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Analysis Of Research Works On The Design And Production Of Antistatic Special Clothing.

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Annotation: This article presents an analysis of research works in the field of design, quality production and use of antistatic special clothing.
Keywords: Antistatic special clothing**,** radiation exposure, electropower, surface density, thickness, special clothing material package.

Today, in the domestic market there is not enough fabrics and special clothing adapted to the working conditions of workers in various industries with a level of protection and safety quality.

A number of foreign and CIS scientists are devoted to the design and production of antistatic protective clothing. Together a group of Japanese scientists collaborated with Abel J González, Makoto Akashi, John D Boice Jr. In their work, they advanced the problem of protecting workers from radiation exposure, developing a program of science-based requirements for the origin of radiation hazards, radiation exposure measurements, assessment of the significance of internal exposure, and for personal radiation-protective equipment, including special clothing.

Authors Castillo J., Cubillos A.Colombian Workers in the Electric Power Sector Developed the Principles of Ergonomic Design of Specialty Clothing [21, pp. 623-627.]. Devoted by Korean scientists Lin L.H., Wang YY, Li J. to the issue of functional design and ergonomic assessment of special clothing of rescuers conducting search and rescue work during emergency situations, including earthquakes.

Indian scientists like Azhar Ali, Patrick recommend the use of nanocomposites in special clothing materials that protect against radiation. They believe that a high degree of insulation can be achieved due to the large interfacial area between nanocomposites and polymers, and it has been reported that this approach is far superior to previous ones.

Professor V.YE. Romanov was the first to put forward a systematic approach to the design of special clothing, developing its theoretical and methodological foundations with a view to further improvement.

In the research of E.A. Surzhenko, a new approach to the ergonomic design of special clothes based on the biokinematic analysis of the elements of the "person-clothing" system is proposed.

EAT. VSilchenko has developed a new antistatic fabric that protects a person from electromagnetic radiation, which significantly weakens electromagnetic and electric fields, as well as meets the requirements for surface density, thickness and fabric structure parameters.

I.V. Cherunova developed improved system of antistatic special dressing for oil residents. In this study, using the methods of mathematical analysis, the signs that affect the properties of the package of special clothes for cold climatic conditions are investigated; The heat resistance properties of clothing packages were studied using special intermediate materials.

A.V. Merkulova proposed a new method of developing special antistatic clothing that protects against low temperatures, for the purpose of designing antistatic clothing for the regional climatic conditions of the northern regions of Russia A map has been developed. A mathematical model of the electrification of a set of special clothing materials has been developed, which will allow it to pre-determine its antistatic protective properties at the design stage. For protection against low temperatures, the technique for the construction of special antistatic clothing has been improved, and a special system has been developed that warns of the electrostatic field strength inside the special clothing.

I.V. Kurenova proposed improvement of heat retention of clothing – a criterion for assessing a heat field; the thermal conductivity of the synthetic intermediate heater layer of clothing has been found to be dependent on the mass fraction of the oil; a method for acoustic emission analysis of the dynamics of oil absorption is proposed; A mathematical model of the distribution of the temperature field in the layers of the "human-

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clothing" system has been developed.

I.N. Ivashchenko has developed technology for designing ergonomic structures of special clothes, taking into account the dynamics of workers' movements, thermophysical parameters and operating conditions, the real working conditions of oil production in the southern regions of Russia. In addition, the structure of the protective garment, in which thermal insulation is adjustable in the range of variable energy consumption and air temperature, has been theoretically substantiated and experimentally proven.

Y.O. Schuls considered the development of theoretical foundations for the design of special clothing for heat protection by calculating the neutral temperature area from the source of exposure to the human body. This work develops new methods of production of special materials with polymer and metallic coatings, as well as devices and methods for determining the protective properties and resistance to heat action of materials.

A number of Uzbek scientists[32 -34] scientific works are also devoted to the development of antistatic fabrics, including D.N. Akbarov's work "Pridaniye antistaticheskix svoystv tekstilnim materialam" is devoted to the issue of providing antistatic properties of fabrics of special scale.

