

## 2SB-10 DRYER INTERIOR TEMPERATURE, SENSOR THROUGH MODERATION WITH THE HELP IMPROVEMENT

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**Abstract:** 2SB-10 drying drum is widely used in cotton ginning enterprises. During the drying process, a temperature sensor is placed on the drum in order to prevent raw materials from burning due to high temperature. As a result, regular control of the temperature inside the drum is achieved. 2SB-10 drying drum is improved and the process is automated.

**Key words:** 2SB-10, SBO, pneumatic supply, drum, reducer, thermocouple, screw, air fountain, Seebeck effect, temperature sensor.

In order not to lose its natural properties during the storage period of seeded cotton and to obtain good quality of fiber and seed, it is necessary to dry it in time and clean it from impurities.

The drying equipment installed in the drying-cleaning departments can be aerofountain, chamber screw and drum, depending on the method of heat transfer to seeded cotton. In the cotton cleaning industry, drum drying equipment of various structures is used, which is considered to be highly efficient in terms of obtaining a lot of moisture and producing a lot of dried cotton.

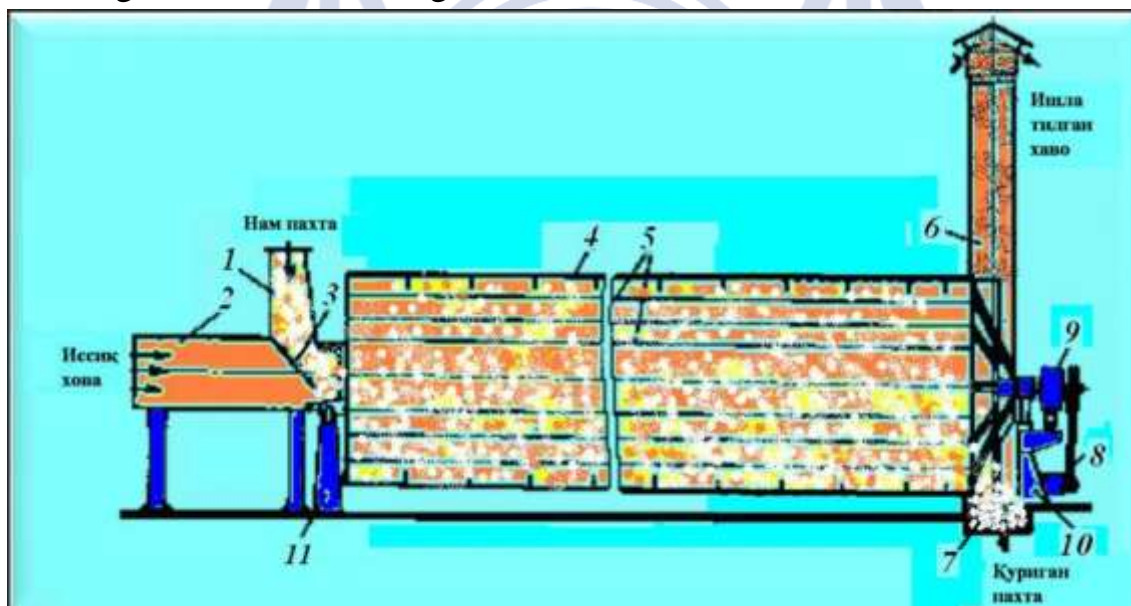
Compared to others, tumble dryers have higher drying agent temperatures and are easier to use.

The heating temperature of its components is of great importance in the drying of seed cotton. Experiments have determined to what degree it can be heated in order not to spoil the quality of fiber and seed when drying seeded cotton. When drying

seeded cotton, seed seeds can be heated to 55°C, technical seeds to 70°C, and fiber to 105°C. If the seeded cotton components are heated above the above-mentioned temperature, then the germination characteristics of seed seeds, and oil release in technical seeds, will decrease. The hardness, length and flexibility of the fiber will decrease. Therefore, seeded cotton should be dried evenly.

Currently, 2SB-10 and SBO drying drums are used to dry seeded cotton in cotton mills and drying-cleaning departments and cleaning departments in cotton ginning enterprises. To ensure continuous operation of these drying drums, they are equipped with heat supply, transport device and supply systems.

Seeded cotton is fed into the drying drum together with heat (drying agent) using a supplier. Due to the rotation of the drum, seeded cotton rises to a certain height and is dried due to its mixing with the drying agent. The used drying agent is discharged through the transfer shaft.



**Figure 1. Technological scheme of the 2SB-10 drying drum [1].**

1-pneumoprovod; 2- hot air transmission pipe; 3- guiding surface; 4- drying drum; 5-shovels; 6-used air outlet mine; 7- dry seed cotton production line; 8-electric motor; 9-reducer; 10, 11- bases.

The scheme of heat transfer to wet seed cotton during the drying process in drums is shown in the figure. As shown in the diagram, heat can affect wet cotton in three ways:



a) Due to the process of mixing with hot air during cotton seeding from drum shovels;

b) Due to the effect of heat on wet cotton falling between the shovels and on the shovels through the outer surface of the shovels;

c) Due to the transfer of heat from the heated parts of the drum and the drum to the seeded cotton [1].

The difference between the improved drying drum model 2SB-10 that we offer is that a temperature sensor is installed in the drying drum. The temperature sensor ensures constant measurement of the temperature inside the drying drum. When drying seed or seeded cotton in a drying drum, the temperature applied to the drum is important.





### Figure 2. Temperature sensor [2].

An improved version of this equipment helps us to constantly monitor the temperature inside the drum, and at the same time to control that the seeded cotton or seed does not burn from high temperature. We have prevented the loss of raw materials and the deterioration of the quality of seed cotton.

A thermocouple is a temperature sensing element and a unique device. It measures the temperature directly and converts the temperature signal into a thermoelectromotive force signal, which is converted into the ambient temperature measured by an electrical meter (secondary instrument). The basic principle of thermocouple temperature measurement is that two conductors of different components form a closed loop. When there is a temperature gradient at both ends, current flows through the loop. At the moment, there is a thermoelectromotive force between the two ends. This is called the Seebeck effect [3].

**Conclusion:** As we know, 2SB-10 and SBO drying drums are widely used in cotton ginning enterprises. Inside the drying drum, seeded cotton or seed is burned. In order to prevent this, we decided to constantly measure the temperature of the drying drum. If the improved 2SB-10 drying drum offered by us is applied to cotton ginning enterprises, the temperature in the drying drum is constantly controlled, and the loss of raw materials inside the drum does not occur. jobs are saved for the enterprise. Also, partial automation is achieved in the drying department of the enterprise.

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