

PROPERTIES OF MATERIALS PROVIDING CHILDREN'S HEALTH

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Abstract. This article discusses the main trends in the properties of materials that ensure the health of children of different ages. At the same time, the physical properties of textile materials from which hospital clothing for patients with skin diseases is sewn are studied.

Keywords. Properties of materials, skin diseases, children, hospital clothing, textile materials, technology and the environment.

Introduction. The occurrence and development of skin diseases in children can be directly determined by the physical properties of textile materials. This paper considers some of the physical properties of textile materials worn by suspected sick children.

The physical properties of textile materials include their ability to absorb and permeate, thermal, electrical, optical and acoustic properties. Many of these properties determine the ability of clothing to protect the child's body from environmental influences (cold, heat, sunlight, precipitation, dust, etc.). Timely removal of steam and gases (sweat, carbon dioxide, etc.) from under the clothing layer creates conditions for maintaining the microclimate necessary for the body's vital activity in the under-clothing layer, which is necessary for a person's comfortable state. On the other hand, the physical properties of textile materials also have technological significance, since their manifestation during the manufacturing operations of garments determines the parameters of technological processes (WTO, stitching, cutting, etc.), the quality of their execution. **Methodology.**

Let us consider the basic physical properties of clothing materials (Fig. 1) worn by the suspected patients. Fabrics, knitted and non-woven fabrics are capable of absorbing various substances in gaseous, semi-solid or liquid states. Depending on the environment and conditions, materials can retain the absorbed substances or release them into the environment.

In this case, as a rule, there is a change in the heat-protective, optical, and electrical properties of the materials.

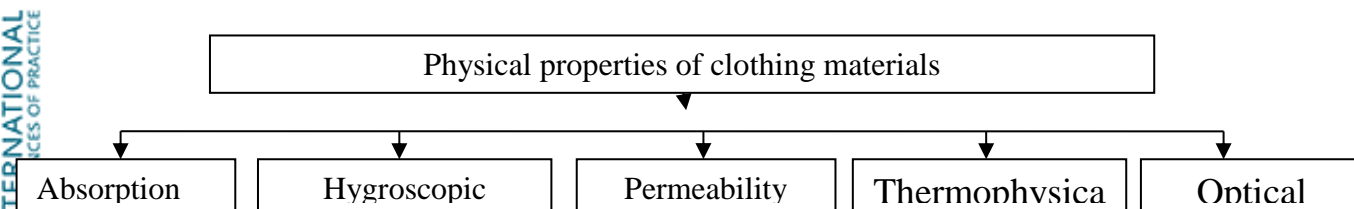


Figure 1. Structure of physical properties of clothing.

Textile materials are capillary-porous bodies with a complex system of pores and capillaries that differ in size and location. Pores in materials are formed as a result of loose arrangement of macromolecules, microfibrils, fibrils in the structure of fibers, between fibers and threads in the structure of the material itself.

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Textile materials during their production, manufacture of garments and their use constantly interact with water vapor in the air and with water. Therefore, one of the most important physical properties of textile materials are hygroscopic properties - the ability of textile materials to absorb and release water vapor and water.

Absorption of moisture vapor from the environment by textile materials occurs through sorption of water vapor by fibers, which is a complex physical and chemical process. Textile materials during their production, manufacture of garments and use of clothing constantly interact either with water vapor in the air or with water. Therefore, one of the most important physical properties of textile materials are hygroscopic properties.

Let's consider some materials according to water absorption criteria.

1. Cellulose (cotton, flax, viscose) and protein (wool, silk) fibers have a high capacity to absorb water vapor.

2. Of the artificial fibers, acetate fibers have low hygroscopicity, since in the elementary link of cellulose, hydroxyl groups are partially or completely replaced by hydrophobic acetyl groups.

3. Most synthetic fibers and threads (especially polyester, polyolefin, polyvinyl chloride) have a low capacity to absorb moisture, since they contain almost no hydrophilic groups.

In order for medical clothing to be comfortable, scientists propose to include medicinal and medicinal materials in the fabric of clothing - moisturizers and nanomaterials that promote rapid healing and prevent the formation of painful formations and scars.

In the research work, 11 types of materials for clothing for skin diseases were selected and the main properties of these materials were studied.

We have developed a methodology for developing hospital clothing for patients with skin diseases, taking into account the topography of the location of skin diseases, and also conducted studies to determine the properties of materials impregnated with special medicinal herbs, creating a comfortable state and ensuring the acceleration of healing processes.

The ability of textile materials to pass air, steam, water, liquids, smoke, dust, gases and radioactive radiation is called permeability. The characteristic, the inverse of permeability, showing the ability of a textile material to resist the penetration of water, steam, etc., is called impermeability, or resistance. Air permeability is most often determined at a pressure difference of $p = 5 \text{ mm H}_2\text{O}$ (49 Pa), which corresponds to the pressure difference in the underlayer and the surrounding air in the climatic conditions of the Republic of Uzbekistan, where the wind speed does not exceed 8-10 m/s. According to N.A. Arkhangelsky, modern materials are grouped into six groups by air permeability, which fluctuates within a wide range: from 3.5 to $1500 \text{ dm}^3/(\text{m}^2 \cdot \text{s})$ (Table 1).

Table 1
Grouping of fabrics by air permeability



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Fabric group	Fabric types	General characteristics of air permeability of a fabric group	Bp, dm ³ (m ² * s) at p = 5 mm H ₂ O (49 Pa)
I	Thick drape and broadcloth, cotton fabrics, diagonal, combed broadcloth	Very low	Less than 50
II	Suit woolen fabrics, broadcloth, drape	Low	50-135
III	Underwear, dress, demi-season, light suit fabrics	Below average	135-375
IV	Light underwear and dress fabrics	Average	375-1000
V	The lightest dress fabrics with large through pores	Increased	1000-1500
VI	Gauze, mesh, canvas, openwork and fillet knitwear	High	More than 1500

Air permeability of materials depends on the weave, humidity of the material, temperature of air and material, etc.

Discussion: The properties of materials are essential when assessing the appearance and aesthetic perception of clothing. They allow you to identify, emphasize or, conversely, hide the texture of the material, silhouette, design features of the product, the volume of the child's figure.

Conclusions: Thus, we can conclude that the correct choice of material properties, as well as the fabrics themselves, from which children's clothing is sewn, stimulates their rapid recovery from various diseases, including BKZ.

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