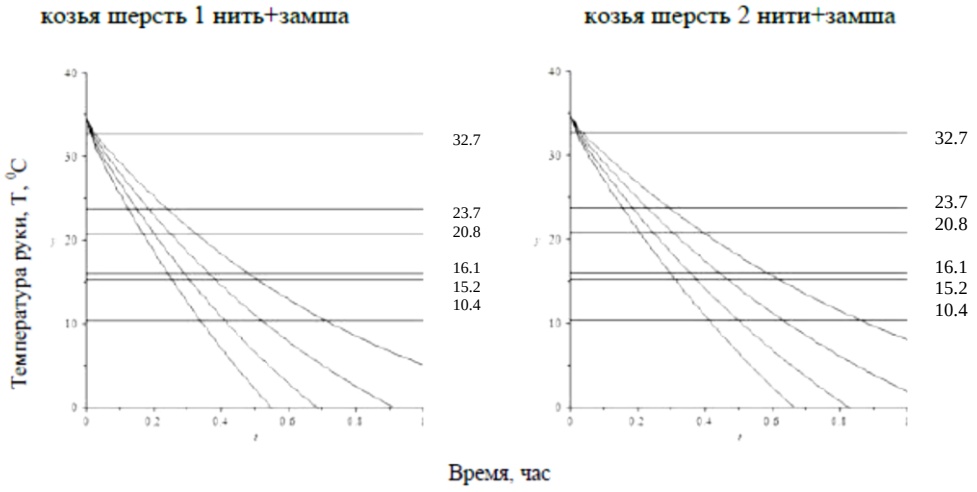
b) Change in the temperature of the skin of the hand when using yarn from sheep wool for gloves from 1 thread and 2 threads



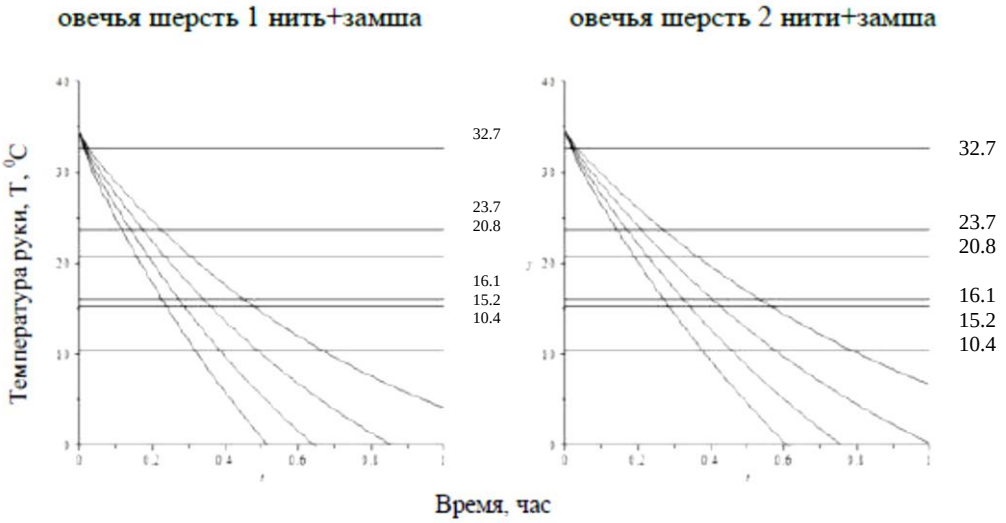
c) Change in the temperature of the skin of the hand when using camel wool yarn from 1 thread and 2 threads for gloves



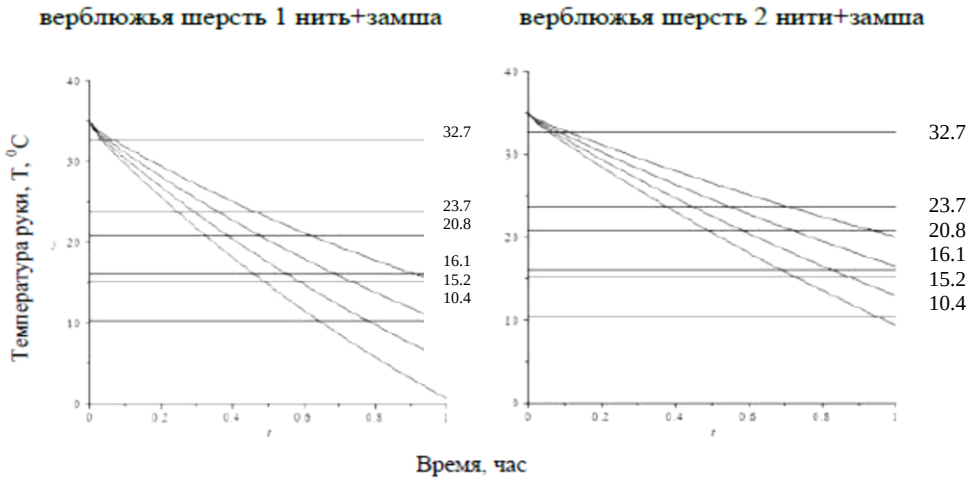
d) Change in the temperature of the skin of the hand when using yarn from dog wool for gloves from 1 thread and 2 threads



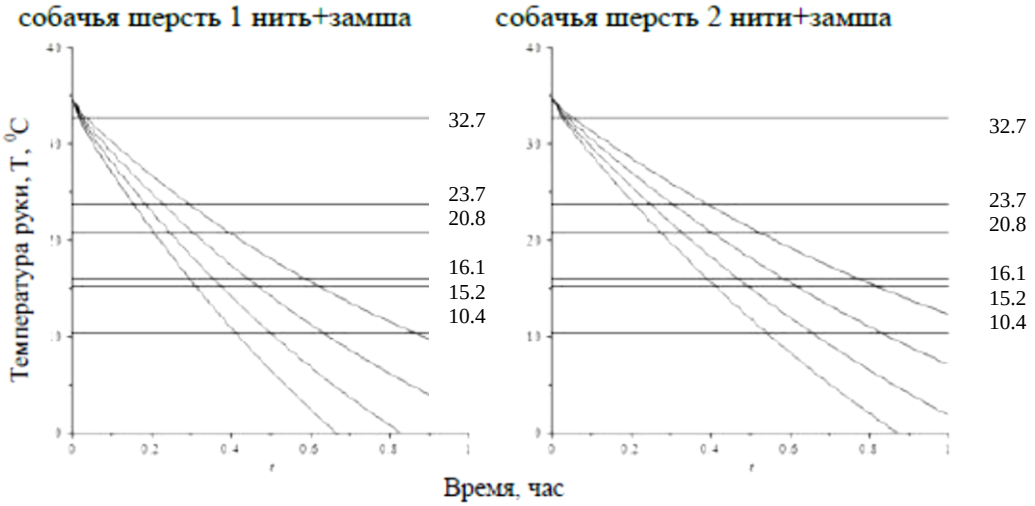
e) Change in the temperature of the skin of the hand when using goat wool yarn for gloves from 1 thread + suede and 2 threads + suede



f) Change in the temperature of the skin of the hand when using yarn from sheep wool for gloves from 1 thread + suede and 2 threads + suede



g) Change in the temperature of the skin of the hand when using camel wool yarn for gloves from 1 thread + suede and 2 threads + suede



h) Change in the temperature of the skin of the hand when using yarn from dog wool for gloves from 1 thread + suede and 2 threads + suede

Figure 5 - Characteristics of the comfort state of the hand (skin) of the participant of the experiment when he is in different climatic conditions: curve 1 - at -10°C, curve 2 - at -20°C, curve 3 - at -30°C, curve 4 – at -40°C

Therefore, the results obtained substantiated the high efficiency of using the software for the reasonable selection of packages of materials for gloves and other sets of costumes for the population of the regions of the Russian Federation and confirmed the need to continue research on the choice of such materials that would provide them with a comfortable state in a given temperature regime for at least one hour.

For the packages and materials shown in Table 6, curves were constructed that characterize the state of comfort of the soldier's hand for the following ambient temperatures, namely, curve 1 - at -10°C, curve 2 - at -20°C, curve 3 - at -30°C, curve 4 – at -40°C (Figure 7).

The software developed by the authors allows the manufacturer to have a tool for an informed decision on the choice of packages of materials for a suit for the population of the regions of the Russian Federation, including the production of gloves to protect the hand from exposure to low temperatures in the performance of their duties.

Confirmation of these conclusions is the analysis of the properties of the most effective materials carried out by the authors in terms of comfortable conditions for the skin of the hand, providing a constant temperature within 32.5°C.

