CONTAINER FOR JUICE-CONTAINING PRODUCTS.

COMMODOITY ASSESSMENT AND SAFETY OF USE

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Annotation The consumer assesses quality of the goods, first of all, on appearance and registration of its packing. This is especially important for food, as the buyer can not always see the product that is hidden under the package. Thus, consumer packaging is one of the most important components of quality and competitiveness of finished canned food, as the appearance and design of packaging, the buyer evaluates, first of all, the product itself. Therefore, issues related to the manufacturer’s use of packaging for a particular product are paramount. The competitiveness of finished products depends not only on the consumer packaging, but also related to environmental friendliness and its cost. Since after opening the package and using food, consumer packaging is thrown away and must be subsequently disposed of, in this case there are problems that require modern methods of solution (choice of material for consumer packaging, use of modern processing technologies, use of secondary resources, etc.). The solution of these issues directly depends on the quality of raw materials, which is also reflected in the materials of the article. To choose the right type of consumer packaging, you need to know its advantages and disadvantages, as well as its competitiveness in the food market. Depending on the type of canned products, juices, beverages, the manufacturer may use specific, most acceptable in this case, the type of packaging. The aim of the work is to consider the most commonly used types and types of consumer packaging, and to provide practical assistance to food producers (juices, beverages, juice products) in terms of choosing the most acceptable range of packaging depending on the type of finished product.

Key words: types of containers, juice-containing products, methods of canning, thermal sterilization, vacuum deformation
довольному ринку. Залежно від віда консервованої продукції, соків, напоїв виробник може використо-
увати конкретні, найбільш прийнятні в даному випадку, типи упаковки. Метою роботи є як розгляд найбільш часто використовуваних видів і типів споживчої упаковки, так і надання практичної допомоги виробникам харчової продукції (соків, напоїв, соковмісної продукції) в частині вибору найбільш прийнятах асортименту тари залежно від виду готової продукції.

Ключові слова: види тари, соковмісні продукти, способи консервування, теплова стерилізація, ва-куумна деформація

Тара є одна з основних місць у харчовій технології. Досить широкий асортимент упаковочного матеріалу використовується для упаковування продуктів харчування. Метою роботи є розгляд впливу на вибір упаковки у рамках використання та збереження якісних характеристик продукту.

Тара було визначено, що консервована продукція, соки, напої виробники можуть використовувати ту або іншу упаковку. Вибір тари впливає на вартість готової продукції. Якщо вибрати більш дорогу упаковку для низькоконсумованих продуктів, витрати збільшуються, але вигідність у вигляді якісної продукції може компенсувати цю вартість.

Перш за все вибір упаковки впливає на фізичні властивості продукту. В тарі зберігається та надходить низькошвидкісний, високоякісний, але низькокомунікативний продукт. Наприклад, у тарі зберігається виноградний сок, напівсолодкий напій.

Тара включає такі матеріали, як метал, скло, пластик. Найбільш популярними у тарі для напоїв є металові банки та скляні банки. У скляній тарі продукт зберігається довго, але матеріал для упаковки склів має низькі фізичні властивості, наприклад, можна легко пошкодити склів.

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which is also due to the fact that, with the growing competition between manufacturers, there is a tendency to move from simple standard glass products to exclusive designs in different designs. The choice of a closure is determined by the type of container. Closures must guarantee to the buyer the safety of the finished product and ease of opening the consumer container.

Glass packaging is compatible with advanced, innovative labeling technologies, which mean labeling, symbols or drawings applied to packaging or goods, as well as other aids designed to identify a product or its individual properties, bring to the consumer information about manufacturers, quantitative and qualitative characteristics of goods [2; 3].

It is widely used in the juice and non-alcoholic industries, glass containers with a rim of the necks of cans and bottles: I – rolling, III – threaded. Glass containers of the I closure type or SKO (rolled glass cans) have a high sealing strength, but they are difficult to open. For it, covers are made with a rubber-like sealing ring made of a special material – Bakelite. When rolling, the roller of the capping machine folds the edge of the lid around the rim, while the rubber ring seals and seals the can.

Type III glass containers are sealed by screwing a threaded cap with a sealing paste – plastisol. This closure is also known as the “Twist-off” closure (translated from English – “turn – open”). Precise observance of the main (controlled) dimensions of the throat rim (diameter and height) is the primary guarantee of the tightness of canned food during closure, sterilization and transportation [3].

Consumers prefer to buy juices and drinks in polymer and plastic containers. Such packaging is light and convenient, therefore, large manufacturers also choose and use plastic containers, since the costs of its production are much lower than for other materials. Sales growth has been observed in recent years small-volume plastic bottles for on-the-go use; and multi-packaged drinks – by reducing the demand for large volume bottles. The advantages of polymeric materials are affordable cost, ease of recycling and transportation of recycled containers, compatibility with the production of a wide range of different products.

