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THE UNEVENNESS OF THE THREADS IN TERMS OF LINEAR DENSITY STUDY

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Abstract

In this article, the effect of unevenness in the thread on the product zero indicators is analyzed

The quality indicators of the thread used in the production of textile products ensure the quality of the product made from it. For this reason, it is possible to obtain beautiful, elegant fabrics only when the quality indicators of the spun yarn are high.

It is important to analyze the irregularities in the yarn and their causes. Unevenness in yarn can be controlled by controlling the properties of the raw materials used in the spinning plant and the technological process.

The technological parameters of the raw material used in the spinning process ensure the strength of the thread obtained from it. Therefore, it is necessary to use a modern measurement system that works with high accuracy in determining fiber parameters today.

Keywords: Linear roughness, physical, mechanical, quadratic inequality, tapes, cloths, roving.

Introduction

It is important to test and control the unevenness of the rough product during the spinning process, which determines the causes and time of the unevenness. The more the yarn breaks during forming and winding, the higher the unevenness of the yarn [1,2].

In carding machines, the roughness is not uniform in the process of cleaning and separating the fiber [3]. Unevenness in the fiber layer taken from the combing machine appears in the combed pile.

The unevenness in the change of product properties along the length is determined based on the following views:

- unevenness in linear density;
- by the number of fibers in the cross-section of the product;
- volumetric weight (density) of the product;
- unevenness in physical and mechanical properties, etc.

Analyzing the unevenness of spinning products is very complicated [4,5]. There are many types of roughness for spinning products: they are formed in the first stage of spinning and change in the subsequent stages and add new types of roughness to it [6].

The unevenness of the yarn adds several components to it and affects the unevenness of the various stages of spinning production [7]. Different forms of unevenness are related to each other.

The semi-finished product (roving) obtained after each pass is packed in a compacted state. This process is carried out to protect the quality of the product from changes during transportation and storage. Such packages are tapes, cloths, spools with felt [8,9].

The quality of semi-finished products and yarn is tested to check and control the normality of technological processes. Different methods are used to determine product unevenness. Accordingly, internal external and general unevenness is determined [10].

The internal unevenness refers to the value of the unevenness of the semi-finished product and yarn found in one package. For example, the linear density, hardness, and internal unevenness of the yarn are determined separately from the yarn in each tube [11].

The initial results found in various methods and test equipment are processed or ready-made results are obtained [12]. The unevenness is treated in the same way.

Such found unevenness is called the internal unevenness of the thread, as it belongs to the thread in one tube. The characteristic of this unevenness is that you cannot be satisfied with the obtained result, because it is this thread that is defective and may be giving a thread with a greater unevenness [13]. Taking this into account, the internal unevenness is determined in several tests, and the average value of the results is determined.

The unevenness between packages, packages, tubes can be called external unevenness. As noted, the average value of the indicator is found when determining the internal unevenness. This average size is individual for each tube and varies from one to another.

The unevenness in each tube is not visible in the deviations between the tubes and the packaging. There may be large deviations within a parcel, but little difference from the

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neighboring parcel value. It can also be the opposite. The unevenness determined by the mean values of the parameters of each package is the external unevenness.

It should be noted that when finding the unevenness of the product, the cross-sectional length changes within one package. The roughness between the packages, that is, the external roughness, is not affected by the mass of the cross-sectional lengths, that is, the external roughness remains the same regardless of the cross-sectional length. The main reason for this is that the disparity between the masses of sections of length l and the masses of length $l_2=nl_1$ does not change.

Material and Method

The unevenness of the tested product without dividing it into packages and packages is the general unevenness. As a result of conducting n tests from m packages, mn test results are obtained. The inequality from which the value is obtained by grouping them or other distributions turns out to be general inequality.

The method of determining internal, external and general unevenness should be the same. It is possible to choose an arbitrary length only when determining the external unevenness by the method of sections. All three types of unevenness can be determined using one formula. The three inequalities have the following relationship:

$C^2_{gen}= C^2_{in}+ C^2_{tsh}$

The total roughness is equal to the geometric sum of internal and external roughness. These factors make it difficult to change the causes of inequality. Therefore, based on the market economy, scientific and research work has been carried out to determine the unevenness of the pile and the pile during the spinning process.

For this, roving and pile samples were taken from different spinning processes and unevenness indicators were determined using the Uster-Tester-3 device (Table1).