Unfortunately, gloves made from wool of various animals, made from both one and two threads, do not guarantee the population of the regions of the Russian Federation to provide such a comfortable

state even at a temperature of -10 ° C, not to mention that the air temperature can be even lower. In this case, the surface of the skin of the hand is cooled below the critical value, i.e. below 10.4°C and can lead to frostbite and irreversible negative processes.

The use of mitts to protect the hand also does not guarantee the population of the regions of the Russian Federation their protection from the effects of low temperatures, suggesting the search for such materials and the formation of bags from them for the manufacture of gloves that would provide them with comfortable conditions, which is possible with the use of nanomaterials capable of limits, allowing the population to fulfill their statutory duties within the required time period. Cold is one of the harmful environmental factors affecting a person. Reactions to exposure to cold can be both functional and pathological in nature: illness, injury, death.

At low temperatures, a person can experience cold stress. The cause of cold stress can be the cooling of the body as a whole or part of it, most often the face and respiratory organs, hands, feet. At the same time, different types of cold stress are formed due to a combination of climatic factors, physical activity, clothing, etc. The main types of cold stress are:

- cooling of the whole body;
- cooling of the extremities;
- skin cooling (convective);
- skin cooling (conductive);
- respiratory cooling.

Combinations of climatic factors are as follows:

- air temperature, average radiation temperature, air mobility, physical activity, relative humidity of air, clothing;
- air temperature, air mobility;
- clothing surface temperature;
- air temperature, physical activity.

The effect of cold stress on a person is due to the intensity of cold stress (tissue cooling).

The result of extreme intensity of cold stress is hypothermia.

The results of the intensity of cold stress I degree will be:

- local cold injury - frostbite, numbness;
- cold damage without freezing;
- pain;
- functional damage;
- acute cardiorespiratory effect;
- deterioration in performance;
- discomfort;
- heat balance.

Discomfort can cause a decrease in activity, especially in relation to solving problems associated with neuro-emotional stress, with the need to concentrate, and also increase the risk of occupational accidents and injuries. Moreover, tissue cooling can lead to reduced physical activity, which increases the risk of accidents.

Cooling of a person, both general and local (especially of the hands), contributes to a change in his motor activity, disrupts coordination and the ability to perform precise operations, causes the development of inhibitory processes in the cerebral cortex, which can cause injuries. With local cooling of the hands, the accuracy of the combat mission is reduced; activity decreases by 1.5% for each degree of decrease in temperature of the fingers.

A drop in body temperature, muscle and skin temperature leads to a decrease in the ability to perform physical work due to a decrease in the level of metabolism.

These changes reduce coordination and can lead to an increase in accidents, especially when performing a combat mission in the cold. The sensitivity of the receptors also changes with a decrease in skin temperature. So, at a skin temperature of 20 ° C, it is 1/7 of normal.

The above means that a set of heat-protective clothing intended for work in an open area, in particular, in climatic regions IA and I B (“special” and IV climatic zones), must include face and respiratory protection.

Hands and feet play an important role in thermoregulation, being specific heat exchangers of the body with the environment. The state of thermal comfort is provided at a temperature of the skin of the feet 29-31°C and a heat flux of 52-87 W/m2. The thermal resistance of tissues remains within the limits of up to 0.3 clo.

Studies by a number of authors have shown that with an increase in the thermal insulation of footwear, the weighted average temperature of human skin increases (from 32.0 ± 0.30 to 33.5 ± 0.32 ° C) and the weighted average heat flux decreases (from 90.3 ± 4.0 to 57.0±0.32 W/m2 (≈ 40%)). The reduction in total heat loss as a result of increasing the thermal insulation of shoes can be 17.1°C.

Heat loss by convection and radiation from the surface of various areas human body when it is cooled:

a) Head 19.0 W (12%);
b) Arms 44.4W (31%);
c) Torso 36.0 W (25%);
d) Legs 49.0 W (32%);
e) Whole person 148.4 W (100%).

The amount of thermal insulation of shoes can have a significant impact on the overall heat loss of a person and body surface temperature. This means that when developing thermal protective clothing, the requirements for thermal insulation of all areas of the body should be met.With an increase in the thickness of the package of materials of insulating clothing, practically only the temperature of the skin of those areas of the body that are protected (torso, shoulder, thigh) increases. Othere is only a slight increase in skin temperature in the area of the hands. The change in temperature depending on the degree of warming of the surface of the body is practically not

observed.There is a certain relationship between the general thermal state of the body and the degree of cooling of a particular area of the body, in particular, the feet and hands. At the same time, the thermal insulation of the latter has a significant impact on the overall heat transfer of a person. The creation of heat-protective clothing for operation in the regions of the Russian Federation should be based on a scientific principle that takes into account the physiology of heat exchange between a person and the environment. Requirements for materials and constructionthermal clothing for the regions of the Russian Federation:

- the heat-shielding ability of clothing to protect against cooling is determined by the thermophysical parameters of the package of materials from which it is made, design, type (jacket, jacket and trousers, overalls, etc.);
- The heat-protective clothing material package is formed from the base material, the insulating pad and the lining. If necessary, to reduce the air permeability of the package of clothing materials, a windproof pad can be used, which should be placed between the base material and the insulation pad;
- the main material (integumentary, outer layer) determines the appearance of clothing and performs protective functions. It must have protective properties corresponding to the conditions of activity, be resistant to mechanical stress, precipitation, exposure to light, various types of pollutants, and be easy to clean from pollution. It must be able to conduct moisture from under the clothing to the environment and have breathability adequate to the wind speed.

The paper considers the process of cooling the surface tissues of the human knee and elbow when exposed to low temperatures (Table 6).

Table 5. Characteristics of the package of materials for the protection of the elbow and knee joints

Model	Package materials	Thickness, mm	Coefficient of thermal conductivity λ, W/m ºC
1	2	3	4
Model 1	cotton linen	0.9	0.044
	Wool sweater or pants	2.4	0.027
	Nylon lining	1.6	0.042
	Thinsulate insulation (1 layer)	6.0	0.044
	Arctic-tech - outer layer (85% PE + 15% cotton)	1.8	0.041
	Arctic-tech (knee or elbow pad)	1.8	0.041
Model 2	thermal underwear	1.76	0.039
	Wool sweater or pants	2.4	0.027
	Nylon lining	1.6	0.042
	Thinsulate insulation (21 layers)	12	0.036
	Arctic-tech - outer layer	1.8	0.041
	Foam rubber damper	2.2	0.027
	Arctic-tech (patch pocket)	1.8	0.041

For the description, a mathematical model is built in the form of a boundary value problem:

$$\frac{\partial T_i}{\partial t} = a_i\left(\frac{\partial^2 T_i}{\partial r_i^2} + \frac{2}{r_i}\frac{\partial T_i}{\partial r_i}\right) + \frac{q_{iv}}{c_i\rho_i},\ i = 1,2,\dots n, \quad (21)$$

$$T_1(0,t) \neq \infty;$$

$$\lambda_n \frac{\partial T_n}{\partial r_n}(R_n,t) + \alpha(T_n(R_n,t) - T_c) = 0; \quad (22)$$

$$T_{i-1}(R_{i-1},t) = T_i(R_{i-1},t); \quad (23)$$

$$\lambda_{i-1}\frac{\partial T_{i-1}}{\partial r_{i-1}}(R_{i-1},t) = \lambda_i \frac{\partial T_i}{\partial r_i}(R_{i-1},t),$$

$$i = 2,\dots n.$$

Initial conditions , where $T_i(r_i,0) = f_i(r_i)t -$ time; − temperature of the i-th layer;$T_i\, i = 1,\dots n;$ − ambient temperature; is the heat capacity coefficient of the i-th layer; − coefficient of thermal diffusivity of the i-th layer; is the density of the i-th layer; − coefficient of thermal conductivity of the i-th layer; volume density of the heat flux of the i-th layer; heat transfer coefficient from the surface of the skin or protective layer (hair, hat); $T_C c_i a_i \rho_i \lambda_i\, q_{iv} - \alpha - f_i(r_i) -$ initial temperature of the i-th layer.

