Overview of beeswax: components and applications

Science

Tireless bees have long supplied man not only with honey, perga, propolis, but also with such a wonderful product as wax. It is a fat-like mass, which is obtained as a result of the work of special glands. In the future, the wax will be used as the main building material for the creation of honeycombs. The unfair opinion that wax is just a waste of bee labor, in fact, it worthily took its place and is widely used in various medical and cosmetic preparations. Wax is of particular respect in traditional medicine. Let’s look at what is beeswax?

A product with various biochemical elements is the result of the tireless labor of beneficial insects. Wax is a hard brittle substance of white or yellow-brown color with a pronounced honey aroma. A high concentration of propolis in the product gives it a green tint. It is very interesting how insects make wax. The young bee produces its special glands, located on the abdomen. Further, this material is used in the construction of honeycombs – small cells that are a repository of honey stocks. Getting wax is a rather complicated process: after eleven days of life, the bee intensively absorbs floral nectar and pollen, for the necessary supply of enzyme substances in the body. Then there is a selection of wax with the help of the abdominal glands.

From one hive you can get up to two kilograms of wax per season. The unique antibacterial qualities of this compound do not allow the honey to ferment, and the pollen reserves to mold. Color tone is determined by the time factor. Spring wax will be saturated with cream tones. In summer waxes usually darker ones prevail – more yellow or brown shades. It is assumed that the appearance is directly dependent on the diet of bees. In the autumn, various residual products accumulate in the comb, including bee nectar, pollen particles, chitin residues, etc. As a result, the cells darken to almost

black color and do not adequately perform their original functions. Then they are used for obtaining wax.

What does wax consist of and why is it so useful?

Wax is a very complex substance in its biochemical composition, which has not yet been fully studied. Vain attempts to repeat the formula by artificial means did not give a positive result. According to research, wax consists of a great variety of various elements. Especially distinguished:

- esters about 70%;
- limiting hydrocarbon components to 17%;
- fatty acids not more than 14%;
- a small amount of water-about 2%.

The product contains a rich composition of vitamins and minerals, carotenoids, aromatic substances, pigments, a large variety of impurities – pollen, propolis (cleaning makes it possible to get rid of all kinds of impurities). Chemical and thermal quality. The wax can not be dissolved in water and glycerin, it successfully dissolves in heated medical alcohol; wax dissolves very well products such as fatty substances, various essential oils. Turpentine, gasoline and paraffin compounds.

How to clean the wax? So how do they get the wax in our usual form?

Pure product can be obtained by melting pieces of wax, unsuitable bee honeycombs, zabrus (top of the honeycomb, which is cut off before honey is pumped out). To get wax I use the following techniques.

Heat is dry. Under the sun’s rays, the melted wax flows into a special container in which it settles and crystallizes. This method is the most useful, but not very effective, because all you can get no more than 30% wax.

Heating with steam. Hot water is added to the wax tank. After that, the thinned wax flows into the sump, where the crystallization process takes place. This method produces about 60% pure beeswax.

Warming up with water. When using this method, the original substance is boiled in water, as a result of which the water-insoluble wax gradually floats to the surface. This method is successfully used in small apiaries. Low quality is due to the large presence of third-party impurities, so the wax needs additional cleaning.

Chemical extraction. The main components are gasolines or heated alcohol. The wax product remaining after pressing is soaked in a solvent and evaporated to obtain a saturated extract.

Main applications:

- widely used in medical preparations (candles, ointments, emulsion drugs);
- various cosmetics (balms, creams, lipsticks);
- making soap;
- for impregnation and polishing of genuine leather;
- when forming in metallurgy;
- in the manufacture of paper products;
- electrical sensors, insulation tapes;
- paint and varnish production, etc.