

ALIGAL™

Protective Atmospheres for Preserving
Food Freshness





Air Liquide was a pioneer in the development of Modified Atmosphere Packaging (MAP) by developing pure and mixed gases with guaranteed low impurity levels.



ALIGAL

ALIGAL protective atmospheres preserve the natural color and flavor of fresh food. They extend shelf life without chemical additives or preservatives by inhibiting spoilage due to oxidation, bacteria and mold growth usually occurring with food exposed to air.

Packaging in a modified atmosphere makes use of the natural components of air. The goal of MAP is to eliminate or reduce the physical, enzymatic and microbial deterioration that spoils food.

Bon Appétit with ALIGAL™

Imagine what your performance could be

ALIGAL single and mixed gases are designed to satisfy demanding quality requirements of the food industry. They are used extensively in Modified Atmosphere Packaging (MAP) of a wide variety of food products. By preserving the freshest characteristics of foods, and by extending shelf life, ALIGAL food-quality gases empower food processors and retailers to:

- Reduce product returns
- Gain greater flexibility in production scheduling
- Improve product consistency
- Control inventory more effectively and economically
- Distribute products over greater distances
- Improve opportunity for branding of value-added products



Today's consumers are more selective when purchasing food. They want fewer preservatives and chemical additives, a more appetizing appearance, plus fresh and delicious flavor, without sacrificing shelf life. Air Liquide, as a long-standing partner of the food industry, has specifically developed our ALIGAL™ products to address these consumer expectations.



ALIGAL food-quality gases

Food groups benefit in important ways when ALIGAL products are introduced:

- Reduced susceptibility to oxidation
- Improved protection from bacteria and mold
- Enhanced color and overall appearance
- Combination of two or more of the above

Each ALIGAL gas has specific properties that address these needs. For instance, carbon dioxide (CO₂) has bacteriostatic and fungistatic properties; nitrogen (N₂), an inert gas, prevents oxidation; and oxygen (O₂), an active gas, maintains the color of meat and is necessary for "living" products like produce to breathe. ALIGAL gases can also be used to help prevent physical damage such as crushing.

Many variables, such as ingredients, equipment and process parameters will impact shelf life. Therefore, optimum results will be obtained when each MAP solution is tailored to the specific food product and process. Similarly, strict temperature and sanitation controls are critical throughout the entire process, from receipt of raw ingredients to the packaging and distribution of the finished product.

ALIGAL gases are available in a range of blends appropriate to specific foods and meet standards for approved food packaging uses.

They are colorless and odorless and comply with procedure controls and quality assurance throughout the production process. Strict filling and testing procedures assure a consistent and quality product. ALIGAL products can be easily integrated into the MAP system that includes packaging equipment and film.

Keeping Pace in the Marketplace

Smart food processors and retailers use ALIGAL products from Air Liquide to help satisfy increasingly more discerning consumer tastes.

Presentation and packaging with ALIGAL makes the difference:

- **Maximum** freshness and flavor
- **More** "natural" products that feature reduced use of additives and preservatives
- **Longer** shelf life in the marketplace and storage in the home
- **Easier** to use and consume products with minimal preparation (ready meals, individual portions, etc.)
- **Appealing** packaging that showcases its contents

ALIGAL™ for appetizing presentation

Each ALIGAL protective atmosphere has been scientifically formulated to address the specific shelf life requirements of a wide selection of foods, ranging from case-ready meats, fresh poultry, processed meats, cheese and freshly cut salads to prepared entrées, fresh pasta, sandwich kits, snacks and bakery products.