The solution of the problem is in the following form

$$T_i(r_i,t) = \sum_{k=1}^{\infty} D_k(t) X_{k,i}(r_i), \qquad (24)$$

where

$$X_{k,i}(r_i) = \frac{1}{r_i}\left(A_i \sin\left(\frac{\mu_k r_i}{\sqrt{a_i}}\right) + B_i \cos\left(\frac{\mu_k r_i}{\sqrt{a_i}}\right)\right) -$$

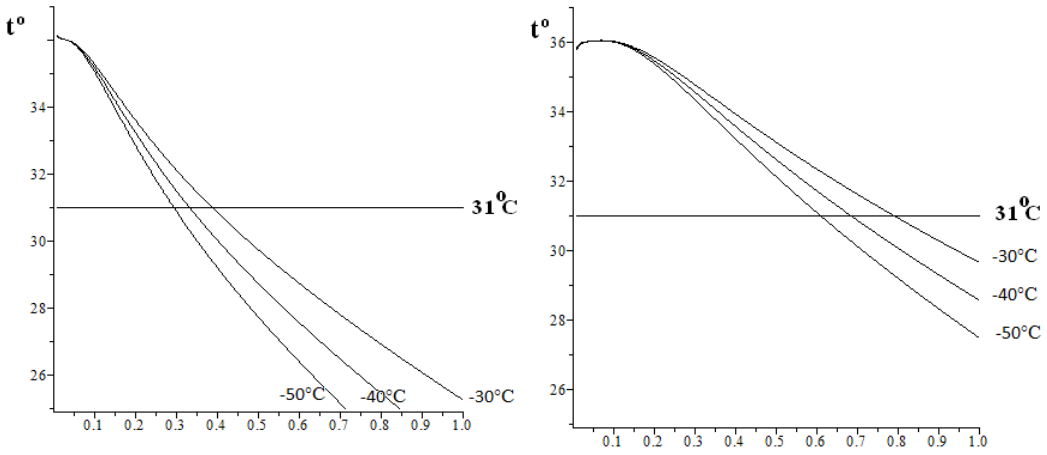
eigenfunctions of the corresponding boundary value problem:

$$\frac{\partial^2 X_i}{\partial r_i^2} + \frac{2}{r_i}\frac{\partial X_i}{\partial r_i} + \frac{\mu^2}{a_i} X_i = 0, \qquad (25)$$

$$X_1(0,t) \neq \infty; \lambda_n \frac{\partial X_n}{\partial r_n}(R_n) + \alpha X_n(R_n) = 0; (26)$$

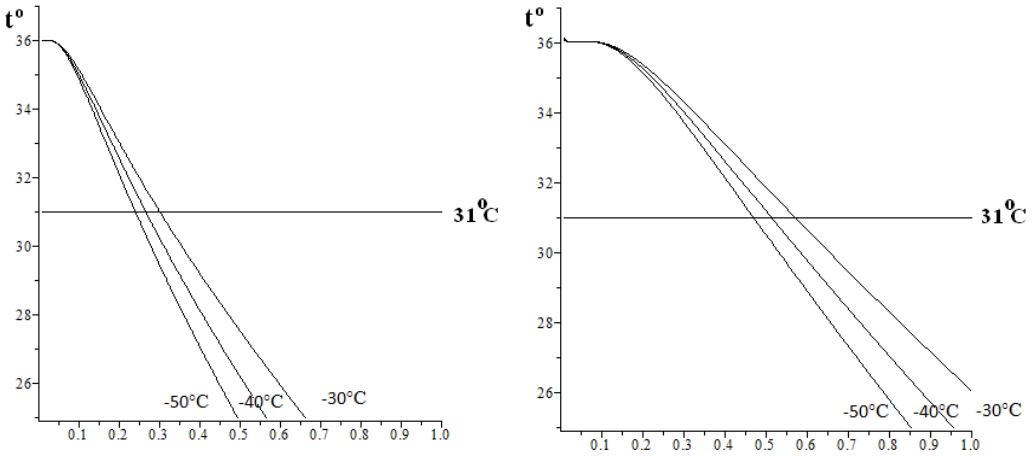
$$X_{i-1}(R_{i-1}) = X_i(R_{i-1}); \qquad (27)$$

$$\lambda_{i-1}\frac{\partial X_{i-1}}{\partial r_{i-1}}(R_{i-1}) = \lambda_i \frac{\partial X_i}{\partial r_i}(R_{i-1}).$$



a) b)

Figure 6 - knee:
a) model 1; b) model 2



a) b)

Figure 7 - Elbow:
a) model 1; b) model 2

The article presents the results of research on the reasonable choice of material packages for knee and elbow pads in order to ensure comfort for civil servants in the Arctic during the entire time they are in climatic zones with low temperatures. Approbation of the software product confirmed its high efficiency. Currently, despite the introduction of numerous sanctions on the Russian economy (sanctions were introduced after February 24), domestic companies continue to produce various types of modern high-quality clothing and create new fashion clothing brands. This is evidenced by the results of the Fashion Week held in Moscow (June 20-26), where domestic designers presented numerous collections of clothes in various styles. Experts noted that in order to fill the vacant places after the mass withdrawal of foreign

brands, the number of Russian designers is sufficient, while the question of quality remains. It was also noted that during the period of numerous sanctions, the holding of Fashion Week in Moscow is a professional support for micro and small businesses. For the production of clothing, various materials are used: fabrics, knitwear, leather, fur and others. The most demanded material are various types of fabrics.

Of interest is the current state of the production of clothing from textile materials in the context of sanctions. According to the operating conditions, clothing is divided into outerwear and light clothing.

Data characterizing the volume of production of outerwear made of textile materials in physical terms in the 1st half of 2022, compared with the 1st half of 2021, are shown in Table 6.

Table 6

Products, county	1st half		
	2022	2021	2022 in % to 2021
Coats, short coats made of textile materials, except for knitted or crocheted, thousand pieces	523.2	494.9	105.7
Coats and short coats for men or for boys, thousand pieces	57.3	58.3	98.3
Coats, short coats for women or for girls, thousand	465.9	436.6	106.7
Jackets made of textile materials, except knitted or crocheted, thousand pieces	1456.1	1410.7	103.2
Jackets for men or boys, thousand pieces	929.1	863.4	107.6
Jackets for women or girls, thousand pieces	527	547.3	96.3
Raincoats, raincoats with hoods made of textile materials, except for knitted or crocheted, thousand pieces	143.5	150.1	95.6
Raincoats, raincoats with hoods men's or boys', thousand pieces	93.1	103.1	90.3
Raincoats, raincoats with hoods women's or girls, thousand pieces	50.4	47	107.2
Suits and sets made of textile materials, except for knitted or crocheted, thousand pieces	2242.6	1970.5	113.8
Suits and sets for men or for boys, thousand pieces	1641.5	1543.6	106.3
Suits and sets for women or for girls, thousand pieces	601.1	426.9	140.8
Men's or boys' jackets and blazers, of textile materials, except knitted or crocheted, thous.	353.9	325.1	108.8
Women's or girls' jackets and blazers, of textile materials, except knitted or crocheted, thous.	521.6	385.5	135.3
Overalls with bibs and straps made of textile materials, except knitted or crocheted, thousand pieces	343	493.7	69.5
Overalls with bibs and straps men's or boys', thousand pieces	183.4	268.3	68.4
Overalls with bibs and straps women's or girls, thousand pieces	159.6	225.4	70.8
Anoraks, windbreakers, windbreakers and similar articles of textile materials, except knitted or crocheted, thous.	876.6	705.3	124.3
Anoraks, windbreakers, windbreakers and similar articles for men or boys, thous.	644.8	508.5	126.8
Anoraks, windbreakers, windbreakers and similar articles for women or girls, thousand	231.8	196.8	117.8

In the 1st half of 2022, the output of outerwear made of textile materials amounted to 6460.5 thousand pieces, that is, it increased by 8.8% (by 524.7 thousand pieces), compared to the same period in 2021 (5935 .8 thousand pieces). Domestic companies and firms produce a wide range of outerwear from textile materials. The distribution of outerwear made of textile materials by main types, produced in the 1st half of 2022, is shown in Figure 8.

