European Scholar Journal (ESJ)
Available Online at: https://www.scholarzest.com
Vol. 2 No. 3, March 2021,
ISSN: 2660-5562

INVESTIGATION OF PROPERTIES OF MATERIALS USED FOR MULTIFUNCTIONAL BAG

O'g'iloy Turdiyeva, master's student
Abdurakhim Khojiyev, t.f.n., associate professor
abdurahim5700@mail.ru
PhD Nabijon Maqsudov
Namangan Institute of Engineering and Technology.

Article history:
Received: 28th February 2021
Accepted: 11th March 2021
Published: 24th March 2021

Abstract:
Polymer, knitted and crochet materials were selected to create new models of multifunctional bags for babies, and their composition, physical-mechanical and hygienic properties were studied in the research laboratory and production facility of the institute. As a result of the research, polymer was selected for the avra part of the bag, and knitted materials were selected for the lining part. Analysis of the results of the experiments showed that the physical, mechanical and hygienic parameters of the selected materials fully meet the requirements of the consumer on all parameters.

Keywords: fiber, thickness, tensile strength, air permeability, weight, moisture content, length

Leather, artificial leather, polymer, coat, jeans and many other materials are used for bag materials [6]. As a result of the research, polymer was selected for the avra part of the bag, and knitted materials were selected for the lining part. The following properties of the materials required for the bag were studied: fiber content, weight, air permeability, tensile strength, elongation, moisture absorption, thickness.

The fiber content of materials is determined by organoleptic and laboratory methods of incineration [7]. In the laboratory, the fiber content of the materials was determined as follows: the appearance of the fabric was examined, the fabric was felt and wrinkled, the body and back yarns were identified, the body and back yarns were cut and the body and back yarns were burned. The fiber content was determined by using Table 1.

Table 1
The fiber content of materials

№	Image of the material	Material	The width of the material, cm	Fiber content
1		Polymer	150	Polymer fiber
2		Knitwear	150	Natural fiber

3		Sponge	100	Polymer fiber

The following results were obtained when the weight of the cut samples was weighed on the electronic scales ZK200C [8], DW1111 [9] in a circle of 10 mm^2. Figures 1 and 2 describe the research process.

Figure 1. Samples of materials.

Figure 2. Weighing materials

The values of the weights of the materials determined as a result of the tests are given in Table 2.

Table 2

Weight values of samples taken from materials

	Material name	**Weight (gr)**	**The surface of the sample, mm^2**
	Polymer	31,864	7850
	Knitwear	25,504	7850
	Sponge	34,194	7850

Air permeability is the air permeability of the sample itself, which has different properties in each material [10]. The air-permeable nature of the multi-purpose bag specially designed for children should create a comfortable environment for the baby to breathe when the bag is used in the rain, as well as when the weather is hot. The air permeability of the materials was determined using a tester YG861E [11].

Figure 3. The process of testing air permeability

The air permeability of the materials is shown in Table 3

Table 3

Air permeability of materials

	Material name	Air permeability (cm3 cm2 per second)
	Polymer	5,24
	Knitwear	2126,28
	Sponge	4326,2

From this it can be concluded that the polymer material is almost impermeable to air.

The thickness of the fabric depends on the thickness of the yarns, the degree of bending, the type of weaving, the density of the fabric and the applied finish. The higher the linear density of the yarns that make up the fabric, the thicker the fabric [12] .

The thickness of the fabric is about 0.1 - 3.5 mm. It was measured with a special device YG141D - thickness gauge [13]. The fabric sample was placed between two glossy plates; one of the plates is movable and is attached to the needle of the instrument. The arrow shows the thickness of the material in millimeters, Fig. 4.

Figure 4. Material thickness test process

The sample thickness of the material is shown in Table 4.

The thickness of the material

Table 4

№	Material name	The thickness of the material (mm)
1	**Polymer**	**0.011**
2	**Knitwear**	**0.050**
3	**Sintafon**	**0,1**

Mechanical properties include tensile strength, elongation elongation, tensile strength, relative tensile strength, and more. These properties are used to indicate the maximum mechanical capacity of the fabric, as well as its quality. To identify them, rectangular samples of fabrics were made in the width of 50 mm, length 200 mm, ie 50x200 mm. For textile fabrics were identified separately in the transverse and longitudinal directions. The tests were performed on a YG026T breaker [14]. The distance between the clamps of the machine is 100 mm for textile fabrics. Tensile strength indicates the strength of fabrics, Table 5 shows the results of experiments.

Physical and mechanical properties of the material
Table 5

	Sample name	Ko'rsatkichlar				
		Power (n)	Elongation (mm)	Elongation(%)	Work (j)	Delay time (s)
	The height of the polymer	679	18,4	9,20	7,3	5,53
	The width of the polymer	623	16,4	9,20	6.3	5,5
	The length of the knitwear	478	32,8	16	7,3	9,55
	The width of the knitwear	930	34	25	15,6	9,77

In Figures 5 and 6

In determining the tensile strength of a fabric by the tensile strength of the fabric and the elongation at break, the rapid tearing of the fabric was determined by how high the force was applied to the fabric. We cut the sample 5-20 times 5-20 times in width and 5 times in width through each lab and calculated their average by passing each of them in a separate laboratory.

