

Freshline™ MAP *– cheese*

For the past 8000 years cheeses have formed a staple part of mankind's diet. The application of modified atmosphere packaging (MAP) technology has lead to a dramatic increase in the shelf life of many cheeses from soft gouda to grated cheddar, the benefits are real and cost effective.





Air Products'
Freshline™

Hard and semi-hard (moisture content 20-55%)

Hard cheeses have traditionally been packed using vacuum technology. This allows for good preservation and shape retention. It excludes oxygen and minimises moisture loss. Vacuum packing suffers from a down-market image and packs are difficult to open.

Hard cheeses are now commonly packed in Freshline carbon dioxide/nitrogen gas mixtures using horizontal form-fill-seal (HFFS) machines utilising barrier packaging films. Carbon dioxide within the mixture has a powerful anti-bacterial effect. Lowering the residual oxygen levels within HFFS pillow packs to values in the range 1-2% reduces bacterial and mould growth.

Gas ratios vary in the range 10-40% CO₂ 60-90% N₂ although 100% CO₂ is used by many manufacturers. Since cheese absorbs carbon dioxide, packs with high carbon dioxide content can suffer from pack collapse. In some very hard cheeses like Cheddar, this is a benefit; in other more crumbly cheeses like Cheshire, this can lead to product compression. A good working compromise is a 30-60% CO₂ with a balance of nitrogen.

Soft (moisture content 55% or more)

Soft cheeses are not suitable for vacuum packaging but show significantly extended shelf life when packed in a 30/70% CO₂/N₂ atmosphere (shelf lives in the order of 21 days have been shown to be possible). Retail soft cheeses are usually supported in a semi-rigid tray and then gas flushed into pillow packs using HFFS machines.

Some soft cheeses contain live respiring mould which produce carbon dioxide during storage. In these products mould growth must be allowed to continue but at a controlled rate. By using a packaging material of appropriate permeability and gas flushing with low levels of carbon dioxide it is possible to achieve an acceptable compromise. Typically a 10/90% CO₂/N₂ mixture using a film of intermediate permeability has been found effective.

Value added (processed, sliced, grated etc.)

Vacuum packaging cannot be used for packaging sliced and grated cheese since the packaging tends to solidify the product. Typical modified atmosphere packaging (MAP) gas mixtures are 30/70% CO₂/N₂. If a carbon dioxide level of greater than 50% is used, this can lead to pack collapse due to absorption of carbon dioxide by the cheese. Some producers use 100% nitrogen.

Grated cheese is Modified Atmosphere packed on vertical-form-fill-seal (VFFS) machines using barrier flexible films similar to those used for hard cheeses. Resealable gas flushed packs are becoming highly popular with consumers.

tell me more
www.airproducts.com/food
e-mail: mapinfo@airproducts.com

Freshline UK
Air Products PLC
2 Millennium Gate, Westmere Drive
Crewe, Cheshire CW1 6AP
Tel +44(0)1270 614111