Analysis Of Fabrics Used In Designing Modern Backpacks For School Students.

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ABSTRACT

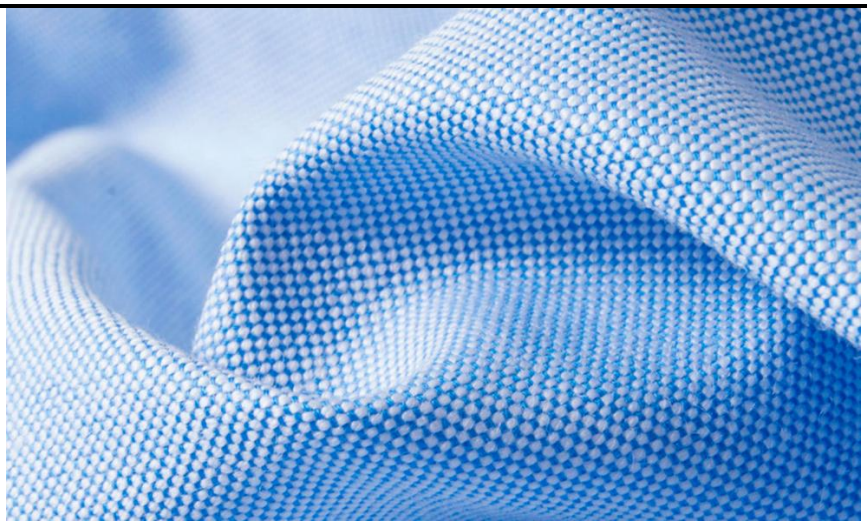
In order to design modern backpacks that meet local conditions and requirements, the fabrics used in the production of backpacks and their characteristics are analyzed in the article. Advantages and disadvantages of fabrics are compared according to the purpose of use.

Keywords: Oxford, cordura, nylon, polyester, leather.

Backpacks are widely used in various fields for carrying goods due to their ease of use. In particular, almost all elementary school students use backpacks to carry their books and supplies. Backpacks are the most suitable tool for carrying daily school equipment due to they distribute the load symmetrically and leave hands free. Fabric for a backpack is the most important component. Appearance, tactile sensations, weight, waterproofness and durability - it all depends on the fabric. The fabric for sewing a backpack must be strong, wear-resistant, durable, easy to care for, and withstand temperature changes. Today backpacks are made from the following materials:

- Oxford,
- Cordura,
- Nylon,
- Polyester,
- Natural materials and fibers (leather, linen, canvas, cotton, denim).

To produce **Oxford** fabric, a special matting weave is used, which adds strength to the nylon fibers (picture 1).



picture 1. Oxford fabric

Initially, this fabric was widely used for sewing shirts and polos, which were popular among Oxford students. Oxford wears well, it does not allow moisture to pass through, keeps its shape and is easy to clean. To produce oxford, polyester, nylon, cotton or viscose threads of different lengths and thicknesses are used. The combination of weaving and synthetic warp, coupled with thick threads, ensures high reliability of the finished product. Oxford has different density, thickness and protection values. If the fabric is impregnated with PVC or PU, then this is also included in its labeling. Therefore, they provide protection of a high reliability class. This fabric has a low specific gravity, low hygienic properties, is easy to wash, and is used for a long time. Does not allow moisture to pass through, does not breathe or ventilate. In addition, it is resistant to dirt and staining. Easily repels dirt, is not subject to scratches, tears, and easily withstands mechanical stress. Oxford is used to make backpacks for outdoor enthusiasts and climbers. Disadvantages include the generation of static electricity and sunburn. It is also not recommended to keep oxford backpacks and bags near fire or heating devices, so as not to deform the products.

Cordura is nylon heavy, strong fabric. It is created from threads with a special durable texture (picture 2). The composition of this fabric may contain a certain percentage of viscose or cotton. These impurities give the nylon base softness, increase tactile comfort, and change its hygiene. Thanks to its original structure, Cordura fabric is more durable and wear-resistant. This fabric was developed in the USA specifically for the needs of the army. It receives its protective properties after being treated with Teflon impregnation in several stages. Cordura fabric is most often used by manufacturers to create professional outdoor gear, including backpacks.

picture 2. Cordura fabric

Polyester is a material of synthetic origin (picture 3). Polyester perfectly withstands both severe frost and exposure to the sun. Does not deform during wear. The fibers of polyester substance are obtained from petroleum products using chemical synthesis technology. Polyester is an inexpensive material and, combined with its fairly high consumer and performance properties, is almost ideal for the manufacture of small-capacity textile backpacks. It has high strength and very significant wear resistance, but when carrying loads, polyester can lose its integrity. To increase the strength of this raw material, its threads are reinforced with nylon, impregnated with Teflon or polyurethane. The disadvantages of polyester fabrics include low hygienic properties, the ability to attract dust and accumulate static.

picture 3. Polyester fabric

Leather is considered the reference material for the manufacture of various kinds of accessories, including backpacks. The most important indicator of leather is its strength. Leather is used for sewing city or business bags and backpacks. Leather is not used for tourism purposes, since the material itself is quite heavy.

picture 4. Leather

A variety of fabrics are used to sew backpacks. The whole point is that the choice of a specific material depends more on future loads and operating conditions. Today, synthetic material is especially popular for making backpacks. Due to its durability, easy dyeing and low price, it is advisable to use it in the development of backpacks for

schoolchildren, taking into account the shortcomings of hygienic features.

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