Freshline® MAP for Poultry

Demand for chilled poultry has increased rapidly in recent years, and there is now an extensive market for both whole birds and prepared portions. As with other raw meats, poultry is perishable and, therefore, subject to spoilage from aerobic bacteria, such as Pseudomonas, and anaerobic bacteria, such as Lactobacillus. Modified atmosphere packaging (MAP), used in conjunction with careful temperature control, can more than double the shelf life of these products. Research has shown that these products packed in air typically spoil after 4 to 7 days as compared to a 10 to 21 day shelf life when packed in Freshline MAP gases.

The achievable shelf life of products packaged using Freshline gases depends on a number of factors, including the type of cut, whether the product has “skin on” or “skin off,” the species, the fat content, the initial microbial load and the storage temperature. Consequently, it is very important to control both the temperature and the standard of hygiene during preparation prior to distribution of all poultry products. While the maximum storage temperature of most meats is 46°F, it is recommended that the storage temperature be maintained between 30°F and 35°F to maximize the potential benefits from MAP for poultry and game.

The modified atmosphere packaging of these products provides both the packer and the retailer with other benefits, including the opportunity for creative packaging design and the ability to enhance the presentation of these products to the consumer.

Poultry “skin on” products

Aerobic bacteria are effectively inhibited by the inclusion of carbon dioxide (CO₂) in MAP. Levels of CO₂ in excess of 20% are required to significantly extend the shelf life of raw poultry and game; however, CO₂ concentrations should not exceed 35% as pack collapse and excessive drip may be introduced.

Nitrogen (N₂) is used as a filler gas and helps to prevent package collapse.

Retail: 30% CO₂/70% N₂
Bulk: 100% CO₂

Poultry “skin off” products

The principal spoilage mechanisms of “skin off” poultry are aerobic microbial growth and oxidation of the red pigment. Carbon dioxide in MAP effectively inhibits aerobic spoilage, and the inclusion of oxygen (O₂) maintains the reddish color of the meat for a longer period. A gas-to-product ratio of 2:1 is recommended.

Retail: 70% O₂/30% CO₂
Bulk: 70% O₂/30% CO₂
80% O₂/20% CO₂ has shown to be beneficial in the reduction of Campylobacter.

30% CO₂/20% O₂/50% N₂ can be used in some cases to maintain the color.

A recent development has been the inclusion of low levels of oxygen to the traditional two-part mixtures of nitrogen and carbon dioxide used for “skin on” products.
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and expect more.

Whether your packaging, cooling, chilling or freezing applications include bakery goods, fruit and vegetables, poultry, meats, ready meals or anything in-between, Air Products’ Freshline® solutions offer you the high-purity gases and equipment, the international supply capability, and - most important - the unmatched industry experience and technical support to help you succeed, just about anywhere in the world. We can help you improve your productivity, lower your costs, maximize your returns, and, as a result, help make you more competitive in a very competitive market.

For more information on Freshline modified atmosphere packaging, or any of our Freshline offerings, call Air Products today to speak with a food industry expert, or visit us at the website below.

For More Information

North America
Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195-1501
Tel 800-654-4567
Fax 800-272-4449
E-mail gigmrktg@airproducts.com