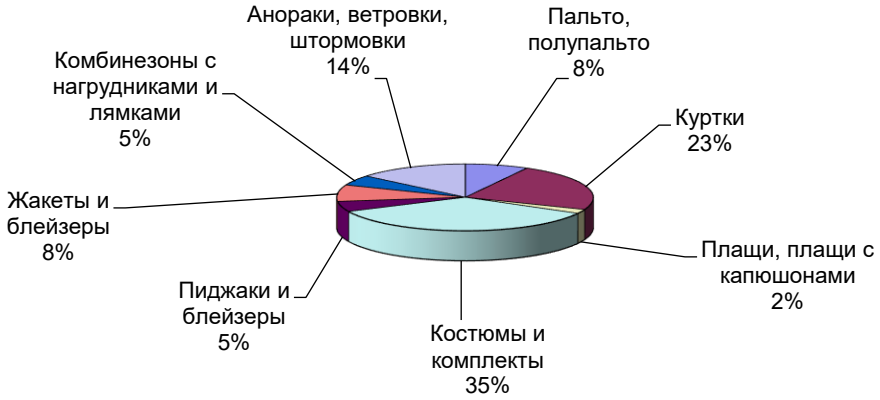


Figure 8. Distribution of outerwear made of textile materials by main types in the 1st half of 2022

From the data presented in Figure 8, it follows that in the structure of outerwear made of textile materials produced in the 1st half of 2022, more than half - about 58% - are suits and sets, jackets. The largest share - about 35% (34.7%) falls on suits and sets made of textile materials. 2242.6 thousand pieces of such clothes were produced, which is 13.8% (272.1 thousand pieces) more compared to the same period in 2021 (1970.5 thousand pieces). The main share - 73.2% - is made up of suits and sets for men or boys, of which 1641.5 thousand pieces were produced in the 1st half of 2022, or 6.3% (97.9 thousand pieces) more than in the same period of 2021 (1543.6 thousand units). The share of costumes and sets for women or girls - 26.8%, while their output increased significantly - by 40.8% (174.2 thousand pieces), compared to the previous period, and amounted to 601.1 thousand pieces. More than half of the production of suits and sets made of textile materials, about 51% (1142.8 thousand pieces) was produced in the Central Federal District. The next position with a share of about 23% (22.5%) is occupied by jackets made of textile materials. In the period under review, 1456.1 thousand units were produced. jackets, or 3.6% (45.4 thousand pieces) more compared to the same period in 2021 (1410.7 thousand pieces). The largest share - 63.8% - is made up of jackets for men or boys, the output of which in the 1st half of 2022 amounted to 929.1 thousand pieces, which is 7.6% (65.7 thousand pieces) more than their output in the same period of the previous year. The share of jackets for women or girls is 36.2%, their output decreased by 3.7% (20.3 thousand pieces) and amounted to 527 thousand pieces. More than two thirds of the output of jackets made of textile materials, 70.4% (1024.4 thousand pieces), produced in two federal districts: Central and Volga. At the same time, the largest output of jackets, 46.7% (679.7 thousand pieces) was produced in the Central District. Privolzhsky District produced 23.7% (344.7 thousand pieces) of jackets. The share of coats, short coats made of textile materials is 8%, 523.3 thousand pieces were produced. such clothes, which is 5.7% (28.3 thousand pieces) more than in the 1st half of 2021 (494.9 thousand pieces). The main share, 89%, is coats, short coats for women or girls, the production of which increased by 6.7% (29.3 thousand pieces), up to 465.9 thousand pieces. Coats, short coats for men or boys were produced - 11%, their output decreased by 1.7% (1.0 thousand pieces) and amounted to 57.3 thousand pieces. The share of raincoats, raincoats with hoods made of textile materials is small - 2.2%, 143.5 thousand pieces were produced, which is 4.4% (6.6 thousand pieces) less, compared to the same period in 2021 (150.1 thousand units). The largest share - 64.9% - is raincoats, raincoats with hoods for men or boys, the output of which decreased by 9.7% (10 thousand pieces) and amounted to 93.1 thousand pieces. The share of raincoats, raincoats with hoods for women or girls accounted for 35.1%, their output, on the contrary, increased by 7.2% (3.4 thousand pieces), up to 50.4 thousand pieces. Jackets and blazers for men or boys account for 5% of the production of outerwear made of textile materials. In the 1st half of 2022, 353.9 thousand units were produced. such clothes, which is 8.8% (28.8 thousand pieces) more than their output in the 1st half of 2021 (325.1 thousand pieces). The share of jackets and blazers for women or girls made of textile materials is 8%, their output increased significantly, by 35.3% (136.1 thousand pieces) and amounted to 521.6 thousand pieces. The share of overalls with bibs and straps made of textile materials accounts for 5% (5.3%), there is a significant decrease in their production, by 30.5% (150.7 thousand pieces),

to 343 thousand pieces. Of these, overalls with bibs and straps for men or boys account for 53.5%, 183.4 thousand pieces were produced. such overalls, which is also significantly less by 31.6% (84.9 thousand pieces) than in the previous period. The share of overalls with bibs and straps for women or girls is 46.5%, 159.6 thousand pieces were produced, there is a decrease in their production by 29.2% (65.8 thousand pieces). Anoraks, windbreakers, windbreakers and similar items made of textile materials are popular in cool weather. In the 1st half of 2022, 876.6 thousand units were produced. such clothing, which is about 14% (13.6%) of the output of outerwear made of textile materials. The output of the types of clothing under consideration significantly, by 24.3% (171.3 thousand pieces) exceeds their output in the same period in 2021 (705.3 thousand pieces). The share of anoraks, windbreakers, windbreakers and similar items for men or boys is 73.5%, 644.8 thousand pieces were produced. such clothes, significantly more, by 26.8% (136.3 thousand pieces) than in the previous period. The share of anoraks, windbreakers, windbreakers and similar items for women or girls is 26.4%, 231.8 thousand pieces were produced. of this clothing, which is 17.8% (35 thousand pieces) more than their output of the previous period. The main volume of production of anoraks, windbreakers, windbreakers and similar products made of textile materials - 85% (745 thousand pieces) was produced in two federal districts: Central and Southern. The largest output of these types of clothing, 50.5% (442.5 thousand pieces) was produced in the Southern District. In the Central District, 34.5% (302.5 thousand pieces) of such clothes were produced. Thus, despite numerous sanctions, the output of outerwear made of textile materials in the 1st half of 2022 increased by 8.8% (by 524.7 thousand pieces), compared to the same period in 2021, and amounted to 6460, 5 thousand pieces. An increase in output is observed for most types of outerwear made of textile materials: coats and short coats, jackets, suits and sets, jackets and blazers, jackets and blazers, anoraks, windbreakers, windbreakers and similar products. Reduced release: cloaks, cloaks with hoods and overalls with bibs and brace. The largest share in the production of outerwear made of textile materials, about 35% (2242.6 thousand pieces), falls on suits and sets. More than half of the production of suits and sets, about 51% (1142.8 thousand pieces), produced in the Central Federal District. Data characterizing the production volumes of light clothing made from textile materials in physical terms in the 1st half of 2022, compared with the 1st half of 2021, are shown in Table 7.

Table 7

Products, county	1st half		
	2022	2021	2022 in % to 2021
Trousers, breeches and shorts made of textile materials, except for knitted or crocheted, thousand pieces	6500.6	6578.4	98.8
Trousers for men or boys, thousand pieces	3057.5	2892	105.7
Breeches and shorts for men or for boys, thousand pieces	61.2	78.1	78.4
Trousers for women or girls, thousand pieces	3294.5	3537.6	93.1
Breeches and shorts for women or for girls, thousand	87.4	70.7	123.6
Shirts for men or boys, of textile materials, except for knitted or crocheted, thous.	952	823	115.7
Women's or girls' dresses of textile materials, except knitted or crocheted, thous.	2121.5	2358.6	89.9
Women's or girls' skirts and culottes, of textile materials, except knitted or crocheted, thous.	986	1021.3	96.5
Blouses, shirts and sweatshirts for women or girls, made of textile materials, except knitted or crocheted, thous.	1182.9	1454.5	81.3

In the 1st half of 2022, the output of light clothing made of textile materials amounted to 11,743 thousand pieces, i.e., it decreased by 4.0% (by 492.8 thousand pieces), compared to the same period in 2021 (12,235.8 thousand pieces). Domestic companies and firms produce a different range of light clothing from textile materials. The distribution of light clothing made from textile materials by main

types, produced in the 1st half of 2022, is shown in the figure – 55% (55.3%) are trousers, breeches and shorts. 6500.6 thousand pieces of such clothes were produced, or 1.2% (77.9 thousand pieces) less compared to the same period in 2021 (6578.5 thousand pieces). Of this group of clothes, the largest share is 50.

