

VACCUM PACKAGING

- It is a procedure in which air is drawn out of the package prior to sealing but no other gases are introduced.
- This technique has been used for many years for products such as cured meats and cheese.

Vacuum packaging is an easy and efficient way of packaging a variety of products. Vacuum packaging is often used in commercial and residential applications to preserve food. Technically it is considered a form of modified atmosphere packaging (MAP). This is any form of packaging the atmosphere around the product is altered from the external atmosphere.

Benefits of Vacuum Packaging

1. Increased Shelf Life –

Studies have shown that vacuum packaging can increase product shelf life from 50%-400%. The key to increasing product shelf life is determining the ideal atmosphere within the packaging for the product being packaged. This could be the introduction of an inert gas or the reduction of oxygen to ideal levels. Vacuum packaging is also a preferred form of packaging for many products going into long term freezer storage. The proper vacuum bags can dramatically reduce freeze burn. It is a chosen form of packaging for meat storage around the world.

2. Reduced Product Loss –

Increased shelf life directly affects the reduction in product loss for companies inventorying products. The reduced product loss helps to increase bottom lines.

3. Sealed Barrier From External Elements

With the proper seal, vacuum packaging can protect products from dust, moisture, insects, and a variety of other external elements that may harm or damage products. Vacuum packaging is also an excellent barrier of protection against freeze burn during long term freezer storage.

4. Seals in Flavors

Wet aging meat is a popular form of curing meat before preparing it. This often uses natural juices from the meat with spices and flavors vacuum sealed to lock in flavors during the curing process.

5. No Chemical Preservatives Required

Vacuum packaging eliminates the need for chemical preservatives. With the right mixture of oxygen to inert gas, products can last longer without the use of commonly used preservatives. The earth's atmosphere is made up of 78% nitrogen which is the most commonly used inert gas for vacuum packaging.

6. Improved Product Presentation - Most vacuum bags are crystal clear allowing products within the packaging to be displayed on shelves.

7. Multiple Packaging Options - Vacuum sealing materials come with multiple packaging options. Users can buy rolls of film or bags to seal products. Bags can be found with re closable zippers, easy-open tear notches, foil-lined, channeled, and with a variety of other options to choose from.

8. Quick and Efficient Packaging - With the proper machines and materials, vacuum sealing can be a very efficient process enabling hundreds or thousands of products to be sealed per hour.

MODIFIED ATMOSPHERE PACKAGING (MAP)

Modified Atmosphere Packaging (MAP) can be defined as the enclosure of food in a package in which the atmosphere inside the package is modified or altered to provide an optimum atmosphere for increasing shelf life and maintaining quality of the food.

In modified atmosphere packaging (MAP) air is replaced inside a package with a predetermined mixture of gases prior to sealing it. The gases involved in modified atmosphere packaging, as applied commercially today, are carbon dioxide, nitrogen and oxygen.

GASES USED IN MAP

The three main gases used in MAP are CO₂, O₂, and N₂, either singly or in combination.

i. Carbon dioxide reacts with water in the product to form carbonic acid which lowers the pH of the food. It also inhibits the growth of certain microorganisms, mainly moulds and some aerobic bacteria.

ii. Nitrogen is an inert gas with no odor or taste. It has no direct effect on microorganisms or foods, other than to replace oxygen, which can inhibit the oxidation of fats.

iii. Oxygen promotes several types of deteriorative reactions in foods including fat oxidation, browning reactions and pigment oxidation. Most of the common spoilage bacteria and fungi require O₂ for growth. For these reasons, O₂ is either excluded or the level set as low as possible. Exceptions occur where O₂ is needed for fruit and vegetable respiration or the retention of color in red meat.

ADVANTAGES OF MODIFIED ATMOSPHERE PACKAGING

1. Increased shelf life.
2. Reduced economic losses due to longer shelf life.
3. Provides a high quality product.
5. Improved presentation – clear view of product and all –around visibility.
6. Little or no need for chemical preservatives.
7. Sealed packages are barriers against product recontamination.
8. Odorless and convenient packages.

DISADVANTAGES OF MODIFIED ATMOSPHERE PACKAGING:

1. Added costs for gases, packaging materials and machinery.
2. Temperature control necessary
3. Different gas formulations for each product type.
4. Special equipment and training required.
5. Increased pack volume adversely affects transport costs and retail display space.
6. Loss benefits once the pack is opened or leaks.
7. CO₂ dissolving into the food could lead to pack collapse and increased drip.

2. Temperature control necessary.
3. Different gas formulations for each product type.
4. Special equipment and training required.
5. Increased pack volume adversely affects transport costs and retail display space.
6. Loss benefits once the pack is opened or leaks.
7. CO₂ dissolving into the food could lead to pack collapse and increased drip.