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CEREALS USED IN THE CEREAL INDUSTRY, THEIR TECHNOLOGICAL QUALITIES

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Abstract: In this article, the tasks of enterprises producing cereal products are to isolate various impurities and shells from the grain mass, increase their nutritional value, and lead to easy cooking of food. A distinctive feature of cereal production enterprises is that the grain from which the cereal is obtained is diverse, and in the process of whitewashing the grain, they try to preserve the integrity of the flour contents. Cereals of different varieties coming to the enterprise for processing to obtain cereals are called cereal grains, since the bulk of these crops are used for the production of cereals. In addition, cereals and cereal products are also produced from oats, barley, wheat, corn, and peas. In some cases, sarcho (white oats), chumiz, lentils and other cereals are also processed into cereal products.
Keywords:cereals, breakfast cereals, dairy products, cereals.

The range of cereals is quite wide, they include whole grain (core) cereals, cereals with crumbly magiz, flakes with crumbly cereals (flakes), etc. Cereals occupy a special place in meeting human needs in flour products. It is used in the manufacture of various bakery and confectionery maksilots, replacing raw materials, and the cereals themselves are used in the preparation of various dishes that do not require unnecessary labor. For example, a "dry breakfast" of burst cereal is eaten with dairy products. In recent years, the preparation of various cereals, which do not require additional processing, has been well established in food technology.

In the production of coating products from cereals, the main technological processes are used to clean various wastes and separate its flower husks. Performing these processes with high productivity and efficiency is important to obtain high-quality raw materials.

It is known that affordable grains are covered with a flower, seed or fruit shell. In different cereals, the ratio between the pulp and the shell is different. For example, barley grain has a shell that adheres firmly to the acorn, but buckwheat, rice, millet and oats do not. In the manufacture of cereals from grains, the shell of which adheres firmly to the core, their cuvette and heat treatment contribute to the easy separation of the shell and increase the strength of the shell. Crushing processing is essential to achieve the technological perfection of crushing. Shyn ychyn also closes before the ylap justification. As a result of pre-gluing the grains on fpacylotlap, elegant mahcylotlaps are obtained, varying in size and size.

The technological process of coating production consists of the following stages::

- preparation of grain for cleaning

-it consists of a double-hinged technological Japanese, while it depends on which grains are processed in Japan;

- cleaning of grain from waste;
- peeling oat flakes from the husk;
- water, steam treatment (GTI) ;
- pre-sorting using separators.

The production of cereals from cereals in Japan consists of the following stages:

- sorting before whitewashing;
- separation from shells;
- elegant way to separate flour (bran), crushed grains, shells from finished products;
- isolation of magislapi from elegant and non-elegant mixtures;
- Swing on a yopmalup and apply makeup;
- clean the lid and waste.

Technological processes for obtaining cereals from grain. The process of obtaining cereals from grain, as in flour mills, includes three main stages: preparation of grain for processing; processing of grain into cereals and groats; shipment of finished products.

Grain preparation for processing consists of two main stages: separation of impurities from the grain pile and hydrothermal processing of grain. Unlike the grain preparation stage at flour mills, at grain production enterprises, the grain surface is affected by dry processing and washing processes. This is explained by the fact that the technological process of processing all grain crops is similar, that is, as a result of whitewashing, the task of obtaining an external husk is performed. Of course, in this case there is no need to clean the grain surface in a dry and clean way.

At enterprises producing cereals, the process of cleaning grain from impurities is practically based on the same methods as at enterprises producing cereals. However, the working bodies of grain cleaning machines should be installed in such a way that they are more suitable for a particular grain and depend on pneumatic parameters.

Hydrothermal treatment is used in preparation for processing grain of oats, buckwheat, corn, wheat and peas. It increases the yield of cereals, improves its quality and facilitates further processing processes. Depending on the technological properties of the grain and the variety of the product produced, various methods of hydrothermal treatment are used. The processing methods and the whitewashing machine used for this are also important. Before whitewashing the grain, its fractional separation is used, etc.

The grain processing process includes a number of necessary steps for all technological schemes: grain whitewashing, sorting of whitewashed products, control of finished products. The processes of bleaching and grinding (polishing) of cereals are used in the processing of most cereals. In addition, the control of waste generated after sorting grain bleaching products is an important process.

For certain crops, the core grinding process is also used. Separate grain processing by grain size fractions is typical for individual schemes. This is achieved by calibrating the grain before whitewashing.

Grits, crumbly grits (chloride), etc. are made from the crushed core.

The grain of cereals is extremely diverse in shape, size, and structure. It consists of two parts: nuclei (endosperm with embryo) and cortex (film). The kernel can be covered with an outer shell or a flower shell (millet, rice, barley, oats), or a fruit shell (buckwheat, wheat, corn), or a seed shell (peas). A very important feature of the grain is the close connection of the core with the outer shell.

In the grains of four cereals: rice, millet, oats and buckwheat, the outer shell covers it without growing with the core. In the other four: wheat, peas, barley and corn, the pods are tightly fused together over the entire surface of the core. The fact that the bark is connected to the core determines the processing methods to a certain extent. In the grains of different crops, the amount of the outer shell varies. The largest amount of bark is contained in oats – 22 ...30% (on average 26%), the least in barley, on average 11%, 10% in peas, the rest in millet, buckwheat, rice with a bark content of 20%. The yield and quality of cereals are influenced by many grain quality indicators. First of all, the amount of grain husk, its size, evenness, humidity and the amount of impurities in it are of great importance.

