



**СТАЛІЙ ЛАНЦЮГ ХАРЧУВАННЯ
ТА БЕЗПЕКА КРІЗЬ НАУКУ,
ЗНАННЯ ТА БІЗНЕС**

**SUSTAINABLE FOOD CHAIN
AND SAFETY THROUGH SCIENCE,
KNOWLEDGE AND BUSINESS**

**Тези доповідей
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KEY SOLUTIONS IN CHILDREN'S FOOD PACKAGING

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Innovations in baby food packaging are constantly changing, driven by consumer demand for faster, easier preparation and transportation solutions that can adapt to new lifestyles. This is why the packaged baby food market is offering more and more opportunities.

An important aspect in the production of baby food packaging is that it guarantees safety. Another important aspect that baby food packaging must meet is maintaining the vitamins and properties of the products. Doypack bags with a stopper are one of the best alternatives in terms of comfort and protection of this type of product.

In addition to these basic aspects, packaging intended for this application must be innovative, and its design and ergonomics focused on the «ready-to-eat» and «n-the-go» product segments, because convenience in preparation and transport is what the consumer requires at this time.

Therefore, packaging for baby food products, which are usually consumed hot, requires materials with properties that are resistant to heat treatment, e.g. heating in a microwave oven. To achieve aseptic packaging conditions, it is necessary to use a system that maintains microbiological safety. For this purpose, we must take into account several aspects. On the one hand, it is essential to maintain the sterilization of the environment and of every element in contact with the product. On the other hand, it is necessary to use sterilization-friendly materials that prevent contamination of the product and maintain the safety of the product after packaging. Therefore, sterilization of the packaging requires the same special conditions at the time of packaging the product. Once the food is introduced into the container, it is sealed with a sealing machine to prevent any type of internal contamination. Retort packaging meets these requirements.

Baby food products that use aseptic packaging include dairy products, juices and purees, also because such packaging perfectly preserves the properties of fruit and vegetable preserves

In addition to ensuring food safety, aseptic packaging allows temperature regulation for faster heating, prevents the use of chemical preservatives while maintaining the product's natural state, limits the migration of substances from packaging materials, and reduces environmental impact as well as production costs. In addition to meeting all the safety and preservation properties of food, mobile food packaging is an

ideal option for packaging baby food as it offers the possibility of easier handling and transportation.

Retort packaging – a profitable alternative to rigid packaging. Retort packaging is a soft food packaging, which is an excellent alternative to the usual cans. This type of packaging (pouches) perfectly preserves the quality of products for a long period. Retort packaging are used for products requiring sterilization, such as: porridge, stew, canned goods, soups, sauces, baby food (vegetable and fruit mash, soups, pasta, as well as cereals, meat, pate), animal feed. Quick preparation is the main advantage of such dishes.

Retort packaging offers numerous benefits, including high barrier properties that prevent the penetration of light and gases, extended shelf life without loss of quality, and the ability to maintain products in their natural state without moisture loss. It preserves the natural aroma and taste of foods, provides excellent thermal stability at both high and low temperatures, and ensures strong resistance to shocks, cracks, punctures, and other mechanical damage. Additionally, retort packaging is cost-effective in logistics and production, allows full-surface information printing, and offers a wide variety of sizes and designs, including fully customized options.

Retort packaging consists of several laminated layers designed to withstand high temperatures during autoclave sterilization. The most common structure includes: a PET layer that provides external protection and printability; an aluminum foil layer that acts as a barrier against light and gases; a nylon layer that prevents micro-punctures and is recommended for long-shelf-life human food; and a PE sealing layer that ensures strong heat-sealing and prevents polymer migration into the product.

Retort packaging offers several important functional features. It prevents evaporation thanks to its vapor-resistant structure, keeping products in their natural state without moisture loss. It also eliminates the risk of oxidation, as vacuum packaging removes all air from the pouch. The material inhibits the growth of microorganisms, ensuring high product quality and long shelf life, while also preserving the natural aroma of the contents. Additionally, retort packaging is freeze-resistant, protecting the product from external environmental factors and enabling long-term storage.

Currently, more and more children's products packaged in retort packaging are appearing on the Ukrainian market, displacing glass and tin containers.

Conclusions. Thus, the use of retort packaging in the production of products for baby food is promising, relevant and gradually expanding.