

INFLUENCE OF THE PROCESSES OF PREPARATION AND UNWINDING OF COCOONS ON THE CONNECTION OF RAW SILK

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Annotation. The effect of the concentration of an aqueous solution of sericin on the binding of raw silk was studied and it was revealed that the higher the concentration of an aqueous solution of sericin in the silk reeling basin, the higher the binding of raw silk. The most rational exposure in water is a 3-minute exposure; after 3 minutes, the cohesion of the raw silk decreases by 20-28 moves of the carriage. It was revealed the temperature sequences in the processes of preparing cocoons for unwinding and their unwinding.

Introduction. The quality of raw silk is regulated by a state standard, mandatory for both suppliers and consumers. Raw silk is characterized by qualitative and quantitative characteristics. Qualitative characteristics, in turn, are divided into primary and secondary. The main characteristics include unevenness in linear density, rewinding ability and cleanliness for large defects, and the secondary ones include unconformity, relative breaking load, elongation at break, cleanliness for small defects, cohesion and condition of the skeins. The grade of raw silk is established according to the worst indicator of the main quality characteristics, if the raw silk meets the established standards according to secondary characteristics. If, according to two of the secondary characteristics, the indicators are worse than the norm, then the grade of raw silk is reduced by one.

Research methods. Cohesion is the resistance of raw silk to splitting forces. To determine the connectivity, use 20 of 50 or 25 spools of raw silk wound to determine the rewinding capacity. To carry out the tests, a Duplan cosimeter and a reel are used. The device is threaded with a single thread from each spool. Threading is done by threading through each hook. Both ends of the thread are secured. The thread being tested must be free from all defects in cleanliness. Cohesion is determined by abrading raw silk threads with metal plates at a carriage speed of 140 strokes per minute. The weight of the upper grid is 300 g. The total load of the suspension system that creates thread tension is 180 g. For each of the 20 threadings, one thread is selected from the spools by random selection and threaded. After refueling, lowering the top grill turns on the device. The device is reset every 10 strokes. Raise the upper grid and use a magnifying glass with 10x magnification to examine the

condition of the raw silk thread. After registering 10 loosening 6 mm or more in length. This phenomenon is noted. In this case, the number of friction cycles necessary to separate the thread and destroy its connection is noted.

The data obtained and their discussions. The main factor on which cohesion depends is the environment for unwinding the cocoons. We investigated the effect of the concentration of an aqueous solution of sericin on the binding of raw silk (Table 1).
Table 1.

Effect of the concentration of an aqueous solution of sericin on the connectivity of raw silk

Concentration of aqueous solution of sericin, g/l	Connectivity, number of carriage strokes
0,0	41,3±4,2
0,5	52,6±3,3
0,8	55,8±2,7
1,0	55,7±2,8
1,5	74,3±2,5

The data presented shows the dependence of the magnitude of connectivity on the concentration of sericin in the water of the silk-winding basin. It can be seen that the higher the concentration of the aqueous solution of sericin in the silk reeling basin, the higher the binding of raw silk. In this regard, it is irrational to wash out cocoons in running water. When unwinding cocoons, it is necessary to use a drainless water recirculation system, as is customary on Japanese machines.

The influence of the duration of storage of cocoons after steaming in water at a temperature of 92-93⁰C on the cohesion of raw silk was investigated.

Table 2.

The influence of the duration of storage of cocoons after steaming in water at a temperature of 92-93 on the cohesion of raw silk

Duration of exposure of steamed cocoons in water at a temperature of 38-42 ⁰ C, min	Connectivity, number of carriage strokes
1	79±2
3	94±3
6	70±3
10	70±2
15	62±2

As can be seen from the table, the most rational exposure in water is a 3-minute exposure; after 3 minutes, the cohesion of the raw silk decreases by 20-28 moves of the carriage.

The cohesion of raw silk also depends on the sequence of temperature conditions in the processes of preparing cocoons for unwinding and their unwinding (Table 3).

Table 3.

The influence of the processes of preparation and unwinding of cocoons on the cohesion of raw silk

Index	Options														
	1			2			3			4			5		
	Steaming	Shaking	Unwinding	Steaming	Shaking	Unwinding	Steaming	Shaking	Unwinding	Steaming	Shaking	Unwinding	Steaming	Shaking	Unwinding
Water temperature, °C	92	92	42	93	93	37	92	89	42	9	80	3	93	6	42
Connectivity, number of carriage strokes	64			69			70			75			89		

As can be seen from the data obtained, the highest coupling is when parked 93°C, when shaking 65°C and when unwinding 42°C

Conclusions.

- the higher the concentration of the aqueous solution of sericin in the silk reeling basin, the higher the binding of raw silk.
- the most rational exposure in water is a 3-minute exposure; after 3 minutes, the cohesion of the raw silk decreases by 20-28 moves of the carriage.
- the highest cohesion when parked 93°C, when shaking 65°C and when unwinding 42°C