Applications		Recommended ALIGAL Product	Comments		
	Bakery Products Breads Breakfast pastries, muffins Dessert breads and cakes Par-baked bread	2 or 15 13 or 15 13 or 15 2	ALIGAL extends mold-free shelf life of baked goods and delays onset of rancidity.		
		Dairy Products Block cheese Shredded cheese Yogurt	2 13 2	The fungistatic properties of ALIGAL result in extended shelf life.	
			Dry Foods Coffee Snack foods	1 or 6 1 or 6	ALIGAL provides additional protection against product crushing (i.e. potato chips, tortilla chips, nuts).
			Freshly Cut Produce Freshly cut salad Sliced tomatoes	1 1 or 6	When combined with permeable packaging films, ALIGAL decreases the respiration rate of fresh produce (product-specific).
	Fresh Raw Meats Fresh ground beef Poultry, chicken parts (bulk) Poultry, chicken parts (retail) Raw uncured sausages Retail meat cuts Turkey (ground, cuts)	28 2 13, 15 or 27 28 28 27	By promoting the formation of oxymyoglobin, ALIGAL maintains the natural red meat color and product appeal (i.e. beef, pork, lamb, veal). Aerobic spoilage bacteria (i.e. Pseudomonas spp.) are inhibited.		
		Prepared Foods Cooked entrées Cooked lasagna Deli salads Fresh refrigerated pasta Sandwiches	13 or 15 13 12 or 13 12 or 13 13 or 15	ALIGAL helps preserve the organoleptic quality of prepared foods while delaying microbial spoilage.	
			Processed Meats Beef jerky Cooked sausages Deli meats/cold cuts	1 or 6 13 13 or 15	The bacteriostatic properties of ALIGAL result in extended shelf life. The balance gas displaces oxygen from the package and prevents slices from sticking together, protecting the product from oxidation and ensuring easy peel-off (i.e. cooked ham, turkey, corned beef, salami).

ALIGAL™ cylinders are dedicated for use **ONLY** in the food industry. In addition, they are equipped with our exclusive SCANDINA™ cap that substantially improves safety during cylinder transport, storage and use. Filling and testing procedures using strict quality control, along with tamper-evident valve seals, ensure consistently high-quality products.



ALIGAL Cylinder

Fixed shock-absorbing **SCANDINA** cap provides added safety during transport, service and use—permanently attached cap prevents loss and thread misalignment

Ergonomic design makes it easy to maneuver the cylinder

Chrome residual pressure valve ensures gas quality, restricts back flow into cylinder, and is designed to prevent cylinder contamination

Traceable batch analysis sticker provides product tracing information, including the cylinder fill plant identification and fill date

Once a cylinder has been filled, a shrink sleeve is secured over the valve to provide a tamper-evident seal

ALIGAL is available in single cylinders and multi-cylinder packs when larger quantities of gas are needed.



- **Manage Quality**
ALIGAL supports your quality requirements and improves quality management through traceability, training for your personnel, and individual consultation with our specialists.
- **Manage Consumption**
For the administration, documentation and analysis of your gas-related consumption and process data, DATAL™ monitors your product inventory levels, enabling remote inquiries and automatic supply.
- **Manage ALIGAL Safely**
Protect the purity of ALIGAL gases and deliver them safely to your point-of-use with SCOTT™ high-performance equipment: pressure regulators, valves and fittings, changeover manifolds, and other equipment.





As a leading world supplier of specialty and industrial gases, Air Liquide is all about molecules that matter

Our technologies are carefully engineered to provide customers with meticulously analyzed measures of certain molecules in the form of pure or mixed gases and liquids. These molecules are in turn used as raw materials or end products in themselves, as is often the case in healthcare or food and beverage processing. Other times the molecules we provide are used to measure or test for the presence of other molecules, as in applications such as environmental monitoring, homeland security or process control.

Our focus however, goes well beyond the refining and selling of molecules. It includes providing definable value that can be measured at the bottom line. About one third of Air Liquide's product sales can be linked directly to applications that are helping to preserve our environment or ensure human safety. Other Air Liquide products and services involve helping our many customers keep pace with a challenging global economy—by empowering them to improve efficiencies without sacrificing end product quality or analytical accuracy.

Our commitment to safety, technology and innovation has kept Air Liquide at the forefront of the high-tech business of specialty and industrial gases for more than 100 years. Our presence of over 43,000 employees in 75 countries enables us to leverage the resources of a truly global enterprise with powerful, personalized service from our localized, customer-focused teams. Combined with innovative products and services, we believe this to be a winning formula that transforms molecules that matter into greater customer satisfaction, efficiency, growth and success—plus a safer and cleaner environment for us all.



Founded in 1902, Air Liquide is the world leader in industrial and medical specialty gases and related services, providing innovative solutions for the manufacture of everyday products and for the protection of life.

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