The first place for the producer and consumer for juices and drinks is taken by a semi-rigid combined container. This package retains its original shape and dimensions when filled with products. It is able to withstand minor mechanical stress during transportation and storage. Provides protection of contents from mechanical stress, from the effects of oxygen, microflora, ultraviolet radiation. It is environmentally friendly, allows aseptic storage of drinks, packing them in portions, various forms of this container Tetra Pack, Tetra Brick, Tetra Prisma, Tetra Gemina and others are widely used [4; 5].

Aseptic packaging has six (“Tetra Pack”) or seven (“Combiblock”) layers, allowing you to store drinks and juices – 9–12 months. The technology of packaging products in aseptic containers is such that vitamins are retained in the product, heated to very high temperatures for just a few seconds, and bacteria and microorganisms die. Tetra Pak’s main competitor is SIG Combibloc, which holds 10–12% of the aseptic packaging market. In “Combiblock”, for example, products of the Santal, J-7 brands are packaged, but the Tetra Pak concern remains the absolute market leader, and the principle of operation for all manufacturers remains the same – aseptic packaging technology.

There are two technologies for forming combined packaging. The first technology, which requires a large initial investment, is the formation of a package from a so-called roll. It is used in the formation of Tetra Brik. The second technology used by a number of manufacturers around the world is die-cut bag forming (a kind of “flat bag”): a method that can significantly reduce the initial investment in equipment.

The cost of packaging varies in each case and on average amounts to 10–12% of the cost of the product. The core technology of Tetra Pak packaging machines is the Tetra Brik Aseptic packaging system. The principle of operation of this technology: the packaging material supplied in a roll is fed to the packaging machine and sterilized in a closed aseptic bath, then it is shaped into a tube. The process takes place in a closed compartment of the machine, which prevents unwanted contact of the inside of the packaging material with the environment. The use of this technique excludes any possibility of third-party contamination of the product in the package. Packages are formed from the pipe, which are sealed below the level of the liquid being poured. This prevents the ingress of air into the package, upon contact with which the product will deteriorate. The increase in the shelf life of the product is ensured by its short-term temperature treatment, within a few seconds or minutes. Finally, the product is packaged in sterilized packaging under aseptic conditions. Opening methods – perforation, “ReCap”, “Pultab”, Straw-hole, “StreamCap” [6; 7].

The second place in the market is occupied by polymeric semi-rigid blown containers of the type (polyethylene terephthalate), in which liquid products such as beverage juices, including carbonated ones, are packed. It is made from various thermoplastics and is a preform from which bottles can be blown when the blanks are heated to 100 °C of various volumes. In the next 10 years, the consumption of PET containers in the juice drinks filling industry should be expected to grow by 140%.

PET containers are a unique type of packaging for food products due to the combination of the following consumer properties:
Today, Doy-Pak packaging is produced in various shapes and configurations. They are used to pack yoghurts, cottage cheese, milk drinks, baby food, juices, purees. Various variations of Doy-Pak bags are possible not only due to the packaging design, but also due to special methods of processing and manufacturing of containers. The container can withstand high temperatures of packaging, pasteurization, sterilization. Canning
methods for Doy-Pak packaging are asepsis, hot filling. A combination of two preservation methods can be used – heat sterilization by the “hot filling” method and the use of preservatives. In this case, the product is subjected to heat treatment in such a way that 100% of the required sterilizing effect is not achieved. The lack of lethality is ensured by the use of preservatives (sorbic acid), which ensures industrial sterility and more complete preservation of the nutritional value of the finished product [11; 12].

Autoclavable bags and Ultracean packaging are becoming more and more popular. A retort bag or autoclavable Doy-Pack is a bag made of thermo-welded multilayer material that can withstand autoclave sterilization temperatures. Such retort packaging is used in the manufacture of ready-made meals, sauces, mashed potatoes, wet animal feed [13].

Conclusions. The main types of consumer packaging are considered, which are used in the production of a wide range of canned products, including juices, juice drinks. The main advantages and disadvantages of glass, metal, polymer and multilayer soft and semi-rigid containers are presented. Possibilities of using containers in various cases of production and storage of canned food products that require both special storage conditions and stored under normal standard conditions (temperature 0–25 °C, relative humidity 75%, atmospheric pressure) are indicated.

References
7. Verkhivker YG, Miroshnichenko EM. The use of polymeric types of packaging technology food production. Abstract World Congress On Food Science and Technolog; 2019 Jul 15–17; Rome, Italy.

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