

# Modified Atmosphere Packaging

- ✔ Preserved food quality and extended shelf life
- ✔ Optimised inventory and expanded distribution networks
- ✔ Total gas management and technical support
- ✔ Dedicated and passionate experts near you
- ✔ Strong culture of collaboration and partnership

## Benefits


### What is MAP and how does it work?

MAP, also known as protective or controlled atmosphere packaging, consists of replacing air in the packaging with a single gas or gas mixture, adapted to each food product.

Common gases include Carbon Dioxide, Nitrogen, and Oxygen. They are chosen for their preservation properties and form a protective bubble inside the packaging, preventing food products from crushing.

Replacing air with gas helps limit fat oxidation, and minimise the growth of microorganisms, to eventually extend the shelf life and quality of your product over a longer period.

- + **Extended shelf life:** Significantly prolongs product freshness and prevents spoilage, reducing waste
- + **Preserves quality:** Maintains the natural colour, texture, and nutritional value of the food
- + **Reduced need for preservatives:** Lessens reliance on artificial additives, appealing to health-conscious consumers
- + **Enhanced product presentation:** Offers clear visibility of the product, attracting buyers
- + **Improved food safety:** Inhibits the growth of spoilage microorganisms, enhancing overall safety



A complete range of food grade gases to address the shelf life requirements of your food products

## ALIGAL™

ALIGAL™ guarantees that our range of gas products complies with the industry standards and enforceable legislation in each country. It also ensures that a food safety management system based upon HACCP principles is applied throughout all stages of the production process and supply chain, and also includes a highly effective traceability system in order to provide peace-of-mind to both the processor and the final consumer.

### Safety & quality

Each ALIGAL™ product conforms to local food and beverage regulations and to the same minimum Air Liquide specifications and manufacturing standards used worldwide.

### Reliability & flexibility

With ALIGAL™, Air Liquide guarantees the same product quality, consistency and reliability, anywhere in the world, in various modes of supply adapted to your needs.

### Expertise & proximity

Thanks to extensive global R&D activities and dedicated local teams and technical experts near you, Air Liquide can bring comprehensive and innovative solutions to your doorstep.

Air Liquide products are specially formulated for Modified Atmosphere Packaging and leverage the properties of each gas molecule

Different foods have varying characteristics and require gas compositions adapted to their needs. Let's look at some common MAP combinations, and compare shelf life with air packaging vs. MAP.

Gases	Function
Carbon Dioxide	<ul style="list-style-type: none"> <li>Inhibits microbial developments</li> <li>Slows down oxidative reactions</li> </ul>
Nitrogen	<ul style="list-style-type: none"> <li>Prevents oxidation</li> <li>Limits the growth of aerobic bacteria</li> <li>Protects against package collapse</li> </ul>
Oxygen	<ul style="list-style-type: none"> <li>Maintains the bright colour of red meat</li> <li>Prevents anaerobic conditions</li> <li>Essential for respiration of fresh fruits and vegetables</li> </ul>

### Comparison of product shelf life in air against protective atmosphere

Product	Recommended gas composition	Shelf life gains with MAP vs. Air
Snacks & coffee	100% N <sub>2</sub>	3-10x longer (e.g. potato chips: from ~3 months to 9-12 months)
Fresh meat	70-80% O <sub>2</sub> 30-20% CO <sub>2</sub>	2-4x longer (e.g. refrigerated chicken: from 12 days to 21 days)
Cooked meat & dairy	60-80% N <sub>2</sub> 40-20% CO <sub>2</sub>	3-5x longer (e.g. sliced ham: from ~3-5 days to 15-30 days)
Bread & cakes	50-70% CO <sub>2</sub> 50-30% N <sub>2</sub>	2-5x longer (e.g. bread: from ~5-7 days to 14-30 days)
Fruits & vegetables	2-10% O <sub>2</sub> 3-10% CO <sub>2</sub> N <sub>2</sub> balance	1.5-3x longer (e.g. leafy greens: from ~4 days to 10-14 days)

# Why choose Air Liquide for your MAP needs?

**Our experts, at the service of your development**



Air Liquide has been a world leader in industrial gas solutions since 1902.

Having tested over 1,500 food products worldwide and accumulated thousands of global references, we have extensive experience in the food industry. Our dedicated local team and food application experts will work with you to understand your needs and create the ideal solution for your operations.

For all types of food product, Air Liquide teams can support you with:

- ✓ Gas composition tests and MAP trials
- ✓ Design & commissioning of gas installation
- ✓ Choice of gas supply mode
- ✓ Training in the use and handling of gases
- ✓ Packaging line startup with machine vendors

## Contact us

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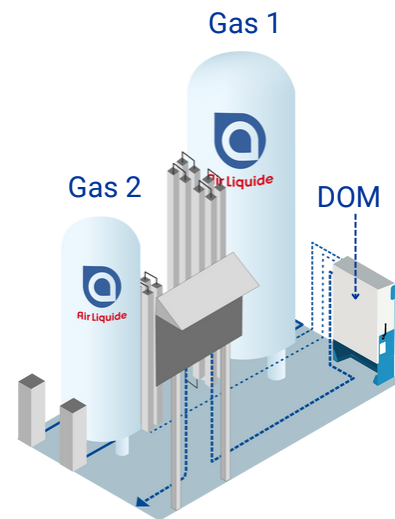
## Food grade gas equipment

Air Liquide has a complete range of food grade gas equipment such as gas regulators, semi-automatic gas manifolds, flowmeters, and flexible hoses, to ensure a safe, seamless and accurate supply of gases to the point of use.

### Dynamic On-site Mixer (DOM): Focus on your processes

**Get accurate gas mixtures:** Whatever your gas mixture and flow rate, Air Liquide's Dynamic On-site Mixer (DOM) delivers a consistent gas mixture from liquid and/or cylinder supply.

**Get the highest reliability:** A smart robust design that requires no power supply, no solenoid valve, no buffer tank.



ALIGAL™ is available with the best choice of supply modes according to your gas consumption needs to ensure quality, consistency, reliability and cost competitiveness.

