



The BOC quick guide to:

Extending the shelf life of dairy products

What challenges are facing the dairy industry?

Dairy is an important part of the national diet. According to the British Cheese Board, we consume up to 700,000 tonnes of cheese each year. Add to that yogurt, butter and milk and there are currently thousands of UK businesses trading in a popular yet challenging product, with a limited shelf life and ever-present potential to spoil. Meanwhile consumers demand improved quality and shelf life, but also value for money.

What makes dairy produce deteriorate?

The two main causes are microbial growth and rancidity – the deterioration in a food's fat content. Hard cheeses with relatively low water content are prone to the former, while dairy foods with higher water levels such as soft cheeses and cream are more susceptible to fermentation and rancidity, as are cultured products such as cottage cheese and yogurt.

How can spoiling be delayed and shelf life extended?

The main catalyst for quality loss is the food's exposure to air. If the atmosphere surrounding a product can be modified at the point of packaging, before the onset of any deterioration, quality will be maintained and longevity improved. Such Modified Atmosphere Packaging (MAP) is now a key element of food processing in dairy and other sectors. MAP of fresh food products works in combination with good hygiene practices and controlled chilled temperature, both through production and the supply chain. BOC has worked closely with research institutes and packaging companies across the world to develop our MAPAX® packaging solutions.

Can the same modification be used for all dairy products?

No. Different dairy products respond to different atmospheric mixes. For example:

- In the packaging of hard cheese, carbon dioxide is used first and foremost as it effectively reduces or stops microbial activity and helps to retain texture. Concentrations of just 20% in the atmosphere within the packaging will inhibit mould growth yet has virtually no impact on lactic acid bacteria, a natural constituent of the cheese
- A balanced combination of carbon dioxide and nitrogen slows the spoil of soft cheese
- A 100% nitrogen or nitrogen-rich mix with carbon dioxide will prevent rancidity in cream

Can MAP be useful in product development?

Any technology that can support new product development offers potential added value to food producers and the dairy sector is no exception. In recent years a greater range of prepared fresh cheese (sold in grated or sliced form) has appeared on the market, and the use of MAP has helped this development. For example, bags of grated cheese containing a mixture of 50% nitrogen and 50% carbon dioxide can achieve a shelf life extension of up to seven weeks. The use of 50% CO₂ reduces the volume of that gas that dissolves into the food's water content and so averts package collapse. Another example is sliced cheese which was previously vacuum packed but the lack of free space around the product inhibited taste and aroma development, gave the cheese a rubbery look and made the slices hard to separate. Overall, food companies who've switched to MAP are now able to present customers with a higher quality product.



BOC Limited

The Priestley Centre, 10 Priestley Road, The Surrey Research Park, Guildford, Surrey GU2 7XY, United Kingdom
Tel +44 1483 579 857, Fax +44 1483 505 211, www.BOConline.co.uk

BOC Limited registered office, The Priestley Centre, 10 Priestley Road, Surrey Research Park, Guildford, GU2 7XY, England. Number 337663 - English Register. Authorised and regulated by the Financial Conduct Authority, register number 715528. BOC is a trading name used by companies within The Linde Group. The BOC logo and the BOC word are trademarks of Linde AG. MAPAX® is an EU-registered trademark of The Linde Group. Trademark registrations and their status may differ from one location to another. Copyright © 2017. Linde AG.