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Influence of Fibrous Waste Emulsion on Technological Indicators

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ANNOTATION: In this article, taking into account the specific properties of the raw material, four variants of emulsifying compositions for a mixture of low-cost fibers and fibrous wastes are prepared, the impact of technological processes and the quality of the fiber mass are studied.

KEYWORDS: oleic acid emulsion, low-grade fibers and fibrous wastes, emulsion applied

I. INTRODUCTION

The cotton fiber has an empty channel inside and its wall consists of layers. The thickness of the outer layer is 1 μm and is called the primary layer. This layer has a turbid structure and consists of wax-pectin. The second, the main layer is thicker, up to 6-8 microns in the cooked fibers. Due to the fact that the surface of cotton fiber, which consists of 95% cellulose, is hydrophobic, the surface of cotton fabrics is more difficult to absorb moisture [1].

The hydrophobicity of cotton fiber is due to the presence of a layer of wax on the surface of the cuticle - a thin (0.0015 ... 0.025 microns). In the process of processing, the fibers are broken, broken and otherwise damaged by mechanical influences. The reason for such interruptions is the lack of moisture and damage to the top layer of fiber [2].

The largest share of textile industry waste is in the textile industry. The practical properties of the wastes of the textile industry have shown that they have a high technological significance. The waste can contain up to 60% of the products suitable for production.

It is necessary to take all necessary measures to restore such a shortage of cotton fiber by emulsification. As a result of emulsification, the elasticity and elastic properties of the fibers are restored. Emulsions are usually prepared on the basis of fatty substances. Observations have shown that fatty substances are mainly in the form of small droplets, the size of which corresponds to the size of the fiber section [1].

The specific properties of the fibers and the objects they are rubbed with, normal pressure, humidity, air temperature and humidity, the type, properties, amount of emulsion and many other factors are important.

Studies have shown that changes in the humidity of the cotton fiber and the relative humidity of the air cause difficulties in their processing due to electric charges. Involvement in the production of fibrous waste is an important direction in the expansion of raw material reserves.

II. METHODOLOGY

Currently, more and more surfactants are used for emulsification. Taking into account the specific properties of the raw material, four variants of emulsifying compositions were prepared for the mixture, consisting of a mixture of low-grade fibers and fibrous wastes. Preliminary studies have studied the effect of emulsifying mixtures on technological processes and changes in the quality of the fiber mass.

As a result of experiments, it was found that the use of the emulsion based on the drug OP-7 improves the technological process.



Table 1

№	The composition of emulsifying mixtures	The amount of constituents, %			
		1- Option	2-Option	3- Option	4- Option
1.	Humidifiers OP-7	1,5			
2.	Oleic acid		12,5		
3.	Caustic		2,0		
4.	Technical glycerin		1,0	1,0	
5.	Alizarin oil			4,0	
6.	Privacel				2,0
7.	Water	98,5	84,5	95,0	98,0

Studies with emulsions based on alizarin oil (option 3) and privacel (option 4) also had a positive effect on the parameters of their technological processes. However, according to experimental results, it is difficult to give a clear advantage to one of the emulsions.

Therefore, oleic acid emulsion was selected when choosing an emulsifying composition, taking into account their cost and 77 environmental convenience. In order to study the dependence of technological processes on the amount of oleic acid emulsion (option 2), experiments were conducted on six options.

When the emulsion is applied up to 2.0%, the mass of the fibers decreases.

Alizarinbased emulsion was selected taking into account the impact of emulsions on the indicators of technological processes, cost and environmental convenience. Experiments on the impact of technological processes and the quality of the fiber mass have shown that the addition of this emulsion in the amount of 1.8-2.0% increases the efficiency of the process and reduces the waste of fibers.

III. EXPERIMENTAL RESULTS

Taking into account such a bond, ten samples were treated with OP-7 and alizarin-based emulsions. After one day of emulsified samples, the quality composition was determined in Shirley Analyzer MK2 and the properties of the fibers in the HVI equipment.

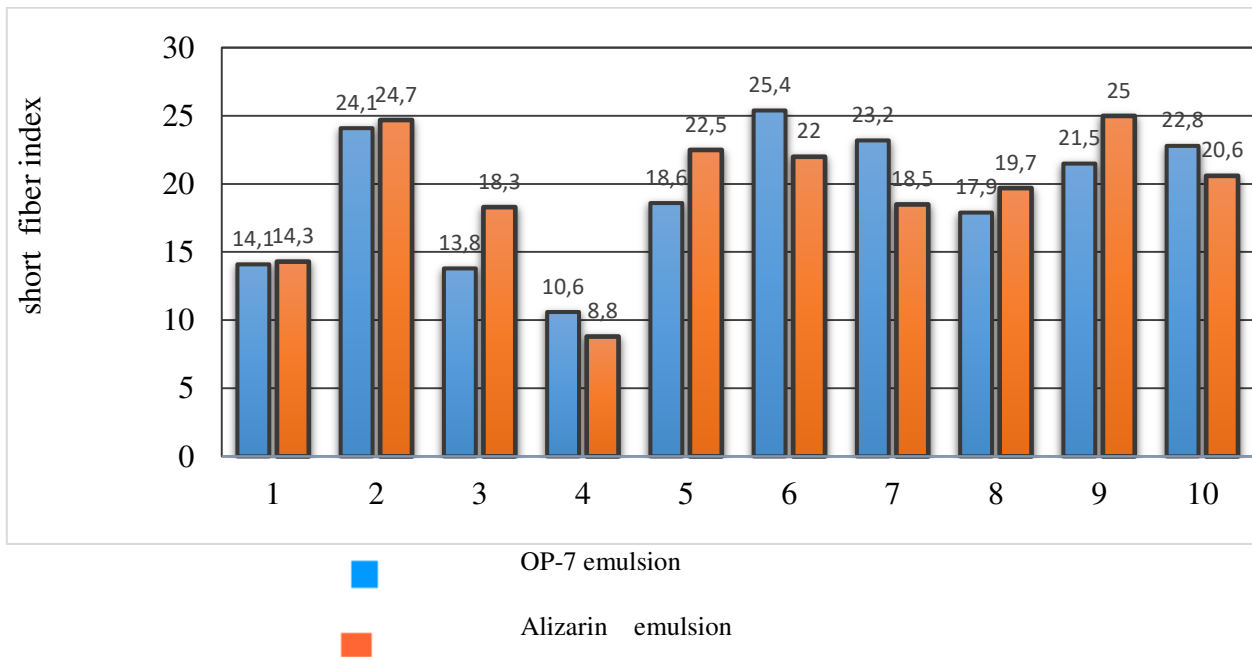


Figure 1. Short fiber index in samples



Although the effect of the type of emulsion was not observed when analyzing the mechanical properties of the fibers obtained in the experiments, these parameters were improved during emulsification. Further increase in the amount of emulsion leads to a decrease in the degree of irritation. The same changesystem is observed for cleaning efficiency. The output of purified fibers from the mixture increases in direct proportion to the increase in the emulsion applied.

IV.CONCLUSION

Thus, it was found that emulsification of a mixture of fibrous wastes and low-grade fibers creates favorable conditions for the of technological processes, which allows efficient use of waste and better cleaning. It also reduces fiber emissions. It is known that when checking the quality and properties of raw materials, their condition and the essence of the testing process affect the result.

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