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Development Of An Effective Composition Of Thickening Agents

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Annotation. A composition has been developed for printing mixed fabrics based on cotton and nitron fibers. The coloristic characteristics of printed fabrics have been studied. It has been established that the developed thickener composition gives the printing ink sufficient adhesiveness, viscosity, plasticity and other properties, makes it possible to obtain a soft, elastic, transparent, uniform and firmly fixed film on the fabric, and does not reduce the brightness of the color.
Key words. Component, polymer, nitron, thickener, composition, plasticity, viscosity, dye, printing ink.

Introduction

When processing cotton fiber into yarn, it is subjected to a number of mechanical influences, leading to a deterioration in its properties. Therefore, cotton fiber is refined and fabric based on it, after the boiling and bleaching stage, is printed using various ingredients.

Despite significant achievements in the field of refining cotton fiber, progress in this area is far from exhausted, therefore the development of effective water-soluble compositions based on local raw materials, suitable as a thickener in the process of printing mixed fabrics based on cotton and nitron fibers is a very urgent task [1] .

Finding the possibility of purposefully using them as a thickener in the finishing of mixed fabrics and fabrics can significantly reduce the consumption of scarce, expensive components imported from abroad (alginates, acrophyllic, starch and its derivatives) and ensure the smooth operation of textile industry enterprises.

Literature And Methodology

The development of water-soluble polymer compositions with specific properties: viscosity characteristics, fluidity, plasticity, thixotropic properties, sorption capacity, adhesion to fibers, bactericidal properties is of great importance in the development of chemistry and technology of composite materials [2-3].

Among the numerous polymeric materials, a special place is occupied by the oxidized starch OK, the water-soluble polymer polyacrylamide PAA and the preparation K-4.

Results

To obtain high-quality colors on fabrics with any classes of dyes, the following requirements apply to printing inks:

- they must have consistency in order to retain the dye and thereby ensure sufficient clarity of the design and the absence of spreading during printing;
- the printing ink must wet the engraving of the printing roll well and be retained in it;

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- it must freely penetrate the template sieve (when printing with mesh templates) and not clog it during printing;
- transfer evenly and tightly onto the fabric during the printing process;
- have optimal deformation properties that ensure the production of continuous and uniform patterns using machine printing methods;
- be stable during storage and in various operating modes of printing machines.

The main component of printing ink is a thickener, which forms a specific internal structure [5].

Based on the results of studies of color intensity, shade character, hardness, resistance to soap and dry friction of printed cotton fabrics, optimal thickener compositions were developed, the compositions of which are presented in Table 1, and the properties of printed fabric with printing inks with polymer thickeners are shown in Table 2.

Table 1.

Composition of the thickening polymer composition for active dyes

Composition	Composition composition, g/kg							
	Sodium alginate	OK	PAA	K-4	Sodium silicate	Soda Ash	Urea	Ludigol
Developed	-	60	1	1,5	5	10	100	10
Traditional based on KK	75	-	-	-	5	10	100	10

Discussion

The developed compositions are structured aqueous solutions of hydrophilic polymers with dyes and fully meet the above requirements. The composition of printing ink with polymer thickeners - oxidized starch [4], - 60.0, PAA-1.0 and K-4-1.5 - 40 g/kg turned out to be more effective in terms of coloristic indicator (Table 2).

Table 2.

Color characteristics of printed fabrics

Composition	Color tone, nm	Color brightness, KD/m2	Color Purity, P	Color intensity, K/S	Uneven color, max.
Developed	482	4576	0,66	15,6	0,16
Traditional based on KK	402	4223	0,54	14,3	0,15

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As can be seen from Table 2, a properly developed thickener composition and other components of the composition give the printing ink sufficient adhesiveness, viscosity, plasticity and other properties, allow you to obtain a soft, elastic, transparent, uniform and firmly fixed film on the fabric, and do not reduce the brightness of the color. The color tone of the printed fabrics for all compositions does not differ significantly, but the color intensity is the highest for recipes [1] OK, PAA, K-4.

Conclusion

A technology has been developed for producing thickening compositions based on local raw materials - OK, PAA and the K-4 preparation. The coloristic parameters of printed fabrics have been studied. It has been established that the developed thickener composition gives the printing ink sufficient elasticity and viscosity.

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