The amount of husk – peeling-is determined in the grain purified from impurities. The higher the grain size, the lower the core content and the less cereals will be obtained from such grain. As a rule, the coarse grain is less than that of the fine. In addition, small grains usually do not whiten well (peel off). The fine grain itself actually affects the efficiency of processing. Grain sizes are determined by the size of the sieve opening, and the fine grain that has passed through these sieves is introduced mainly into wild (foreign) impurities. In a number of crops, the number of such grains is limited by appropriate standards. The size of the screening hole from which the fine grain is extracted is 1.4 x 20 mm for millet, 1.8 x 20 mm for oats, 2.2 x 20 mm for barley and so on. It is advisable to sift fine grain at grain reception points and elevators.

Grain moisture has a great influence on its technological properties, the final moisture content of cereals. High and often low humidity worsens its technological properties, with high humidity, the

processes of cleaning and whitewashing grain from impurities become difficult, and with low humidity, the degree of grinding increases sharply during grain processing.

A relatively large number of different mist mixtures are often found in cereal raw materials, many of which are difficult-to-decompose mixtures. Wild (foreign) impurities include organic, mineral, seeds of cultivated and wild plants, etc. For example, the seeds of all other cultivated and wild plants are introduced into wild (foreign) mixtures in buckwheat, millet, and rice grains. The seeds of some cultivated plants, for example, barley, are introduced into grain mixtures from wheat oats.

The general method of cleaning grain from impurities is almost the same as when cleaning wheat and rye at flour mills. However, the variety of shapes and sizes of grain crops, as well as the presence of size-specific impurities in them, lead to the use of grain cleaning plants with some distinctive features.

For technological purposes, it is important that the grain mass consists of grains of the same transparency, since processing grains with different transparency leads to loss of magnesium (core). The consistency of the cereal, that is, its transparency, affects the quality and quantity of the output of cereals. When the transparency of the grain is high, its consistency increases, and a small amount of broken grains and powdery mildew is formed during the whitewashing process. The resistance of the endosperm to cleavage during the whitewashing of cereals will depend on its humidity, the higher the humidity of the endosperm (up to the established norm), the higher the resistance to cleavage.

To distinguish cereals from wholegrain and wholegrain cereals, it is necessary to know the structural structure of the grain, physical properties, biochemical processes occurring in it, as well as derivatives of individual types and varieties.

The main processes of preparing cereals for processing include: 1) grain purification from impurities; 2) hydrothermal grain treatment;

At grain production enterprises, as well as at flour production enterprises, a separator, a trier, an aspiration column and other equipment are used to clean grain from impurities. The doll separator and oat separator equipment is used to clean grains that differ in grain length, as well as to separate from unbleached grains (in the production of oat flakes) and to control broken grains stuck between the husks.

Since rice and oat grains have spines, they are processed on special additional equipment. When passing oat flakes through wallpaper equipment, their germination rate reaches 93%, while all added oat flakes are separated. The rice grain is separated from the grains by 88-92% as a result of the rotation of the grains and the mutual friction of the grains during movement on special grain separation equipment (osteotelerator). Grains of rice and oats are sent to aspiration columns to separate them from broken thorns.

An important stage in grain production enterprises is the process of hydrothermal processing (GTI) of grain. As a result of GTI, structural and mechanical changes of the grain occur, the conditions for separating the shell and shell from the endosperm improve. In addition, the shells become brittle, and the magiz strengthens, which leads to an increase in the yield of cereals with standard humidity, increased productivity due to energy saving of the enterprise.

The supply of GTI increases the nutritional value of cereals, increases its ability to absorb water and reduces the boiling time. The cooking process during GTI is an auxiliary factor, unlike in flour mills, and takes from 30 minutes to 1 hour.

The correct organization of the hydrothermal treatment process for each grain leads to a high yield of subsequent processes and an increase in the nutritional value of the cereal product.

The main processes of production of a cereal product from cereals include:

1) sorting of grains prepared for whitewashing;
2)whitewashing (swelling of grain shells);
3) bleaching sorting of products;
4) grinding;
5) sorting of crushed products;
6) bleaching and grinding of cereals;
7) control of the cereal product.

There are the following ways of giving GTI: steaming-drying-cooling; soaking-extinguishing.

The steaming-drying-cooling method is applied to buckwheat, oats and peas. An important aspect of it is that the grain is heated to a high temperature (above 100 C) using saturated steam. During steaming, the grain is moistened and, together with heating, its base is strengthened. The drying process used after steaming contributes to the destruction of grain shells during the brittle whitewashing process. After that, the cooling process of the grains serves to further reduce humidity and makes the shell layered and brittle again. Special evaporative, dehumidifying and cooling equipment is used to carry out these processes.

Soaking-the stewing process is the method used for most cereals. In this case, the grain is moistened in special equipment or steamed with low-pressure steam. Soaked grain is stewed in bins for several hours. The grain that has passed through these processes has high plasticity and is less crushed during the whitewashing process. The moistened shells form layers, as a result of which the endosperm is easily mixed.

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