

Biodecomposed Materials in Packaging Technology

A. Chorna
J. Smirnova

National University of Food Technologies

Using of synthetic polymeric materials for the production of packing is predetermined by their numerous advantages over other packing materials:

- cheap raw material;
- high aesthetics;
- lightness;
- low power-capacity of production;
- possibility of revolutionary designer decisions when constructing and arranging of packing [1].

However the production of synthetic polymeric packing materials depends on the supply of world petroleum and gas resources. The environmentalists of the whole world stand for substituting of raw materials source of production of these materials by natural ones, and, in particular, by plant components. The synthetic packing is not subject to decomposition and becomes the ecological problem of global scale.

At the modern stage of development of society there appeared the new approach to the development of polymeric materials, diametrically opposite to traditional. It is aimed approach to the at receiving polymers that keep operating characteristics only during the period of consumption, and then undergo physical and chemical and biological transformations under the influence of environment and easily join the metabolism processes of the natural biosystems. Products of biodecomposition are expected to be not toxic for the environment [2].

A number of new biodecomposed plastics received due to different technologies has appeared today. Now most European businessmen have already widely used materials, that are biologically decomposed. As for the prospects of the use of biodecomposed materials in the countries of ex-Soviet Union, then it must be noticed, that they have not been developed yet. The producers of EC members see the potential market of unecological polymeric production distribution in CIS countries [3].

Analysing the problem of biodecomposed polymeric packing materials, it is possible to distinguish three basic groups dividing conventionally these existent materials :

- biodecomposed polymeric materials obtained by a synthetic way;
- biodecomposed materials on the basis of natural polymers, obtained by biological transformation of the latter;

- additives added to synthetic polymers at their burial place, ability to decompose into harmless components.

Different technological approaches are known to create biodecomposed polymers.

Recently many researches have been devoted to mixtures of starch with other natural fillers and polymers, such as a chitin, chitosan, pectins, cellulose and others, or with products of their chemical modification [4].

Thus, the capacity of polymeric materials to be decomposed is determined mainly by their chemical composition, structure and properties of macromolecules. Firmness of polymers to biological decomposition is affected by some macrostructural characteristics (size of porosity, equitability of additives in polymeric mass, peculiarities of treatment of production surface, compatibility of components and structure of systems obtained, etc.) and also technological parameters of its preparation.

References

1. Фомин В.А., Гузеев В.В. Биоразлагаемые полимеры, состояние и перспективы использования // Пластические массы. – 2001. - № 2.-С. 42-46.
2. Третьяков А.О. Биоразлагаемые упаковочные материалы. // Мир упаковки.- 2004. - № 5.-С. 14-16.
3. Легонькова О., Сдобникова О. Биоразлагаемые материалы в технологии упаковки // Тара и упаковка. – 2003. - № 6. - С. 78-80.
4. Власова Г.М., Макаревич А.И. Биоразлагаемые пластики в индустрии упаковки // Технологические переработки и упаковки. - 2001. - № 8. С. 28-31.