

Fruit & vegetables. MAPAX[®]

Consumers demand high quality, fresh fruit and vegetables all year round. This is both an opportunity and a challenge to producers, processors and packers. Careful handling supports hygiene and product integrity through the supply chain and over distance – from harvesting, through storage, preparation, packaging and distribution. It promotes product quality and longer shelf life.

For growers and food producers, 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

The right choice of modified atmosphere in the right packaging material is essential. Get this wrong and the product will quickly spoil.

If fruit and veg are sealed with a film that has insufficient permeability, undesirable anaerobic conditions (less than 1% oxygen and more than 20% carbon dioxide) will lead to loss of quality. Conversely, if they are sealed in a film which has excessive permeability, little or no modified atmosphere will be retained.

Moisture loss is another risk as it can accelerate the deterioration process.

Getting the right balance between the transmission of oxygen and carbon dioxide through the packaging medium and a product's respiration rate is a crucial factor. An equilibrium modified atmosphere (EMA) is influenced by many things. As well as respiration rate, the variety, size, maturity and intensity of produce preparation, temperature, packaging film, pack volume, fill weight and light levels all come into play. Rigorous testing is required to ascertain the best EMA for each product.

The solution

Atmospheric control combined with the right packaging is proven to extend the lifespan of fresh produce. Micro-porous film is a good example of fit-for-purpose Modified Atmosphere Packaging (MAP). It has the right level of permeability to retain freshness and lengthen the shelf life.

It also offers the correct intermediary permeability. It supports the establishment of a desirable EMA – when the rate of oxygen and carbon dioxide transmission through the pack equals the product's respiration rate. Typically, EMAs of 3 – 10% oxygen and 3 – 10% carbon dioxide significantly increase the shelf life of fruit and vegetables.

Determining the optimum EMA for a particular fruit or vegetable is a complex issue that can only be solved with practical testing.



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 fruits and vegetables

Product	Gas mixture	Gas volume Product volume	Typical shelf-life		Storage temp.
			Air	MAP	
Lettuce	5% O ₂ + 5 - 20% CO ₂ + 75 - 90% N ₂	100 - 200 ml 100 g prod	2 - 5 days	5 - 8 days	3 - 5°C
Fresh cut salad mix	5% O ₂ + 5 - 20% CO ₂ + 75 - 90% N ₂	100 - 200 ml 100 g prod	2 - 5 days	5 - 8 days	3 - 5°C
Pre-peeled potatoes	40 - 60% CO ₂ + 40 - 60% N ₂	100 - 200 ml 100 g prod	0,5 hours	10 days	3 - 5°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

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