R.D. Akbarov's scientific work "Razrabotka i issledovaniye svoystv spetsialnoy tkani s zadannimi electrofizicheskimi kharteristikami" is based on the fact that the physico-mechanical properties of electrically conductive metal fibers are almost identical to the properties of the original nitron fiber. It was established by the author that a mixture of 60% cotton and 40% electrically conductive fibers is considered the most acceptable, and it is also found that the addition of electrically conductive fibers to cotton fibers will lead to an improvement in their physical, mechanical and operational properties.

In the scientific work of Baymuratov B.Kh. "Creation of multifunctional electrically conductive textile materials and their properties", the scientific work of Baymuratov B.Kh. "Creation of multifunctional electrically conductive textile materials and their properties" is based on the dependence of the shielding efficiency of the distance between electrically conductive textiles in the textile, and this distance is rationally calculated as a = 4–6 mm, It provides a 50-fold reduction in screening efficiency. The textiles created by the author expose workers to electromagnetic radiation (radar devices, SVCH devices) and high-voltage electric fields (LEPs, transformers, computer equipment, etc.).Recommended for the preparation of special blankets and clothes that will protect against the effects of the effects of the coronavirus.

Depending on the sign, magnitude, and location of the electrostatic charge, the electric field created by it can adversely affect the human body and even pose a threat to its health [74].

An electric current can pass through the human body, causing injury and injury as a result of an electric charge flowing through an electrified garment, causing a spark, or coming into contact with harmful substances in the environment. Long-term exposure to the external electrostatic field to the human body can cause functional disruption of the nervous and cardiovascular systems.

Measurements by Russian scientists [77] showed that the use of clothes made from natural materials does not significantly cause electrification of human skin compared to synthetic materials.

Positive electrical charges generated on the surface of the skin adversely affect the person, causing a deviation from the normal functioning of the blood vessels and nervous system, leading to headaches, drowsiness or excessive nervousness.

However, until now, there are no recommendations on the effects of static electricity on a person through special clothing in hot climates and on improving personal protective equipment against static electricity.

Thus, as a result of the analysis, it turned out that most scientific work is aimed at the development of fabrics with antistatic properties and improving their physical, mechanical and operational properties, the number of scientific works aimed at the production of antistatic special garments is insufficient, and all of them are made for cold climatic conditions. During the study of scientific developments in the field of design of special clothing, it turned out that scientific research on the design of antistatic special clothes for workers of the regional electricity supply was not carried out, taking into account the climatic conditions of the Republic of Uzbekistan.

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Thus, as a result of a review of the literature, it was found that a person's thermal condition is determined by climatic factors, his individual characteristics and special protective clothing. The range of possible physiological thermoregulation of a person is incredibly limited, and its protection is only possible with the help of special clothing. Ensuring the microclimate under the dress and safe thermal condition of a person is realized through the creation of high-quality and safe special clothing.

Conclusion

The Regional Power Supply of Uzbekistan has determined that one of the main directions is the design and development of high-quality special clothing from materials with protective properties and hazardous production factors that adversely affect the health of workers, taking into account the current working conditions of workers.

References

1. Davidov A.F., Nikiforova A.A. Razrabotka metodiki opredeleniya coeffitsiyenta oslableniya tkaney dlya zashiti ot elektromagnitnix izlucheniya // Izvestiya visshix uchebnix zavedeniy. Technology Textile Promishlennosti. – 2012. - No. 3

2. Damyanov G.B., Bachev S.Z., Surnina N.F. Stroyeniye tkani i sovremenniye metodi yeye proyektirovaniya – Moscow: Legkaya i pishevaya promishlennost, 2004.

3. Yegorov N. V. Analiz struktur ognezashitnix tkaney iz aramidnix nitey i pecennosti ix izgotovleniya na sovremennom tkatskim stanke: dis. … cand. texn. nauk: – M., 2010.

4. Wandel M., Ph.D. Antistaticheskiye svoystva volokon dlya kovrov. J. Chemiefas. 2002. No. 5.

5. http://profvn.ru/customers/tehnologii/bekinox/. It is used in the manufacture of antistatic electrical conductive tissue. Bekart Company, Belgium. 2001,

6. Nikitin A.A. Mechanism of conductivity of electrically conductive chemical fibers and their electrophysical properties. Review inf. Ser. Industrialnost chemical fibers.-Moscow: NIITEKHIM. 2008.

7. Mercules A.I. Methods and Means of Protecting the Human Body from Static Electricity. –M.: MDNTI. 2006.