

# Packaging and preservation: N<sub>2</sub>, CO<sub>2</sub> und O<sub>2</sub> – help you succeed

Food stays fresher and more appetizing longer when you replace the air inside the packaging with a gas or a gas mixture with special properties. The quality of products packaged under such modified atmospheres (MAP: Modified Atmosphere Packaging) can be improved through the beneficial effects of a wide variety of gases. After all, what could be better than the food packaging gases that make up our **Gourmet** line, which are air's natural components such as carbon dioxide, oxygen and nitrogen that satisfy the highest quality standards?

## Preservation and freshness

Basically, MAP robs bacteria and mold fungi of oxygen by displacing the air, and inhibiting growth starting from a CO<sub>2</sub> content as low as 20%. However, when you want to package fresh meat and protect it against anaerobic microbes, a high oxygen content of 70 or 80% is the answer. Nitrogen can also be added as a support gas if necessary.

In order to enable MAP customers to leverage the benefits of different gases, we also recommend mixtures of two or more gases in many cases. Optimal proportion solutions vary from product to product. A modified atmosphere tailored to your product helps sustain its freshness and improve its appearance - in a perfectly natural way, and without preservatives.

## Intelligent gases support production

Are your freeze-dried and spray-dried bulk materials susceptible to oxygen and moisture because their fissured surface absorbs large quantities of oxygen? Pourable goods don't tolerate atmospheric moisture well. Excess moisture reduces pourability and offering ideal conditions for the growth of microorganisms. But using an inert gas to "break" the vacuum after the drying process eliminates this problem. And Modified Atmosphere Packaging – with nitrogen, carbon dioxide or a **Gourmet** mixture – will then preserves the desired results thereafter for a long time.

## Sparkling freshness

Gases have other uses, too: nitrogen is used to remove dissolved oxygen from liquid foods by a simple process of sparging. The liquid is permeated with fine gas bubbles, leaving the oxygen molecules no choice but to hit the road!

## All-round CO<sub>2</sub>: extracts and powders

This gas is a genuine jack-of-all-trades! By using carbon dioxide as a solvent, it is possible to extract specifically selected components under high pressure – in a gentle and environmentally sound way. Examples of this include the extraction of flavors or the decaffeination of coffee.

Liquid carbon dioxide is also ideal for using in the atomizing process by very fine powder that are produced from oils and fats (VarioSol process). The dosing and mixing of fats is far easier when processed in the form of fine powders.

## Good results are no accident

Take advantage of the know-how of our experts. We are your qualified partner for the protection of your products. Get in touch with us!



*Appetizing appearance - oxygen keeps the meat red.*



Sparkling freshness -  
by inert gases



Nitrogen (N<sub>2</sub>), carbon dioxide (CO<sub>2</sub>)  
and oxygen (O<sub>2</sub>) - natural protection for  
food

| Application:                         | Know-how from Messer:   | Advantages:   |
|--------------------------------------|---|---|
| <b>Packaging and storage</b>         |   |   |
| Meat and sausages                    | Modified atmosphere packaging, aseptic packing under active gas (O <sub>2</sub> , CO <sub>2</sub> )       | Protective atmosphere increases shelf life, product looks appealing (reddening of muscle coloring); pre-portioning in large butcheries  |
| Fatty and oily foods                 | Oxygen free packaging (Variofresh®)   | Optimum oxidation protection; shelf life prolonged; flavors, essences and colorings are protected   |
| Edible oils and oily base substances | Storage under nitrogen  | The protective gas nitrogen prevents oxidation and preserves the quality of delicate oils and fats; low risk of fire and dust explosions with dry pourable goods                                      |
| Wine, fruit juices                   | Storage and handling under a controlled atmosphere (sparging and purging with nitrogen or carbon dioxide) | Minimized degradation of quality due to exposure to air; preservation of flavor and color; prolonged shelf life; reduced microbial influences (so wines require less SO <sub>2</sub> , for example)   |
| Beer production and storage          | Carbon dioxide and nitrogen as buffer, conveying and priming gas  | No atmospheric oxygen in pipes and tanks, thus increasing storage life compared with handling and filling with air  |
| Lemonades, still drinks              | Nitrogen as compressed gas  | Prevention of quality-reducing absorption of oxygen and of unwanted carbonation   |
| Banana ripening                      | Preparation of special gas atmospheres (banana gas)   | Specifically controlled ripening through storage in special atmospheres; manage ripe goods in line with market requirements   |
| <b>Special solutions</b>             |   |   |
| Production of fat powders            | Powder production by atomizing with liquid carbon dioxide (VarioSol)                                      | Oils and fats that have been processed into very fine powders are very easy to dose; flexible and economical process that requires little space; also suitable for the production of small quantities |
| Extraction                           | High pressure extraction of selected components with CO <sub>2</sub> as a solvent                         | Production of particularly high-quality products; raw materials are refined gently  |



Converting fats to  
powder form unleashes  
hidden strengths.

