



## Bakery & dried food. MAPAX®

Health-conscious, convenience-seeking consumers are putting the bakery and snack industry under ever-increasing pressure. The hunt for new products is relentless. Likewise the search for new and innovative technologies for a wide range of products including flour-based foods such as breads, cakes, biscuits, crackers, croissants, muffins, bagels, pancakes, waffles and pasta as well as crisps and peanuts. While every product presents its own challenges, manufacturers are always looking to strike the right balance between productivity improvement and product quality over extended shelf life.

The solution lies in new ways of working – in highly sophisticated, efficient production and packaging processes that guarantee taste, appearance, food safety and value for money.

### The challenges

Dry foods such as potato crisps, peanuts, coffee, spices and powdered products contain unsaturated fats. This makes them sensitive to oxidation and rancidity. Oxygen also impacts upon shelf life – even the smallest amount trapped in the packaging induces spoil. Powdered baby milk for example demands oxygen levels of less than 0.2% in order to preserve quality.

Bakery products are susceptible to spoil from mould growth and chemical breakdown. Filled bakery foods are prone to fermentation and iced cakes such as Danish pastries can suffer ‘ice melt’ as the fat content in the icing sugar slowly dissolves.

While the low water content of bakery products naturally inhibits the growth of micro-organisms, a hygienic processing environment will eliminate risk of spore contamination and mould.



### The solution

Strict hygiene, together with temperature and atmospheric control in processing and packaging, minimises the risk of mould growth and chemical breakdown, the two main causes of spoilage in flour-based bakery and dried foods.

Modified Atmosphere Packaging (MAP) offers a barrier to oxygen and moisture. It significantly extends shelf life.

Replacing the oxygen in the pack with nitrogen, carbon dioxide or a mix of the two is an option. Reducing the oxygen level at the processing stage is another.

Carbon dioxide also slows mould growth on bread. It controls the development of aerobic micro-organisms thereby significantly extending shelf life.

Modified Atmosphere Packaging (MAP) is especially well suited to the production and packaging of rye bread, sweet bakery products and pies. It eliminates the risk of excess carbon dioxide – the cause of ‘ice melt’ for example – and offers the ability to balance the carbon dioxide concentration with nitrogen. This helps to retain the fresh appearance and texture of bakery and dried foods over time.

The right packaging material will also prevent moisture loss or absorption in bakery products.

# The BOC solution: MAPAX®

MAPAX® brings you a full range of tailored solutions to meet the packaging requirements of the food industries. Our BOC specialists will recommend the most suitable gas, equipment and safety products for your process, site and employees.

The MAPAX® gas range has been created to match the special quality requirements of the food industry. They comply with the strict food standards and legislation regarding packaging, storage and distribution. We can provide the traceability and safety guarantees demanded by the law.

## Food grade gases

BOC's dedicated field and in-house specialists have in-depth knowledge of the options available to you. We will work with you to develop the right gas mixture for the products being packed.

Gases:

- Oxygen
- Nitrogen
- Carbon Dioxide

### Recommended gas mixtures for dry foods and bakery products

Product	Gas mixture	Gas volume Product volume	Typical shelf-life		Storage temp.
			Air	MAP	
Pre-baked bread	100% CO <sub>2</sub>	50 – 100 ml 100 g prod	5 days	20 days	20 – 25°C
Cakes	50% CO <sub>2</sub> + 50% N <sub>2</sub>	50 – 100 ml 100 g prod	15 days	60 days	20 – 25°C
Coffee (ground)	N <sub>2</sub> or CO <sub>2</sub>	50 – 100 ml 100 g prod	4 weeks	24 weeks	20 – 25°C
Milk powder	100% N <sub>2</sub>	50 – 100 ml 100 g prod	12 weeks	52 weeks	20 – 25°C
Peanuts	100% N <sub>2</sub>	50 – 100 ml 100 g prod	12 weeks	52 weeks	20 – 25°C



## Technical services

BOC works closely with the food industry to create and develop leading technologies and applications. Our Food Technology Centre in Thame, Oxfordshire welcomes customers for trials and product testing. Across BOC and our parent company The Linde Group, we have dedicated MAP technical specialists in place to support and aid all our customers. They can advise you on a range of topics, including gas mixture selection, achievable shelf life and analysis techniques.

## Contact us

### BOC

Tel 0800 111 333  
Fax 0800 111 555  
www.BOCOnline.co.uk

### BOC Ireland

Tel 1890 355 255  
Fax (0)1 409 1801  
www.BOCOnline.ie

BOC has the leading range of products and services for many areas of food processing, including chilling, freezing and MAP. These are supported by a team of dedicated field and in-house specialists as well as our UK Food Technology Centre.

### BOC

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