

## Methods of Food Processing and Packaging Techniques

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### DESCRIPTION

Food processing is the transformation of raw materials into food or other forms by physical or chemical means. Food processing aims to carry out the process of processing food to make it safe, palatable and easy to eat. To meet consumer demand for consistently manufactured products, manufacturers must apply quality processing methods that improve or maintain product safety, quality and nutrition of the products. Food processing combines raw food ingredients to produce marketable food products that can be easily prepared and served by consumers. Technologies which are already seen in food industries or related fields are high pressure processing, pulsed electric fields, ultrasound and cold plasma. Food packaging technology is necessary to deliver the products safely to the consumers in a healthy state at the minimum cost. It is the science or technology of preparing foods for transportation, storage, or sale away from the place of production. Packaging ensures the protection of all kinds of materials through containers that are designed to isolate/protect the contents from external factors. It is an essential aspect of food value addition. Food processing uses cleanly harvested plants and animals to produce marketable foods, beverages, dietary supplements, and the products of pharmaceuticals. They combine these raw materials with some other ingredients to produce edible products, which are often prepared later as food processing companies may not handle the cooking. In industrial food processing, food is created and stored according to the type of the product being processed. Innovations in food processing have greatly influenced what people eat throughout history.

### Methods of food processing

#### Traditional food processing methods which are still used today:

Food processing is one of the oldest industries on earth, ever since humans produced food; there has been a need for ways to process food for optimal nutrition, longer storage life, and for better taste. Some of the most basic food processing methods are everywhere. Cooking is the most common processing method. Heat is applied in a variety of ways, such as baking, boiling, grilling, and frying. All of these processes require materials that can withstand varying degrees of heat without decomposing or

releasing toxic substances into the food. Drying is one of the oldest methods of preserving foods. Sun drying has been used for thousands of years, but modern plants use techniques like freeze drying. Fermentation is a chemical process that occurs in an anaerobic (oxygen-free) environment by bacteria and other microorganisms such as yeast. Apart from its famous use in alcoholic beverages, fermentation is used to make products such as sauerkraut, yogurt and baker's yeast. This process may refer to either submerging in brine or vinegar, and pickling was introduced around 2400 BC.

**Advanced methods of food processing:** Some types of industrial food processing are simple extensions of traditional food processing techniques. Freezing, flash-freezing and freeze-drying, modified-atmosphere packaging, chemical additives, extrusion, refrigeration, irradiation and freezing adequately will improve the freshness and shelf life of a variety of food products, and techniques such as flash-freezing helps in preparing food at improved speed and volume. Pasteurization is invented by Louis Pasteur in 1864; this technique is a reliable method of heating food rapidly and then cooling it, killing potentially harmful microbes. High pressure processing is the process sometimes called as pascalization, in this process the food is treated under high-pressure conditions, killing many species of bacteria as well as improving the safety and shelf life. This process is desirable because it is energy efficient, reduces processing time, and contains no additives. This relatively new process has been in commercial use since the 1990s and is still being perfected.

**Food processing equipment:** All the above processes require special equipment. Food also requires careful cleaning, cooking and packaging, depending on how the food is processed. Cleaning equipment like atomizer, ultrasonic cleaner, magnetic separators are used. Grading equipment which is a lab like equipment used for food quality testing, extruder equipment, foaming equipment, mixers, agglomerating equipment, Machinery equipment like mills, crushers, pulpers, cutters, grinders and saws.

### CONCLUSION

The types of packaging which are used for food are as diverse as the food itself, well known examples include trays, bags, cans,

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coated paper cans, pallets and wraps. Many food products require multiple packaging techniques for each saleable item, such as frozen meal with a tray, plastic wrap, and outer box (which means using multiple packaging machines for one production line). To pack processed foods on an industrial scale, food companies use a variety of specialized equipment. Some important examples are: Vacuum packaging machines remove

air from plastic packages to reduce atmospheric oxygen and limit microbial growth and evaporation to extend shelf life. A cartoner that automatically folds paper cartons and applies glue as needed. Capping machine for sealing and capping liquids in bottles. Coding and labeling machines for not applying repetitive graphics such as marketing labels, but also auto code information essential for tracking food freshness.