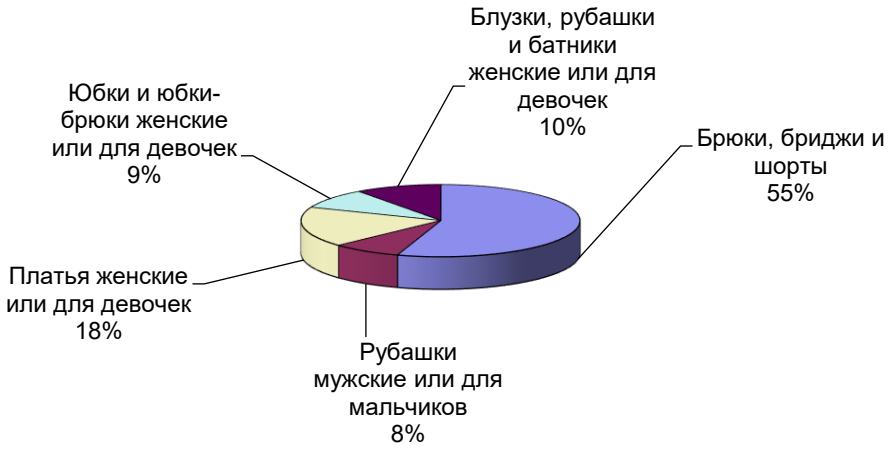
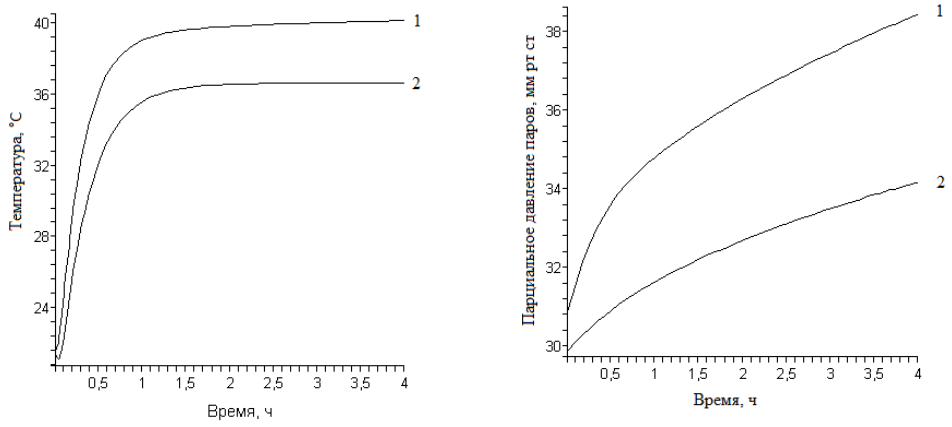


Figure 9. Distribution of light clothing made of textile materials by main types in the 1st half of 2022

For girls, of which 3294.5 thousand units were produced, which is 6.9% (243.1 thousand units) less than in the 1st half of 2021 (3537.6 thousand units). The next position in this group, with a share of 47%, is occupied by trousers for men or boys, the output of which is 3057.5 thousand pieces, which exceeds their output of the previous period by 5.7% (165.5 thousand pieces). . The share of breeches and shorts for women or girls is small, 1.3% (87.4 thousand pieces), but their output increased significantly - by 23.6% (16.7 thousand pieces) and amounted to 87.4 thousand things. Also a small share, about 1%, of men's or boys' breeches and shorts, the production of which decreased significantly, by 21.6% (16.9 thousand pieces), to 61.2 thousand pieces. The main production of trousers, breeches and shorts made of textile materials, about 80%, was produced in two federal districts: the Southern and Central. The largest output of these types of clothing, 60%, or 3897.3 thousand pieces. Produced in the Southern Region. About 20% (1274 thousand pieces) of such clothes were produced in the Central District. The share of men's or boys' shirts made of textile materials accounts for 8% (8.1%). In the 1st half of 2022, 952 thousand units were produced. shirts, which is 15.7% (129 thousand pieces) more compared to the same period in 2021. A slightly larger share, 18%, is women's or girls' dresses, of which 2121.5 thousand pieces were produced, or 10.1% (237.1 thousand pieces) less than in the previous period. The main volume of production of dresses, about 83%, was produced in three federal districts: Central, Volga and Southern. 42% (890.3 thousand pieces) were produced in the Central District, about 23% (479.2 thousand pieces) in the Volga District, and about 18% (378.8 thousand pieces) of dresses in the Southern District. proportion of skirts, about 9% of women's or girls' skirts and trousers, 986 thousand pieces were produced, there is a decrease in the production of these types of clothing by 3.5% (35.3 thousand pieces). Blouses, shirts and sweatshirts for women or girls make up 10% of the output of light clothing made from textile materials. The production of such types of clothing decreased by 18.7% (271.6 thousand pieces) and amounted to 1182.9 thousand pieces. Thus, in contrast to the production of outerwear made from textile materials, which increased in the 1st half of 2022, the production of light clothing made from textile materials decreased by 4% (by 492.8 thousand pieces), compared to the same period in 2021., and amounted to 11743 thousand pieces. A decrease in output is observed for almost all groups of light clothing, with the exception of men's or boys' shirts, the production of which increased by 15.7%. In the production of light clothing made of textile materials, more than half, 55%, are trousers, breeches and shorts. In this clothing group, an increase in production is observed for men's or boys' trousers, women's or girls' breeches and shorts, and a decline in women's or girls' trousers, men's or boys' breeches and shorts. The largest volume of production of trousers, breeches and shorts made of textile materials, 60% (3897.3 thousand pieces), was produced in the Southern Federal District.The heat flux density of the foot is 10 W/m2, the mass flux density of the moisture released by the foot is 0.02 ((kg/(m² h)) on which curve 1 - for bottom packs used non-porous waterproof rubber as the sole, and curve 2 - for the bottom pack, when the material used as the sole was made by nanotechnology and has the ability to ventilate, i.e. to the exchange of air in the intra-shoe

space. Thus, the development of a software product for the formation of comfortable conditions for a person when he is in a climatic environment with an elevated temperature for the first time will allow for a reasonable choice of a package of materials for a suit in order to implement these same comfort conditions and significantly improve working conditions for a person in extreme conditions. If the software for substantiating the choice of packages of materials for clothing and footwear when creating comfortable conditions for a person in climatic zones with a low temperature is due to the control over the decrease in temperature inside the suit space to 21 C0 for the foot and to 31 C0 for the human body, which were are incorporated into the developed software with a reasonable choice of a package of materials taking into account thermal and physical characteristics, then when developing software for a reasonable choice of packages of materials for a person located in climatic zones with elevated temperatures, the problem was solved differently, namely, based on the need to control the prevention of an increase human body temperature.



a *b*

Picture 10. Feature inside shoe space:
***a*- temperature**
***b*- partial vapor pressure**

This is due to the fact that an increase of 0.3-0.5 C0 already creates discomfort for a person, and with an increase of more than 1 C0, this excludes him from being in these conditions. Therefore, packages of materials and a suit made of them must guarantee the fulfillment of these requirements for a person during the entire time he is in these conditions.

The software developed by the authors solves this problem and creates the prerequisites for a reasonable choice of a package of materials based on the obtained thermophysical characteristics on the stands and devices described in communication 2. Therefore, the availability of modern tools for determining the thermophysical characteristics and packages of materials and the developed software guarantee manufacturers reliability to make a suit that creates comfortable conditions during the entire time they are on duty. The entire list of works offered to the reader should not mislead him that there is no need for experimental wear. Of course not. Experienced wear in real conditions confirms the validity of the conclusions drawn or rejects them. But the availability of highly efficient methods for studying the thermophysical properties of materials and software for a reasonable choice of packages of materials significantly reduces the cost of developing and manufacturing workwear for working military personnel both for low temperature conditions and for low temperature conditions. But what is also very important, the formation of requirements for materials on the possibility of their use for the production of workwear is also in demand by the developers of the materials themselves, including the use of nanotechnology, and all this together will solve the problem of protecting military personnel from the effects of external negative conditions.

To select the optimal power, the authors have developed software that allows manufacturers, based on an innovative technological process using universal and multifunctional equipment, to produce the entire range of footwear at minimum, average and maximum costs, which creates the basis for varying the price niche, including through a gradual increase in the share of domestic components in the production of a suit for civil servants with a significant reduction in the cost of its manufacture. At the same time, it was justified to choose exactly those criteria that have the greatest impact on the cost of finished products as criteria for a reasonable

choice of the optimal power when forming the algorithm, namely:

- load factor of workers, %;
- labor productivity of one worker, a pair;
- wage losses per unit of output, rub.;
- specific reduced costs per 100 pairs of shoes, rub.

Of the four criteria given, in our opinion, the main ones are the labor productivity of 1 worker and the specific reduced costs.

Labor productivity of 1 worker is the most important labor indicator. All the main indicators of production efficiency and all labor indicators depend to one degree or another on the level and dynamics of labor productivity: production, number of employees, wages, wages, etc.

To increase labor productivity, the introduction of new equipment and technology, extensive mechanization of labor-intensive work, automation of production processes, advanced training of workers and employees, especially when introducing innovative technological processes based on universal and multifunctional equipment, are of paramount importance.

Specific reduced costs - an indicator of the comparative economic efficiency of capital investments, used when choosing the best of the options for solving technological problems.

