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MODERN MATERIALS FOR SPORTSWEAR

СОВРЕМЕННЫЕ МАТЕРИАЛЫ ДЛЯ СПОРТИВНОЙ ОДЕЖДЫ

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	ABSTRACT
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The modern sportswear market is represented by a wide range of materials. All manufacturers produce certain fabrics according to their unique technologies. The variety of materials makes it necessary to generalize information about their properties, determine their advantages and disadvantages. When choosing sportswear, attention should be paid to the selection of fabric because its materials determine its properties. The article discusses various types of materials for the manufacture of sportswear. АННОТАЦИЯ композиционные слоистые материалы, одежда для спорта, мембранный слой

Современный рынок спортивной одежды представлен широким выбором ассортимента материалов. Все производители изготавливают те или иные ткани по своим индивидуальным технологиям. Многообразие материалов вызывает необходимость в обобщении информации об их свойствах, определении их преимуществ и недостатков. При выборе спортивной одежды необходимо уделять внимание подбору ткани, потому как материал, из которой она изготовлена, определяет ее свойства. В статье рассмотрены различные виды материалов для изготовления спортивной одежды.

Clothing is one of the components of the material and non-material culture of a society. A person creates various stocks of clothes in various style solutions by changing certain items of clothing. The very process of transformation and change can be endless. The use of various types of materials in the design of clothing models allows to increase the range of products, expand their functionality and extend the life of products.

Today the customer needs comfortable clothes, which allows them to feel comfortable regardless of the situation, time, and place. An urgent task is to create sportswear, which helps a customer feel comfortable both in the open air and indoors. Therefore, in materials science, composite layered materials are becoming more and more widespread. These materials may include a membrane.

Modern technological materials play an important role in achieving high results in sports. When choosing sportswear, you need to pay attention to the selection of fabric, because the material from which it is made determines its properties. There are options for winter and summer clothing, special breathable, windproof, waterproof materials and other varieties from which clothing is made.

There are a number of requirements for materials for making a sports suit: wear resistance, hygroscopicity, air permeability, thermal conductivity, comfort, lightness, safety. Sportswear is made from natural or synthetic materials [1].

In the production of sports equipment and products for outdoor activities, the following types of materials are widely used: membrane fabrics, knitted fabrics, fleece, windblocks, softshells, taffeta, duspo, oxford, Cordura, Supplex, Polartec, neoprene.

For the manufacture of sportswear designed to be worn in a cold season, multilayer materials containing a membrane layer are increasingly used. Their advantages are based on the structure of the fabric that prevents the loss of heat; evaporation from the body passes through the tiny pores of the membrane to the outside, and a layer of dry and warm air remains under the clothes. This is especially true for active sports.

Knitwear for clothing, tight-fitting to the body, is most often used for making leggings and tops.

Fleece is a pile non-woven fabric made of unstructured polyester, in the production of which special technologies of fiber weaving and pile creation are used (the pile and the base are joined together). It makes lightweight, soft, pleasantly tactile knitwear in a wide range of colours. It retains heat, shape, practically does not absorb moisture, dries quickly, does not cause allergies, and has high wear resistance. A special anti-pilling treatment allows fleece products to retain their original appearance for a long time. The surface density of the fleece varies from 100 to 400 g/m^2 . It is used in sewing as a lining for winter and demi-season clothes, as well as for making tracksuits, sweatshirts, scarves, hats, and gloves.

A softshell is a multi-layer material consisting of a durable, abrasion-resistant fabric layer, a membrane layer and a fleece inner layer. The use of one layer of such

material makes it possible to replace two or more layers of clothing in a traditional athlete's suit. These materials are characterized by low specific gravity, the ability to retain water and heat, and at the same time, are resistant to wind.

From taffeta, made from chemical fibers of polyester or nylon, with the application of various coatings, both workwear (windbreakers, jackets, overalls, trousers, including insulation) and tourist equipment (sleeping bags, tents, bags, umbrellas) and sports equipment (aprons, flags, etc.) are produced. Taffeta made from polyester is slightly inferior to nylon in strength and chemical resistance, but it is superior in thermal and light resistance.

The main purpose of the development of windblock materials is their 100 % wind protection. In fact, these are two layers - an outer (knitted fabric) and an inner (one-sided fleece), which are connected to each other through a membrane layer. The pile height on the outside and inside can be different. The structure of the material allows the production of products without lining. They are widely used in the manufacture of hats, sweatshirts, overalls, windbreakers, and gloves.

Duspo is a soft, lightweight windproof 100 % polyester fabric. It is unpretentious in washing, dries quickly, has good air exchange properties. Moisture protection is created with a special water-repellent coating. It is widely used in the manufacture of winter and demi-season outerwear, sports and ski suits. Duspo products provide excellent protection from wind and rain. The fabric almost does not get wet – water droplets easily roll off the surface of the garment.

Oxford is a durable fabric made from chemical fibers (nylon or polyester) of a specific structure, most often coated with a coating that makes the fabric waterproof. The fabric is water-repellent. Oxford is used for the production of outerwear and workwear (jackets, overalls), clothing and equipment for tourists, awnings, tents. Frost resistance of oxford with polyvinyl chloride impregnation (PVC) can reach -50 °C, and with polyurethane impregnation (PU) up to -160 °C.

Cordura is a range of modern, high-tech fabrics that represent the original structure of weaving of nylon threads of different thicknesses. It has double frictional resistance and is highly resistant to various types of mechanical stress. To achieve the greatest strength, fabrics can be reinforced. The Cordura fabric is used in the manufacture of outerwear, equipment, backpacks and other areas where resistance to punctures, tears, and rough friction is needed.

Polartec is a fleece-type jersey made of polyester with a thick pile, often made with the addition of other fibers: lycra, cotton, wool, nylon, and rayon; they are added in some cases to give the fabric certain properties (for example, the ability to retain shape). Polartec is very durable, warm, lightweight and breathable. Each villus is hollow inside, has a complex structure and mimics the wool of Arctic animals. The surface of this material does not roll, it does not rustle.

Neoprene is a foamed polymer with closed, air-filled cells in the form of a web. A woven base made of nylon, polyester, cotton or other plastic fabric, usually knitted, is glued to the surface on one or both sides. High quality neoprene fabric is air and water resistant. It has a low absorbency. Products made of neoprene can be used in temperatures from -50 °C to 100 °C. Neoprene is used for sewing jackets, and is also used for seals in places where clothing is attached to the body (wrists, neck, shins), for the manufacture of waterproof shoes.

Supplex is a synthetic knitted fabric. The material is made with the addition of lycra, nylon, microfiber and lurex. It is bright, sleek, and beautiful. The main feature of Supplex is elasticity, the ability to simultaneously stretch along the loop rows and columns, which allows it to fit the body and not restrict movement. This material was widely used for the manufacture of sports, dance costumes. Caring for Supplex is very simple, and the material serves for a long time without losing its qualities and properties.

Thanks to the use of modern multi-layer materials, sportswear can be produced with the required level of protection against environmental influences. The choice of composite layered materials depends on their structure, properties, the number of layers, the cost of their manufacture and other factors that must be taken into account at the stage of designing the appropriate clothing.

Sportswear, correctly selected for hygienic indicators, supports athelet's performance.

References

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