LabTech India

Modified Atmosphere Packaging (MAP)



LabTech Analytical Pvt. Ltd.

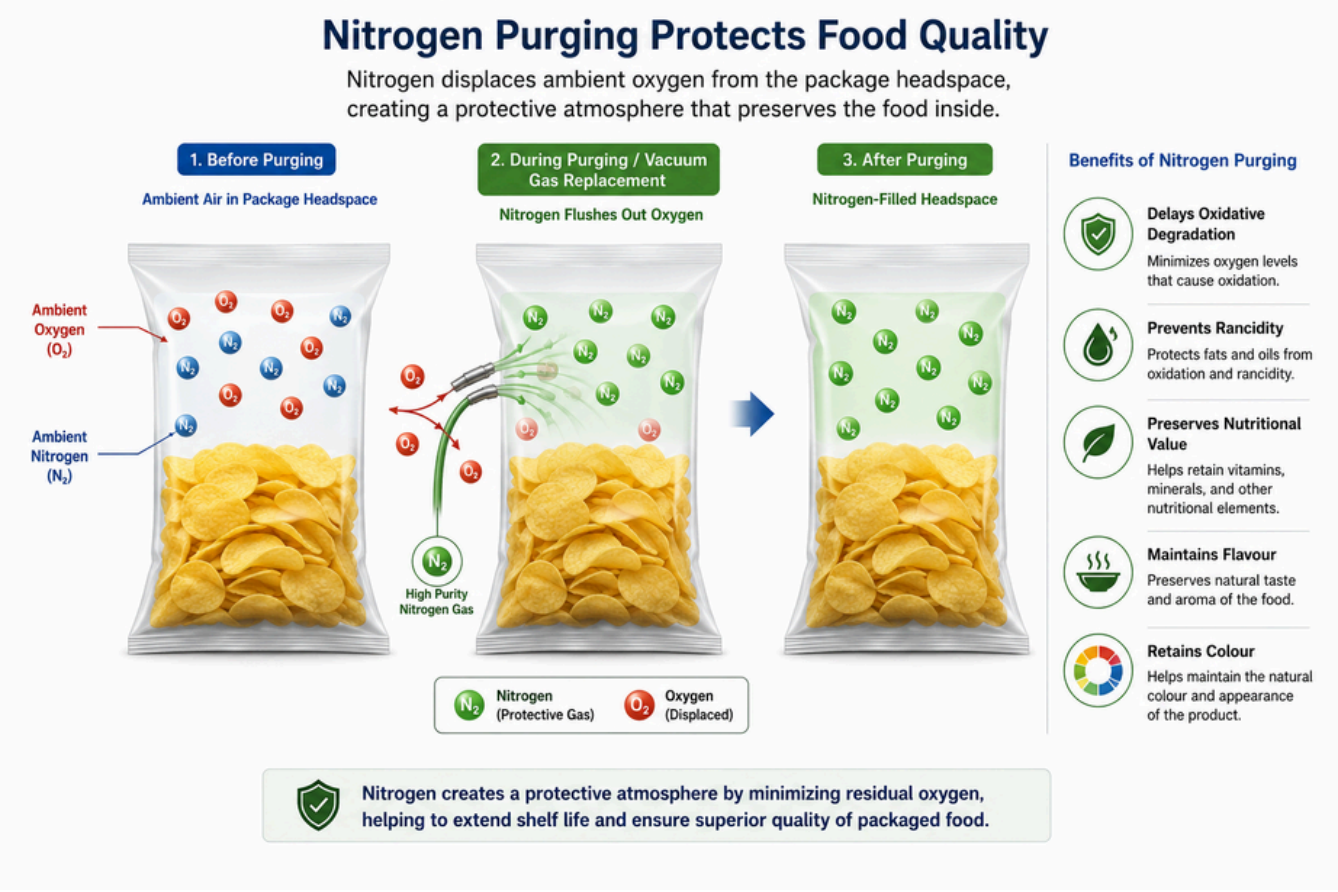
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Introduction:

Modified Atmosphere Packaging (MAP) is a widely used food preservation technology that extends the shelf-life of fresh and perishable products by substituting ambient air with a carefully blended mixture of atmospheric gases. Within MAP systems, Nitrogen (N_2) serves as an inert filler gas that plays a critical, foundational role alongside active gases such as carbon dioxide and oxygen to maintain the physical and chemical integrity of packaged food products, thereby minimizing oxidation and package collapse.