Reduced costs - the sum of current costs, taken into account in the cost of production, and one-time capital investments, the comparability of which with current costs is achieved by multiplying them by the standard coefficient of efficiency of capital investments. Tables 9 and 10 show optimal power calculations for the range from 300 to 900 pairs for men's and women's shoes for the entire shoe range. An analysis of the obtained characteristics for three variants of a given technological process in the manufacture of the entire assortment of shoes confirmed the effectiveness of the software product for evaluating the proposed innovative technological process using universal and multifunctional equipment. So, with a range of 300 - 900 pairs, the best according to the specified criteria is the output of 889 pairs (for men) and 847 pairs (for women). If the production areas proposed by the regional and municipal authorities of two districts - the Southern Federal District and the North Caucasus Federal District, according to the standard indicators, do not allow the calculated production volumes to be realized, then in this case the option of the optimal capacity is selected that is acceptable, for example, the production volume of 556 pairs, which corresponds to the standard indicators for the proposed production areas and is characterized by the best values of the indicated criteria, which form the cost of the entire range of footwear. The authors have developed summary technological processes for assembling the blank of the shoe upper and for assembling shoes, respectively, for 12 models of men's and 12 models of women's shoes.

Table 8. Calculation of optimal power with a range of 300-900 pairs using men's shoes as an example

Power	Type of equipment	Optimal power, steam per shift	Labor productivity of 1 worker, steam	Worker load factor, %	Wage losses per unit of output, rub	Specific reduced costs per 100 pairs of shoes, rub.
300-500	one	500	28.09	61.39	13.68	6735.36
500-700	one	556	27.73	69.14	9.83	6404.71
700-900	one	889	28.09	77.20	6.42	5236.17
300-500	2	500	28.09	61.39	13.68	6728.68
500-700	2	556	27.91	68.70	9.97	6083.28
700-900	2	889	28.09	77.20	6.42	5240.72
300-500	3	500	28.09	61.39	13.68	7533.95
500-700	3	700	28.12	67.28	10.56	6734.02
700-900	3	889	28.09	77.20	6.42	5876.59

To assess the effectiveness of the production activities of a shoe enterprise, it is necessary to analyze the annual results of the enterprise for the production of men's and women's footwear assortment

Table 9. Calculation of optimal power with a range of 300-900 pairs using women's shoes as an example

Power options	Type of equipment	Optimal power, steam per shift	Performance labor of 1 worker, couples	Worker load factor, %	Wage losses per unit of output, rub	Specific reduced costs per 100 pairs of shoes, rub.
300-500	1	500	27.73	62.18	13.40	6980.5
500-700	1	700	27.73	69.14	9.83	6277.43
700-900	1	847	27.73	74.50	7.54	5673.49
300-500	2	500	24.45	63.90	14.11	7630.92
500-700	2	556	27.73	69.14	9.83	6404.71
700-900	2	812	25.64	75.40	7.77	6060.55
300-500	3	500	27.00	61.74	14.02	7827.12
500-700	3	556	29.32	68.21	9.71	6607.65
700-900	3	847	27.00	74.70	7.66	6341.05

These calculations indicate that with 100% of the sale of men's and women's shoes in the specified period of time, not only the costs of production and sale of products are covered, but there is also a profit in the amount of 3697.4 thousand rubles. This indicates the effective operation of the enterprise, as well as the correct marketing and assortment policy. Product profitability is 14.9%.

Shoe enterprises should focus on both external (consumer enterprises, competition, market conditions, etc.) and internal factors, such as sales volume, profitability, covering basic costs, etc. However, it is impossible to take into account and foresee all situations that may arise. when selling light industry products, i.e. some costume models at a certain stage are no longer in demand.

Thus, the regions on whose territory the territories of advanced socio-economic development are organized, including light industry enterprises, become leaders in economic development, determine the competitiveness of the economy of these regions, and provide social protection to the population of these regions.

Conclusion

The purpose of developing the Strategy is to propose a set of strategic directions, measures and steps aimed at reversing the negative trends in the economy and social sphere of the regions of the Russian Federation and entering a sustainable trajectory of socio-economic development, which is based on a model of accelerated economic growth and strengthening the economic base of the Russian Federation for subsequent improvement of the quality of life and well-being of the inhabitants of these regions.

The mission (strategic goal) of the socio-economic development of the regions of the Russian Federation is the growth of the true well-being of the inhabitants of the regions of the Russian Federation, the creation of opportunities for their self-realization by outstripping the rate of creation of new high-tech and knowledge-intensive jobs compared to other regions of Russia, an increase in the level and quality of life, access to social and cultural benefits.

The concept of true well-being comes from the assumption that today the content of the concepts of "development" and "progress" has acquired a new meaning. Development is becoming human-oriented (humanistic) and environmentally-oriented, based on investments in human capital, innovative sectors of the economy, and the preservation of ecosystems. This means an increase in the subjective feeling of personal happiness, including not only the level of income, but also non-economic indicators, including the value of leisure, eco-system services, and the quality of work.

Genuine well-being is assessed by an expanded set of indicators that characterize the quality of human life from all sides (opportunities for self-realization, wealth inequality and other indicators of inclusive economic growth, subjective happiness, quality of the urban environment, environmental indicators, healthy life expectancy, indicators of human development, development of democratic institutions and public participation, etc.). At the same time, not only economic (level of income, volume of production and investment), but also social, environmental, spatial and managerial (institutional) components are taken into account. Economic development not only does not contradict the conservation of nature (“industrialization at any cost”), but also leads to a reduction in social disproportions,

the goal for the period up to 2026 (first stage) is to ensure rapid economic growth and development of the social sphere of the regions of the Russian Federation at a rate higher than the national average based on strengthening the economic base, stimulating entrepreneurial initiative, sustainable spatial development and improving the efficiency of state and municipal government. At the first stage, due to outstripping growth rates, basic conditions will be created for entering the trajectory of sustainable development;

the goal for the period 2027 - 2030 (second

stage) is the formation of a new model for the development of the Russian Arctic, based on the principles of sustainable development, including through the implementation of the provisions of Decree of the President of the Russian Federation dated May 7, 2018 No. 204 "On national goals and strategic objectives for the development of the Russian Federation for the period up to 2030". At the second stage, due to investments in the human capital sectors, ecology, and industrial renewal, a new model of sustainable long-term development of the regions of the Russian Federation will be formed, which implies the harmonious development of the economic, social and environmental components;

the goal for the period 2031-2035 (stage three) is to increase the true well-being of people and their subjective sense of happiness through the scaling up of the sustainable development model, the transition to a fundamentally new quality of economic growth, in which social, economic and environmental development complement each other, the introduction of best practices environmentally-oriented and human-oriented development.

Thus, by 2035, the Strategy is designed to realize the existing human potential of the population of the regions of the Russian Federation, increase opportunities for self-realization, ensuring an increase in the level and quality of life, access to social and cultural benefits, creating an environment of equal opportunities for everyone. This will create conditions for the implementation of a catch-up development model (with growth rates higher than the average Russian ones) with access to a model of sustainable long-term development by 2027.

The implementation of the Strategy will make it possible to make a consistent transition from the old industrial model of extensive economic growth at the expense of natural resources to a sustainable development model that balances economic, environmental and social components. The new development model will be based on the concentration of added value in the region, the development of innovations and human potential, the implementation of a smart specialization policy for certain territories, the greening of industry, and the creation of a new quality of business and management institutions. The implementation of the Strategy will contribute to strengthening the status of the regions of the Russian Federation.

In the Strategy for the Spatial Development of Russia until 2035, the regions of the Russian Federation are considered as geostrategic, which are essential for ensuring the territorial integrity of the country and the security of the state. The regions of the Russian Federation are included in the list of geostrategic territories as regions bordering the countries of the European Union, with a level of economic development below the Russian average. Among the main directions of development of the regions of the Russian Federation, those that are focused on realizing the potential of the border geographical position of the Russian Federation as promising large economic centers stand out. In accordance with the Strategy for the Spatial Development of Russia, this Strategy defines measures to strengthen effective specialization through the development of the timber industry, mining, fishing and fish farming, engineering and tourism.

The regions of the Russian Federation in the long term are positioned as pilot regions of the Russian Federation for the implementation of the global sustainable development agenda for the period up to 2035 at the regional levels in Russia. This agenda was adopted on September 25, 2020 by the UN member states, including Russia.

Within the framework of the Strategy, by 2035 the regions of the Russian Federation are considered as special regions with territories with a unique specialization at the national and regional levels. At the same time, the regions themselves already perform or are potentially capable of performing several functions at once ("development through diversity") at the national level: an innovative industrial center, a scientific and educational center, a transport and logistics center, a digital economy center, a tourist center, a territory of cooperation and interactions, areas of sustainable development.

The Strategy identifies 7 equivalent and interrelated strategic areas focused on the formation of human potential, the creation of new incentives to live and work in the regions of the Russian Federation, and 50 main tasks for moving forward in each of them. At the same time, some of the activities can be implemented at the regional and municipal levels.

