



Freshline[®] MAP gases **– poultry and game**

Demand for chilled poultry and game 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 and game are perishable products and therefore subject to spoilage from aerobic bacteria that flourish at chill temperatures. Modified Atmosphere Packaging (MAP) used in conjunction with careful temperature control can more than double the shelf life of these products.



The principal spoilage organisms associated with poultry and game products come from aerobic bacteria eg pseudomonas and anaerobic bacteria eg lactic acid. Freshline MAP gases offer a way of delaying spoilage and can significantly increase the shelf-life of poultry and game products. Research has shown that these products packed in air typically spoil after 4-7 days, whereas packed in Freshline MAP gases spoilage does not occur until 10-21 days.

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 and game products. Whilst the maximum storage temperature for most meat is +8°C, to maximise the potential benefits from MAP of poultry and game it is recommended that the storage temperatures should be maintained between -1°C and +2°C.

The Modified Atmosphere Packaging of these products also provides both the packer and the retailer with other benefits including the opportunity for creative packaging design and the scope to enhance the presentation of these products to the consumer.

Poultry and game "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 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 and game "skin off" products

The principal spoilage mechanisms are aerobic microbial growth and oxidation of the red pigment. CO₂ in MAP effectively inhibits aerobic spoilage and the inclusion of oxygen (O₂) maintains the reddish colour 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 colour.

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. Please refer to Air Products Freshline Group for further information.

For more information

UK

Air Products PLC
2 Millennium Gate
Westmere Drive
Crewe CW1 6AP
United Kingdom
T +44 0800 389 0202
F +44 01932 258502
apukinfo@airproducts.com

Ireland

Air Products Ireland Ltd
Unit 950 Western Industrial Estate
Killeen Road
Dublin 12
Ireland
T +353 1800 99 50 29
ieinfo@airproducts.com



tell me more
airproducts.co.uk
airproducts.ie