

Dairy. MAPAX®.



The consumer is putting the dairy industry under ever-increasing pressure. On the one hand they demand high quality dairy foods with long shelf life; on the other they expect value for money. For food processors, this translates into a need for new production processes that satisfy these consumer needs as well as strict food regulations.

The challenges

Microbial growth and rancidity are the primary causes of quality deterioration in dairy products, although the type of breakdown depends on the foodstuff. Hard cheese with its relatively low water content is predisposed to mold growth, whereas cream and soft cheeses with their high water content are susceptible to fermentation and rancidity. Cultured products such as cottage cheese and yogurt are also at risk of spoil.

Also, the packaging of value-added cheeses such as grated or sliced cheddar is prone to collapse. Over time, the carbon dioxide in the pack may also taint the cheese.

The solution

The solution lies in an efficient production process that offers gentle handling and rapid processing. If dairy foods can be preserved before the onset of deterioration, then quality and longevity will be maintained.

Carbon dioxide is a priority when packaging hard cheese. It significantly reduces or even stops microbial activity and helps to maintain texture. Concentrations of just 20% are required to inhibit mold growth. Used with nitrogen, it also slows the spoil of soft cheese.

Carbon dioxide can also prevent package collapse. Bagging grated cheese in a modified atmosphere comprising 50% nitrogen and 50% carbon dioxide will eliminate this problem. In cases where carbon dioxide absorption causes tainting, a nitrogen atmosphere is recommended to eliminate this risk.

Modified atmospheres are also proven to preserve the freshness of cultured products such as cottage cheese and yogurts.

The Linde solution: MAPAX®

MAPAX® brings you a full range of tailored solutions to meet the packaging requirements of the food industries. Our Linde 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

Linde'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.

Recommended gas mixtures for dairy products

Product	Gas Mixtures	Gas Volume Product volume	Typical shelf-life		Storage temp.
			Air	MAP	
Hard cheese	80 - 100% CO ₂ + 0 - 10% N ₂	0.01 - 0.02 SCF/lb	2 - 3 weeks	4 - 10 weeks	39 - 43°F
Hard cheese (sliced, gra- ted)	40% CO ₂ + 60% N ₂	0.01 - 0.02 SCF/lb	2 - 3 weeks	21 days	39 - 43°F
Soft cheese	20 - 60% CO ₂ + 40 - 80% N ₂	0.01 - 0.02 SCF/lb	8 days	24 days	39 - 43°F
Yogurt	0 - 30% CO ₂ + 70 - 100% N ₂	0.01 - 0.02 SCF/lb	10 - 14 days	22 - 25 days	39 - 43°F

Technical service

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

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