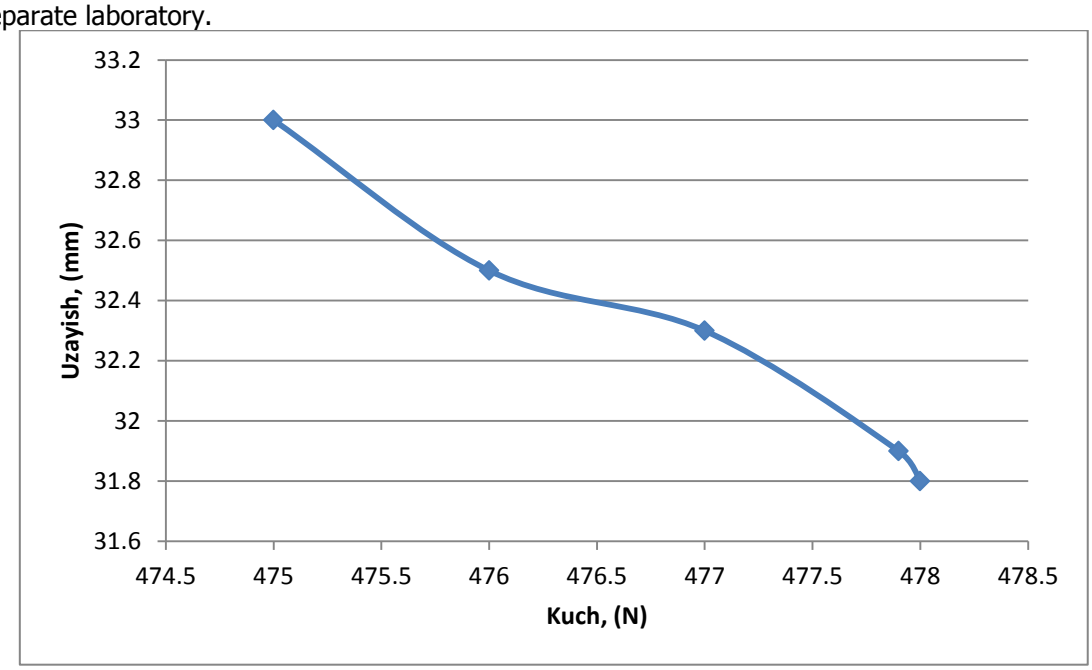

Figure 5. Graph of elongation of knitted fabric

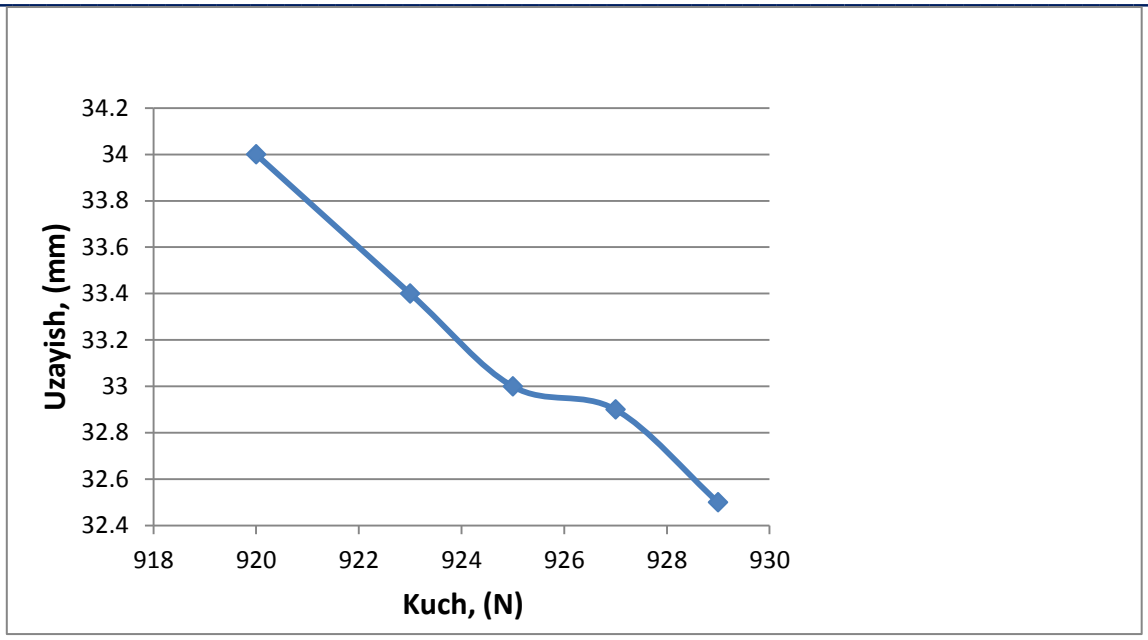

Figure 6. Graph of elongation of knitted fabric in width

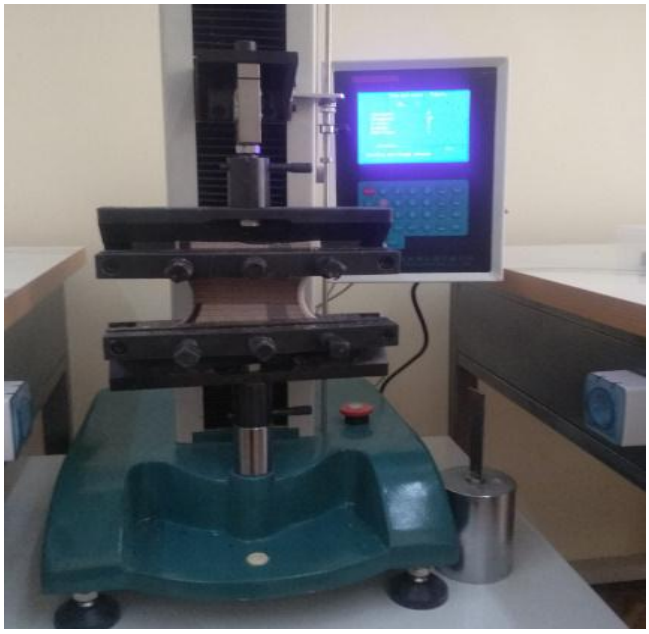

Figure 7

Textile fabrics have the ability to absorb various substances in liquid, gaseous or vapor form. In this case, the mass, size, strength, stiffness and other properties of fabrics change. During the production and use of textile products, they are always exposed to water or steam. Fabrics have several properties that characterize their ability to absorb water or steam. These include moisture, hygroscopicity, water absorption, water absorption, etc. When measuring the moisture absorption of materials on the device FY200, it was found that our polymer material is airtight, knitted and combed well, Fig. 8 [15,16,17 , 18].

CONCLUSION

The properties of many materials for a multifunctional bag have been studied and useful materials for the bag have been identified. The results of the experiments obtained in the following tables show that the polymer material selected for the avra part of the bag was determined to be resistant to external influences, moisture absorption, abrasion resistance, and it was recommended for the avra part of the bag. It was found that the strength, air permeability, naturalness and all other properties of the knitted material meet the requirements of our bag, and the physical-mechanical and hygienic characteristics of the knitting materials fully meet the requirements of the consumer in all respects.

REFERENCES:

1. Turdieva Ogiloy,Khojiyev Abdurakhim " ACADEMUCIA An International Multidisciplinary Research Jurnal" DIO 10.5958/2249-7137.2020.01801.7 India- 2020
2. Abbosova N.G, Axmedov B.B, SH.G.Maxkamov, T.A.Ochilov "Yengil sanoat materialshunosligi". Toshkent.-2005 yil.
3. mhOKsZA/edit?usp=forms_home&ths=true.
4. Е.П.Мальцева "Тикувчиликматериалшунослиги" Тошкент-1986.
5. A.N.Koblyakov. «Laboratorno'y praktikum po tekstil nomu materialovedeniyu»M, «Legprombo'tizdat», 86 g. 166-172 str.
6. 2. G.N.Kukin, A.N. Solov yev «Laboratorno'y praktikum po tekstil nomu materialovedeniyu» M., «Legkaya industriya», 74 g, 21-33 str.
7. 3. OchilovT, MatmusaevU.M. «To`qimachilikmateriallarinisinash» Toshkent.,O`zbekiston, 2004 y.
8. Akbarov Nurislom Akhtamjon ugli, Aliyeva Nodira, Djurayeva Saida, & Yalgasheva Shirinhol. (2021). OPPORTUNITIES TO USE GOOGLE SERVICES TO ORGANIZE THE LEARNING PROCESS. *European Scholar Journal*, *2*(3), 62-63. Retrieved from https://scholarzest.com/index.php/esj/article/view/320
9. Elektiron tarozi model " ZK200C" ,2019.
10. Namuna qirquvchi jihoz. modeli "DW1111" ,2019.
11. O'quv uslubiy qo'llanmasi "materiallshunoslik" Namangan-2017.
12. Materiallarni havo o'tkazuvchanligi " YG861E",2019.
13. Abbosova N.G., Axmedov B.B,SH.G.Maxkamov, T.A.Qchilov "Yengil sanoat materialshunosligi" Toshkent-2005 yil.
14. Material qalinliginio'chaydiganjihoz "YG141D", 2019.
15. Material uzish mashinasi " YG026T",2019.
16. Materiallarning nam shimuvchanligi " FY200" 2019.
17. B.A.Buzov.Materialovedeniye shevenogo proizvodstva.
18. https://vk.com/sdf.
19. http://modagit.ru/artikls/5974.