Within the framework of the strategic direction "Infrastructure for Life", the main directions of infrastructure development are set as a necessary condition for the development of the economy and the social sphere. The strategic direction "Development of the economy and entrepreneurship" defines measures to strengthen key competitive and promising sectors of the economy of the regions of the Russian Federation. Within the framework of the strategic direction "Development of tourism and the hospitality industry", the unique tourist and cultural opportunities of the regions of the Russian Federation are separately disclosed. The strategic direction "Sustainable Spatial Development" is aimed at realizing the unique spatial potential of the Russian Federation. The strategic direction "Improving environmental sustainability and security" sets the values of sustainable development, green economy in order to to pass on to future generations the opportunities we have today. The strategic direction "Human Capital and the Social Sphere" is aimed at the development of science and education, health care, and social support for people. The multiplication of human potential is the biggest

task, a necessary condition for retaining the population, solving problems in the field of industrial development of these regions. Finally, the strategic direction "Effective Governance: Tools for Implementation" sets the vector in the field of creating a modern development management system, introducing advanced practices of public participation, and new instruments of tax, budget and investment policy. social support for people. The multiplication of human potential is the biggest task, a necessary condition for retaining the population, solving problems in the field of industrial development of these regions. Finally, the strategic direction "Effective Governance: Tools for Implementation" sets the vector in the field of creating a modern development management system, introducing advanced practices of public participation, and new instruments of tax, budget and investment policy. social support for people. The multiplication of human potential is the biggest task, a necessary condition for retaining the population, solving problems in the field of industrial development of these regions. Finally, the strategic direction "Effective Governance: Tools for Implementation" sets the vector in the field of creating a modern development management system, introducing advanced practices of public participation, and new instruments of tax, budget and investment policy.

The system of 7 strategic directions is linked to 7 long-term strategic goals and is generally aimed at creating conditions for the integrated development of human potential and securing the population of the regions of the Russian Federation through providing basic needs in education, healthcare, infrastructure, a favorable environment, jobs, including highly qualified, concomitant development of services and institutions (Table 10).

Table 10. Priority areas and strategic goals of the Strategy

Strategic Direction	Strategic goal
Infrastructure for life	Improvement of transport, engineering, housing and communal infrastructure as a necessary condition for the development of the economy and the social sphere
Development of the economy and entrepreneurship	creating new jobs, increasing investment attractiveness, pursuing a cluster policy, developing traditional industries and services, creating conditions for the development of new industrial clusters
Development of tourism and hospitality industry	preservation of the cultural and historical heritage of the population of the regions of the Russian Federation, the creation of a modern hospitality industry in the regions of the Russian Federation
Sustainable spatial development	expanding international cooperation, pursuing a balanced spatial policy aimed at strengthening the economies of municipal and regional entities of the Russian Federation, creating a comfortable urban environment, introducing new technologies
Enhancing environmental sustainability and safety	implementation of the value system of sustainable development, green economy, ensuring the reproduction of a healthy population, as well as the growth of life expectancy and quality by solving environmental problems to pass on to future generations for subsequent multiplication of the opportunities that the regions have at the moment
social development	ensuring a high quality of life for the population by increasing the availability of high-quality social services, the implementation of spiritual and cultural development, interethnic harmony
Effective Governance: Implementation Tools	creation of a modern development management system, introduction of advanced practices of public participation, new instruments of tax, budget and investment policy

The strategy takes into account the provisions of the Decree of the President of the Russian Federation dated May 7, 2018 No. 204 “On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2035”, including within the framework of individual national projects and programs (Table 11).

Table 11. Priority areas and strategic goals of the Strategy, compliance with the May Decree of the President of the Russian Federation

Priority areas	National projects and key quantitative targets of the May Decree	Federal projects in which the participation of the population of the regions of the Russian Federation is expected
Development of human capital and social sphere	national project "Demographic Development": increase in healthy life expectancy up to 67 years; an increase in the total fertility rate to 1.7; an increase in the proportion of citizens leading a healthy lifestyle, as well as an increase to 55% of the proportion of citizens systematically engaged in physical culture and sports; national project "Health": reduction in mortality of the working-age population (up to 350 cases per 100 thousand population), mortality from diseases of the circulatory system (up to 450 cases per 100 thousand population), mortality from neoplasms, including malignant (up to 185 cases per 100 thousand population), infant mortality (up to 4.5 cases per 1 thousand born children); ensuring coverage of all citizens with preventive medical examinations at least once a year; ensuring optimal accessibility for the population of medical organizations providing primary health care; optimization of the work of medical organizations providing primary health care, reducing the waiting time in line when citizens apply to these medical organizations, simplifying the procedure for making an appointment with a doctor; the national project "Education": ensuring the global competitiveness of Russian education, the entry of the Russian Federation into the top 10 countries in the world in terms of the quality of general education; national project in the field of science: ensuring the presence	"Demography" (P): 1) "Financial support for families at the birth of children"; "Establishment of a nursery - promotion of women's employment"; "Older generation"; "Strengthening public health"; "New physical culture of the population"; "Health" (N): “Development of the primary health care system”; "The fight against cardiovascular diseases"; "Fight against oncological diseases"; 1) "Child development healthcare, including the creation of a modern infrastructure for providing medical care for children”; 2) "Provision of medical organizations of the system health care qualified personnel"; 3) "Creation of a single digital circuit in healthcare based on a unified state information system health care (EGISZ)"; 4) "Development of export of medical services"; "Education" (E): 1) "Modern School"; 2) "Success of every child"; 3) "Modernparents"; 4) "Digital School"; 5) "Teacher of the Future"; 6) "Young professionals"; 7) "New Opportunities for Everyone"; 8) "Social activity"; 9) "Improving the competitiveness of Russian higher education"; "Science" (S): 1) "Creation of a network of leading research centers and world-class centers"; 2) "Creationadvanced research infrastructure"; 3) "Generation of fundamental scientific knowledge"; 4) “Creation of scientific and educational centers and cooperation with organizations

	the Russian Federation among the five leading countries of the world carrying out research and development; ensuring the attractiveness of work in the Russian Federation for Russian and foreign leading scientists and young promising researchers; outpacing increase in domestic spending on research and development; national program in the field of culture: There are no specific target indicators in the May decree	operating in the real sector of the economy"; 5) "Digital technologies in science"; "Culture" (A): 1) "Cultural environment"; 2) "Creative people"; 3) "Digital Culture"
Development of economy and entrepreneurship; development of tourism and hospitality industry	national program in the field of increasing labor productivity and supporting employment: growth in labor productivity in medium and large basic non-primary sectors of the economy at least 5 percent per year; involvement in implementation of the specified national program at least 10 constituent entities of the Russian Federation annually; involvement in the implementation of the specified national program of at least 10 thousand medium and large enterprises of the basic non-primary sectors of the economy; national project in the field of development of small and medium-sized businesses and support for individual entrepreneurial initiatives: increase in the number of people employed in the small and medium entrepreneurship, including individual entrepreneurs, up to 25 million people	"Productivity and Employment Support" (L): 1) "Systemic measures to increase labor productivity"; 2) "Implementation of measures to increase labor productivity and expert support for enterprises in non-primary industries"; 3) "Employment support: employment, training, infrastructure development"; "Small and medium business and support for individual entrepreneurial initiative" (I): 1) "Improving the conditions for doing business activities"; 2) "Creation of a digital platform for supporting production and marketing activities of small and medium-sized entities entrepreneurship"; 3) "Improvementprocurement systems carried out by the largest customers from small and medium-sized businesses"; 4) "Expanding access of SMEs to financial support, including concessional financing"; 5) "Creation of a system of acceleration of subjects of small and medium entrepreneurship"; 6) "Modernization of the exporter support system –subjects of small and medium business"; 7) "Creation of a support system for farmers and development of rural cooperation"; 8) "Promotion of Entrepreneurship"

