MESSER
Gases for Life

Gas Packaging for Bakery and Dried Food.

Health-conscious, convenience-seeking consumers are putting the bakery and snack industry under ever-increasing pressure to find new products 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.

The solution lies in new, 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. Even the smallest amounts of oxygen trapped within the packaging can induce spoil and thus reduce shelf life. For example, powdered baby milk demands oxygen levels of less than 0.2% in order to preserve quality.

Bakery products are susceptible to spoil from mold 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 the risk of spore contamination and mold.

The solution

Strict hygiene, together with temperature and atmospheric control in processing and packaging, minimizes the risk of mold 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 and significantly extends shelf life. Replacing the oxygen in the pack with nitrogen, carbon dioxide, or a mix of the two is one option. Reducing the oxygen level at the processing stage is another.

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

Modified Atmosphere Packaging (MAP) is especially well suited for the production and packaging of rye bread, sweet bakery products, and pies. For example, it eliminates the risk of excess carbon dioxide – the cause of 'ice melt' – and offers the ability to balance the 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 Messer solution

Messer's Modified Atmosphere Packaging brings you a full range of tailored solutions to meet the packaging requirements of the food industries. Our Messer specialists will recommend the most suitable gas, equipment, and safety products for your process, site, and employees.

Messer's Modified Atmosphere Packaging 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

Messer'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.

Technical service

Messer works closely with the food industry to create and develop leading technologies and applications. Across Messer, 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.

Recommended gas mixtures for dry foods and bakery products

Product	Gas mixtures	Gas volume	Typical shelf-life		Storage temp.
		Product volume	Air	MAP	
Pre-baked bread	100% CO_2	0.005 - 0.01 SCF/lb	5 days	20 days	68 – 77°F
Cakes	5% O_2 + 5% N_2	0.005 - 0.01 SCF/lb	15 days	60 days	68 – 77°F
Coffee (ground)	N_2 or CO_2	0.005 - 0.01 SCF/lb	4 weeks	24 weeks	68 – 77°F
Milk powder	100% N_2	0.005 - 0.01 SCF/lb	12 weeks	52 weeks	68 – 77°F
Peanuts	100% N_2	0.005 - 0.01 SCF/lb	12 weeks	52 weeks	68 – 77°F

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