Product in combing and combing processes change in roughness

Table1

N	Products	Indicators	Composition of the mixture , %	
			4-I-70%, 5-I-30%	4-II-60%, 5-I-40%
1.	Comb in a combing machine	Linear roughness, U_m %	3,60	3,23
		Quadratic inequality, CV_m,%	4,65	4,07
2.	A braid in a braiding machine	Linear roughness, U_m %	3,64	3,43
		Quadratic inequality, CV_m,%	4,63	3,45

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Result and Disgussions

Analyzing the results of the research, in the mixture of 4-I-70%, 5-I-30%, the linear unevenness of the pile in the combing machine is 3.60%, the square unevenness is 4.65%, the linear unevenness of the pile in the combing machine is 3.43%, quadratic unevenness is 4.64%; In the mixture of 4-II-60%, 5-I-40%, the linear unevenness of the pile in the combing machine is 3.23%, the square unevenness is 4.07%, the linear unevenness of the pile in the combing machine is 3.63%, the square unevenness is 3.45% formed (Fig.1-2)

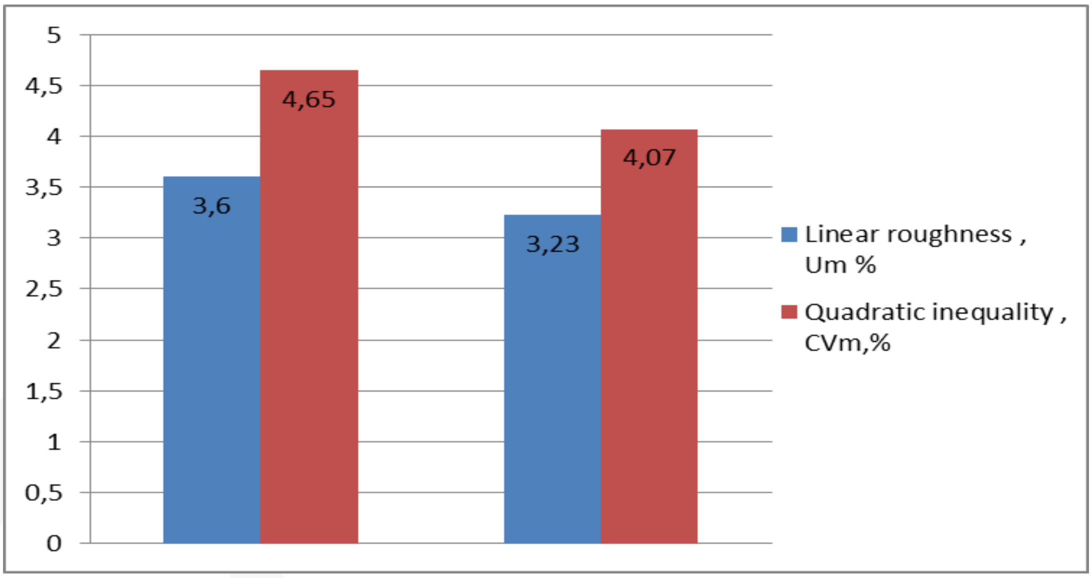

Figure 1. On the pilt in the combing machine change in roughness

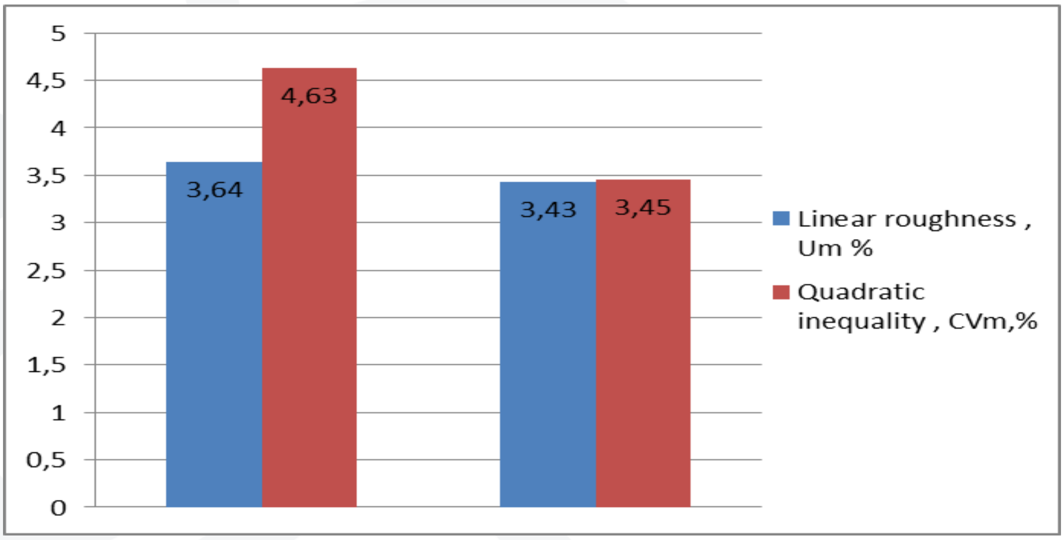

Figure 2. In the braiding machine change in roughness

As can be seen from the obtained test results, it was observed that the unevenness of the product during the spinning process was higher in the 4-I-70%, 5-I-30% mixture than in other mixtures.

Conclusions

In conclusion, the linear unevenness of the product after the carding machine is from 3.23% to 3.60%, the square unevenness is from 4.07% to 4.65%, and the linear unevenness of the product after the carding machine is 3, From 43% to 3.64%, it was found that the quadratic irregularity increased from 3.45% to 4.63%.

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