Infrastructurefor life, sustainable spatial development; international relations	national project in the field of housing and urban environment: providing affordable housing for middle-income families; increase in housing construction to at least 120 million square meters per year; drastic increase comfort of the urban environment, increasing the index of urban environment quality by 30 percent; increase in the share of citizens participating in solving issues of urban environment development, up to 30 percent; ensuring a sustainable reduction in the uninhabitable housing stock; national project for creation of safe and high-quality roads: increase in the share of regional roads that meet regulatory requirements in their total length of at least than up to 50 percent; reduction in the share of highways of federal and regional significance, operating in overload mode, in their total length by 10 percent compared to 2020; reduction in the number of places of concentration of road traffic accidents (dangerous sections) on the road network by half compared to 2020; a 3.5-fold reduction in deaths from road traffic accidents compared to since 2017 - to the level not exceeding four people per 100 thousand of the population (by 2035 - the desire for zero mortality). national program in the field of development of international cooperation and export: formation of global competitive non-primary sectors, the total share of exports of goods (works, services) of which will be at least 20 percent of the country's gross domestic product; achieving the volume of exports (in value terms) of non-commodity non-energy goods in the amount of 250 billion US dollars per year, including engineering products - 60 billion US dollars per year and agricultural products - 45 billion US dollars per year, as well as the volume of exports of services rendered in the amount of 100 billion US dollars per year;	"Housing and Urban Environment" (F): 1) "Housing"; 2) "Formation of a comfortable urban environment"; 3) “Ensuring a sustainable reduction in the uninhabitable housing stock”; "Safe and quality roads" (R): 1) "Road network"; 2) "System-wide measures for the development of the road sector"; "International cooperation and export" (T): 1) "Industrial export"; 2) "Export of agricultural products"; 3) "Logisticsinternational trade"; 4) "Export of services"; 5) "Systemic measures to promote international cooperation and export"

	formation of an effective system of division of labor and industrial cooperation within the framework of the Eurasian Economic Union in order to increase the volume of trade between the member states of the union by at least one and a half times and ensure the growth of the volume of accumulated mutual investments by one and a half times	
Enhancing environmental sustainability and safety	national project "Ecology": liquidation of all unauthorized landfills identified as of January 1, 2021 within city boundaries; cardinal decrease in the level of atmospheric air pollution in large industrial centers; improving the quality of drinking water for the population; ecological improvement of water bodies; conservation of biological diversity, including through the creation at least 24 new protected areas	"Ecology" (G): 1) "Clean country"; 2) "Construction of facilities for sorting and processing MSW"; 3) "Drinking water"; 4) "Forest Conservation"
Effective Governance: Implementation Tools	National program "Digital Economy of the Russian Federation": increase in internal costs for the development of the digital economy through all sources at least three times compared to 2021; creation of a sustainable and secure information and telecommunications infrastructure; use of predominantly domestic software	"Digital Economy" (D): 1) “Regulatory regulation of the digital environment”; 2) "Informationinfrastructure"; 3) "Personnel for the digital economy"; 4) "Informationsafety"; 5) "Digital Technologies"; 6) "Digitalpublic administration"

The implementation of the Strategy is designed to respond to the main demographic challenge of the long-term development of the regions of the Russian Federation. In conditions of rather high mobility of the population, people choose to live in those regions where they can realize their potential. The answer to this should be an appeal to the needs and capabilities of every resident of the Russian Federation and positioning the state as an assistant, the role of civil society in governance should be radically changed, mechanisms for effective feedback from residents should be established. Therefore, at the center of the Strategy are people and their well-being.

Our country is the only one in the world that has proved that nothing depends on the climatic zone if there is a developed industry and infrastructure. We offer our own solution to a whole range of problems, the most optimal, in our opinion, namely: in the future and existing cities of the regions of the Russian Federation, the creation of light industry enterprises, which is due not only to their location on the railway track, which is not unimportant, but also to their advantage the location near large rivers of the regions of the Russian Federation that go to the ocean, which will automatically provoke a sharp increase in not only cargo traffic, but also the opportunity, if necessary, at minimal cost to implement an industrial policy to provide these regions with demanded and import-substituting products, that is, it will be gold for light industry , allowing to produce cheap, unique and other goods such as shoes, belts, bags and other things made of fish skin, fur coats and clothes made of deer skins and so on. Thus, light industry products will be in demand not only in our country, but also abroad. It is strange not to take advantage of such a treasure when everything can not only pay off, but also become an economic superiority in the field of light industry over leading economic powers like China and the United States, since none of them has such a potential as Russia.

But this is in the future, but for now, we propose to start small based on our analytical work, that is, if everything is done wisely, then this will not only be our version of the development of events, but will become a reality and provoke the effective development of the regions of the Russian Federation.

References:

1. (2022). *On the priority of the territory of advanced socio-economic development of small and medium-sized cities in the regions of the Southern Federal District and the North Caucasus Federal District in the production of demanded and competitive products by market consumers;* with the participation and under total. ed. Master A.A. Blagorodova., Dr. tech. sciences, prof. V. T. Prokhorov; Institute of Service and Entrepreneurship (branch) Don State Technical University, Doctor of Economics, prof. G. Yu. Volkova, gene. director of LLC TsPOSN "Orthomoda". (p.544). Moscow: Editus.
2. (2021). *Methodological and socio-cultural aspects of the formation of an effective economic policy for the production of high-quality and affordable products in the domestic and international markets:* monograph /O.A. Golubeva [and others]; with the participation and under the general. ed. can. philosopher. sciences, prof. Mishina Yu.D., Dr. of Tech. sciences, prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (branch) of the Don State Technical University. (p.379). Moscow "Regulations".
3. (2020). *Features of quality management for manufacturing import-substituting products at enterprises in the regions of the Southern Federal District and the North Caucasus Federal District using innovative technologies based on digital production:* monograph / O.A. Golubeva [i dr.]; under total ed. Dr. tech. sciences, prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (branch) of the Don State Technical University. (p.362). Novocherkassk: Lik.
4. (2019). *Participatory management of the enterprise team is the basis for the formation of high-quality digital production of import-substituting products:* monograph / O.A. Golubeva [and others] under the general. ed. Candidate of Philological Sciences, Professor Mishin Yu.D. and Doctor of Technical Sciences, Professor Prokhorov V.T.; Siberian State University of Communications; Institute of Service and Entrepreneurship (branch) of the Don State Technical University. (p.176). Novocherkassk: Lik.
5. (2009). *How to ensure sustainable demand for domestic products of the fashion industry*: monograph / V.T. Prokhorov and others; under total ed. V.T. Prokhorov. (p.494). Mines: GOU VPO "YURGUES".
6. (2019). *Quality management system - the basis of technical regulation for the production of import-substituting products:* monograph / A.V. Golovko [and others]; under total ed. Dr. tech. sciences, prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (branch) of the Don State Technical University. (p.326). Novocherkassk: YuRGPU (NPI).
7. (2019). *On the possibilities of regulatory documentation developed within the framework of the quality management system (QMS) for the digital production of defect-free import-substituting products:* monograph / A.V. Golovko [and others]; under total ed. Dr. tech. sciences, prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (branch) of the Don State Technical University. (p.227). Novocherkassk: Lik.
8. (2018). *The competitiveness of the enterprise and the competitiveness of products is the key to successful import substitution of goods demanded by consumers in the regions of the Southern Federal District and the North Caucasus Federal District:* collective monograph / Prokhorov V.T. [et al.]; under total ed. Dr. tech. sciences, prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (branch) of the Don State Technical University. (p.337). Novocherkassk: Lik.
9. (2018). *Managing the real quality of products and not advertising through the motivation of the behavior of the leader of the team of the light industry enterprise:* monograph / O.A. Surovtseva [i dr.]; under total ed. Dr. tech. sciences, prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (branch) of the Don State Technical University. (p.384). Novocherkassk: YuRGPU (NPI).
10. (2017). *The concept of import substitution of light industry products: prerequisites, tasks, innovations:* monograph / Prokhorov V.T. [and others]; under total ed. Dr. tech. sciences, prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (branch) of the Don State Technical University. (p.334). Novocherkassk: Lik.
11. (2015). *Advertising as a tool for promoting the philosophy of quality in the production of*

competitive products / Kompanchenko E.V., [and others]; under total ed. d.t.s., prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (branch) Don State Technical University in Shakhty: ISO and P (branch) DSTU, (p. 623).

12. (2015). *Assortment and assortment policy*: monograph / V.T. Prokhorov, T.M. Aspen, E.V. Kompanchenko [and others]; under total ed. Dr. tech. sciences, prof. V.T. Prokhorov; Institute of Service and Entrepreneurship (fil.) Feder. state budget educate. institutions of higher prof. education "Don State. tech. un-t "in the city of Shakhty Rost. region (ISOiP (branch) DSTU). (p.503). Novocherkassk: YuRGPU (NPI).
13. (2012). *Enterprise restructuring as one of the most effective forms of increasing the competitiveness of enterprises in markets with unstable demand:* monograph / N.M. Balandyuk [and others]; under total ed. d.t.s., prof. V.T. Prokhorov. FGBOU VPO "South-Russian state. University of Economics and Service". (p.347). Mines: FGBOU VPO "YURGUES".
14. (2014). *Quality revolution: through advertising quality or through real quality*: monograph by V.T. Prokhorov [and others]; under total ed. d.t.s., prof. V.T. Prokhorov; ISOiP (branch) DSTU. (p.384). Novocherkassk: YuRGPU (NPI).