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TECHNOLOGY OF PRODUCTION AND APPLICATION IN THE FOOD INDUSTRY OF COVERING WITH MEMORY EFFECT

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Abstract: In the scientific work the technology of creation of nanostructured coating with memory effect was developed. This made it possible to unify the technological process and simplify the technology of food packaging
Keywords: Start of a technological process cycle, End of a technological process cycle, Covering paper, Ultraviolet camera, Sandwich panels of a final product, Nanostructured film of a memory matrix, cutting, Distant information register installation

Obtaining coatings with a memory effect.
The concept of obtaining of promising coatings with multi-purpose use in the process of developing of a new technological processes in its broad context has always been and remains today rather an interesting topic from the point of view of economics and science in general [1-6].

The term "memory effect" should be understood as the effect of shape memory - spatial location and orientation under appropriate external conditions [7].

The purpose of this scientific work was to develop a promising nanostructured material with a memory effect for the use as a coating to obtain two important practical indicators:

1) significant time savings of the food packaging process, which directly increases the efficiency of the packaging process itself;

2) maintaining the quality of the packaging process (sanitary cleanliness of technological process).

To obtain a material with a memory effect a technological installation was developed, which is fundamentally a new type of installations for producing such coatings (Fig. 1).

Obtained coating is a universal composition of nanostructured clusters; they are the unique memory matrix (Fig. 2).

Fig. 1. General view of an installation for creating nanostructured materials with a memory effect

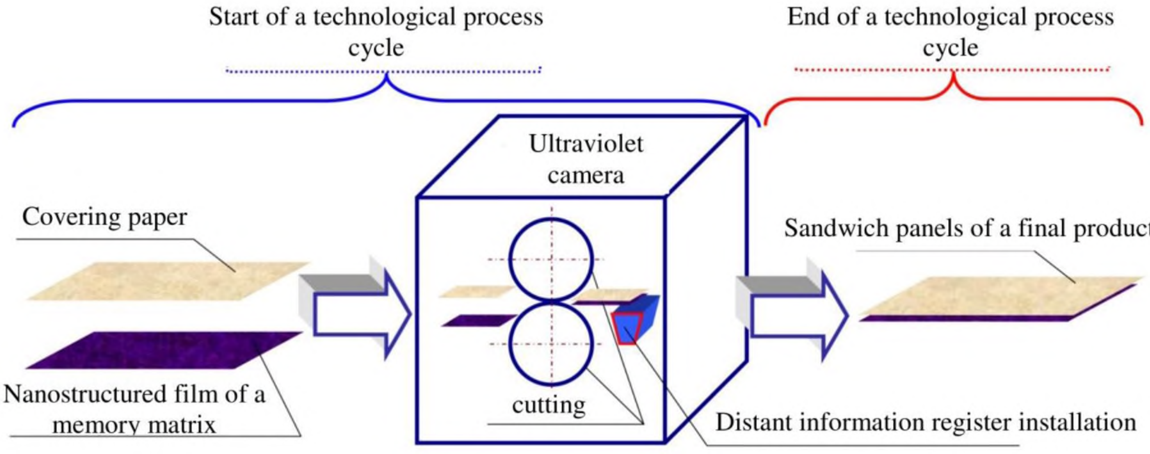

Fig. 2. Diagram of the process for producing a multi-purpose nanostructured coating with memory effect

The value of such a development lies in the successful selection of components of a material that by its molecular nature has proven itself very successfully.

This material due to external factors (ambient temperature, etc.) can quickly (up to 1 second) change its spatial orientation with subsequent preservation of the surface shape.

Material programming effect.

This material is characterized by the main unique valuable property – so-called programming effect. This structured composition can be programmed in such a way that with the corresponding external factors (temperature and humidity) the two main control factors – the linear and volume expansion coefficients according to the laws of the molecular crystalline structure will acquire so-called predetermined – programmed value, which ultimately will make a coated surface change its spatial orientation.

In other words – a plate with a similar coating at the appropriate temperature and degree of ultraviolet polarization of the surface will take the so-called predetermined orientation in space.

This process does not have a reverse reaction, that is, the packages themselves will not be unpacked after the completion of the main packaging process.

The use of memory coatings in the food industry.

Today, the use of such coatings on food packaging lines of a fairly wide list is quite promising.

This may be, for example, a process of packaging butter in appropriate paper packaging forms.

A significant advantage of this technology is so-called effect of electrostatic bonding of the edges of the wrapping packaging material around the food product (for example, a packaged portion of a portion of butter).

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