Role of Nitrogen Gas in MAP

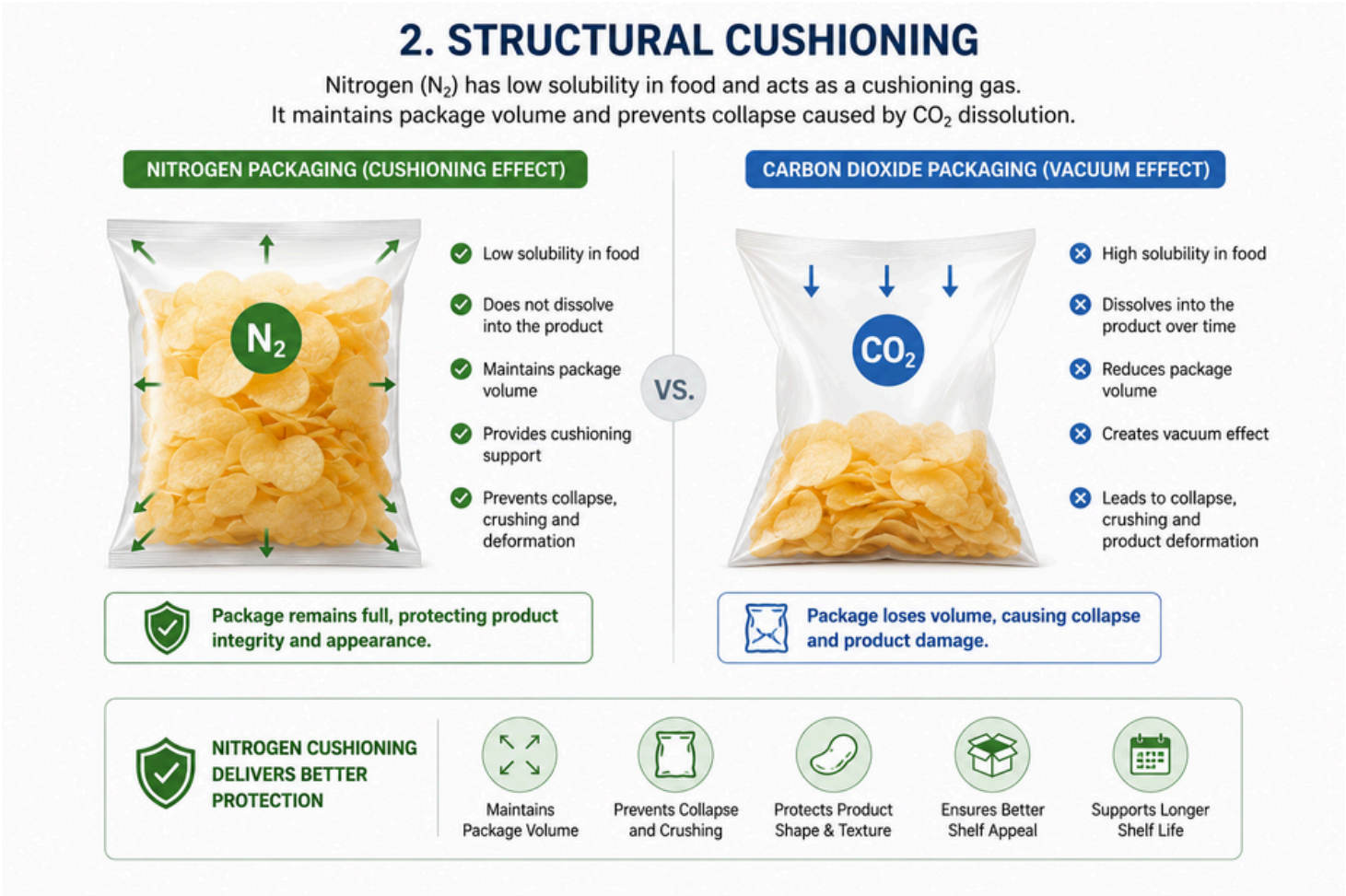
Where carbon dioxide acts as an antimicrobial agent, nitrogen is an inert gas without any direct bacteriostatic or fungistatic activity. The two primary function of nitrogen gas is as follows:



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- **Oxidative Inhibition via Displacement:** Nitrogen acts as a purging gas that displaces ambient oxygen from the package headspace during gas flushing or vacuum gas replacement processes. By minimizing residual oxygen levels, nitrogen delays oxidative degradation, prevents rancidity of fats and oils, and helps in preserving nutritional elements, flavours, and colour of the packaged food product.



- **Structural Cushioning:** Since the nitrogen gas has low solubility in food, it does not readily dissolve into the food product over time. This property of nitrogen acts as a cushioning gas in food packaging. This helps to maintain the package volume and counteracts the vacuum effect created when carbon dioxide dissolves into the food products, thereby preventing package collapse, crushing, and product deformation

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LabTech Range of Products

Nitrogen Gas Generator from ErreDue S.P.A

Specifications:

- PSA-based technology
- Flow rate from 10Nm3/hr to 500Nm3/hr
- Output gas purity up to 99.9995% (Patented Technology with Saturn)
- PLC Control Panel included
- Best Suitable for Industrial Process like MAP Packaging, Inertization, Thermal treatment of metals, etc.
- RS485 & Ethernet connections available



Venus Nitrogen System



Saturn Nitrogen System



Containerized On-site nitrogen production plant at the Brembo plant in Thailand with a total capacity of 100 Nm3/hr

Image Source: LinkedIn

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