

Premium Gases to preserve Food Quality

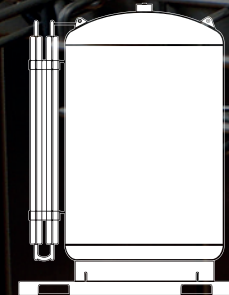
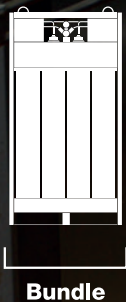
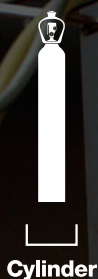


Pioneers in food and beverage-grade gases

Food safety is a public health priority that is presenting new challenges due to the increasing trends in global food production, processing and distribution. Consumers are regarding foodborne disease outbreaks with increasing concern.

Air Liquide is a leading international gas supplier with innovative solutions to address the most challenging food productivity issues. With over 40 years of experience in food and beverage processing, Air Liquide has been a pioneer in the development of food and beverage-grade gases for the industry. Our **ALIGAL™** premium gas products have been specifically developed in order to meet the food safety and quality standards throughout the world.

ALIGAL™ guarantees that our range of gas products complies with the industry standards and enforceable legislation in each country and, at a minimum with European purity specifications. The **ALIGAL™** brand ensures that a food safety management system based upon HACCP* principles is applied throughout all stages of the production process and supply chain, and also includes a highly effective traceability system in order to provide peace-of-mind to both the processor and the final consumer.



Liquid



What makes **ALIGAL™** so unique?



Food safety & quality

Each **ALIGAL™** product conforms to local food and beverage regulations and to the same minimum Air Liquide specifications and manufacturing standards used worldwide. **ALIGAL™** ensures that the complete process from production to delivery follows HACCP principles for identifying, evaluating and controlling any potential food safety issue. Product traceability and recall systems are in place, in the event of a food safety incident. **ALIGAL™ DRINK**, specifically designed for carbonated beverage products, meets the latest ISBT (International Society of Beverage Technologists) requirements and is produced at Air Liquide's FSSC 22000** certified CO₂ production facilities.



Reliable, continuous supply

ALIGAL™ is our guarantee that you can rely on the same product quality, consistency and reliability, anywhere in the world.

ALIGAL™ is available in various supply modes ranging from high pressure gas cylinders for smaller users up to bulk liquid storage tanks for larger quantities, along with an option for on-site gas mixing. The **ALIGAL™** mode of supply can be easily adapted to meet your changing gas requirements.

Our **ALIGAL™** production facilities and filling centers are close by so that we are able to provide you with uninterrupted gas supply. We also offer an automatic re-ordering service for our bulk liquid customers.



Expertise you can depend on

With extensive experience in the industry, our dedicated team of food & beverage specialists will make the most of Air Liquide's R&D capabilities and application know-how in order to help you develop new and innovative products.

Based upon our knowledge of the gas interactions with food and beverage products, our process experts can design comprehensive solutions which will optimize your product quality and process efficiency in order to minimize your overall operational costs.

*Hazard Analysis and Critical Control Points
**Food Safety System Certification 22000

There's an ALIGAL™ product for your particular processing need:

FOOD



Modified Atmosphere Packaging (MAP)

ALIGAL™ products have been specially formulated for MAP applications to address the particular shelf life requirements for a variety of food products. ALIGAL™ helps to preserve the original appearance, colour, flavour and nutritional attributes of your fresh food products by preventing spoilage from oxidation and by slowing down the growth of bacteria and mold.



Cryogenic Freezing and Chilling

The cryogenic properties of ALIGAL™ gases are ideally suited for chilling, freezing, crust-freezing, individual quick freezing (IQF) and temperature control applications. ALIGAL™ products reduce dehydration losses, minimize bacterial growth and freeze or chill at a faster rate than traditional refrigeration solutions in order to better preserve the product's original texture, colour, flavour and nutritional attributes.



Other Food Applications

The properties of ALIGAL™ gases are also ideal for protecting edible oils from oxidation, cryogrinding food materials into powders, adjusting the pH in dairy products, aerating mousse products and the stabilization of food ingredients.

ALIGAL™ is a natural food processing solution that doesn't alter the original composition of the food product.

BEVERAGES



Carbonation

ALIGAL™ DRINK is produced to the highest CO₂ standards in order to meet the stringent requirements of the beverage industry.



Beverage Processing

ALIGAL™ gases provide an all-natural solution for enhancing product quality by reducing and minimizing dissolved oxygen levels in order to prevent oxidation damage and to preserve the original vitamin and nutrient content.



Winemaking

ALIGAL™ products can be used at many stages throughout the winemaking process in order to optimize the dissolved oxygen and carbon dioxide levels to protect the wine's quality from the vine to the glass, to minimize the use of chemical preservatives like sulfur dioxide and to preserve the greatness of the finest vintages.



Dispensing

ALIGAL™ cylinder products have been specially-developed for the hospitality sector for pushing draft beer, for the tapping of wine systems and for the dispensing and carbonation of soft drinks.

| | Composition (%) | | | | Modified atmosphere packaging | Cryogenics | Other food processing applications | Carbonation | Beverage processing | Winemaking |
|----------------------|-----------------|-----------------|----------------|-----|-------------------------------|------------|------------------------------------|-------------|---------------------|------------|
| | N ₂ | CO ₂ | O ₂ | Ar | | | | | | |
| ALIGAL™ 1 | 100 | | | | • | • | • | | • | • |
| ALIGAL™ 2 | | 100 | | | • | • | • | | • | • |
| ALIGAL™ DRINK | | 100 | | | | | | • | | • |
| ALIGAL™ 3 | | | 100 | | 0 | | | | • | • |
| ALIGAL™ 6 | | | | 100 | • | | | | | • |
| ALIGAL™ 12 | 80 | 20 | | | | | | | | • |
| ALIGAL™ 13 | 70 | 30 | | | • | | | | | • |
| ALIGAL™ 15 | 50 | 50 | | | • | | | | | • |
| ALIGAL™ 27 | | 30 | 70 | | • | | | | | |
| ALIGAL™ 62 | | 20 | | 80 | • | | | | | • |

O = Aligal 3 is available for the on-site mixing of Aligal 27

Air Liquide's Industrial Merchant Business Line delivers industrial gases and innovative solutions, including application technologies, equipment and services. From independent professionals to large industrial companies, our 33,500 employees serve over 2 million customers daily across 75 countries. They use their unmatched business and technical capabilities to develop gas solutions that boost the performance of industries and help them to increase product quality, unlock greater competitiveness and minimize the environmental footprint of their manufacturing processes.

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The world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with approximately 65,000 employees and serves more than 3 million customers and patients.