



# Freshline<sup>®</sup> Food Processing Solutions for Bakery, Pastry and Dessert Products

An efficient way to freeze, chill or preserve  
a broad range of products while enhancing  
product quality

In order to improve production processes while optimizing costs and guaranteeing quality, the bakery industry is always looking for new and innovative methods to obtain the best quality products which are perfectly adapted to their customer's needs. In line with this trend, the use of gas-based technologies is a method that is becoming more and more common in the bakery, pastry and desserts sector. This explains why frozen

food items and fresh products packaged in a modified atmosphere are growing categories for food service and in-home food preparation.

Enter Air Products.

Air Products has over 50 years of experience in the food industry. Our Freshline® solutions include innovative freezing, chilling and preservation systems and gases which meet the highest safety and quality standards and are fully compliant with

all relevant EU and local food legislation. The Air Products Freshline® team has considerable knowledge of the use of gas-based technology in the bakery, pastries and desserts sector. By performing an audit of your processes they will work with you to develop the best solution for each production requirement.

Contact us to trial your products in one of our food laboratories.



## Why use cryogenic freezing?

Cryogenic freezing is when liquid nitrogen or carbon dioxide is used to freeze different types of bakery products. In industrial bakery processes, cryogenic freezing has considerable advantages, such as:

- Significant reduction in freezing time
- Reduction in weight loss caused by dehydration
- Reduction in enzyme and oxidative deterioration
- Increase in quality and improvement in the texture of the product
- Reduction in the size of water crystals
- Microbial stability
- Improvements in the appearance and colour of the product
- High freezing speed
- Flexibility in production
- Low financial investment
- Reduction in space taken up by the equipment



## Bakery, pastry and dessert product processing

Whether it is IQF or non-IQF freezing, stuffing, pelletising, crust freezing prior to slicing, frozen dessert hardening, coating,

regular chilling or prior to forming temperature control, inerting, aerating, Modified Atmosphere Packaging (MAP), or several other

processes, Air Products supplies a full line of Freshline® systems and gas mixtures that can be tailored to meet your specific needs.



### Freshline freezing and chilling systems

Our batch and continuous freezers can process a wide variety of bakery products, including cakes, pastries, pies, cookies, dough, frozen desserts and ready to cook bread products. All of our freezing and chilling systems use high-purity liquid nitrogen which is the most efficient means of freezing and cooling available.



## Applications and equipments

**Freshline® MP tunnel freezer**  
– Our state-of-the-art cryogenic Multi-Purpose (MP) tunnel freezer is designed to provide exceptional performance while incorporating the latest international hygiene features. This tunnel can freeze up to 3000kg/h.

**Freshline® QS tunnel freezer**  
– Our unique Quick Start (QS) cryogenic freezing and chilling system requires minimal upfront capital investment and is quickly and easily integrated into your existing or new production line, providing you with an easy, low-risk solution. It is simple to operate whilst rapid to install and offers greater flexibility for fast switchovers of products. This technology can freeze on average 300 to 400kg/h.

**Freshline® DM tunnel freezer**  
– Our flexible Dual-Mode (DM) freezer allows you to quickly change from processing IQF to non-IQF products. Production levels can reach up to 1000kg/h.

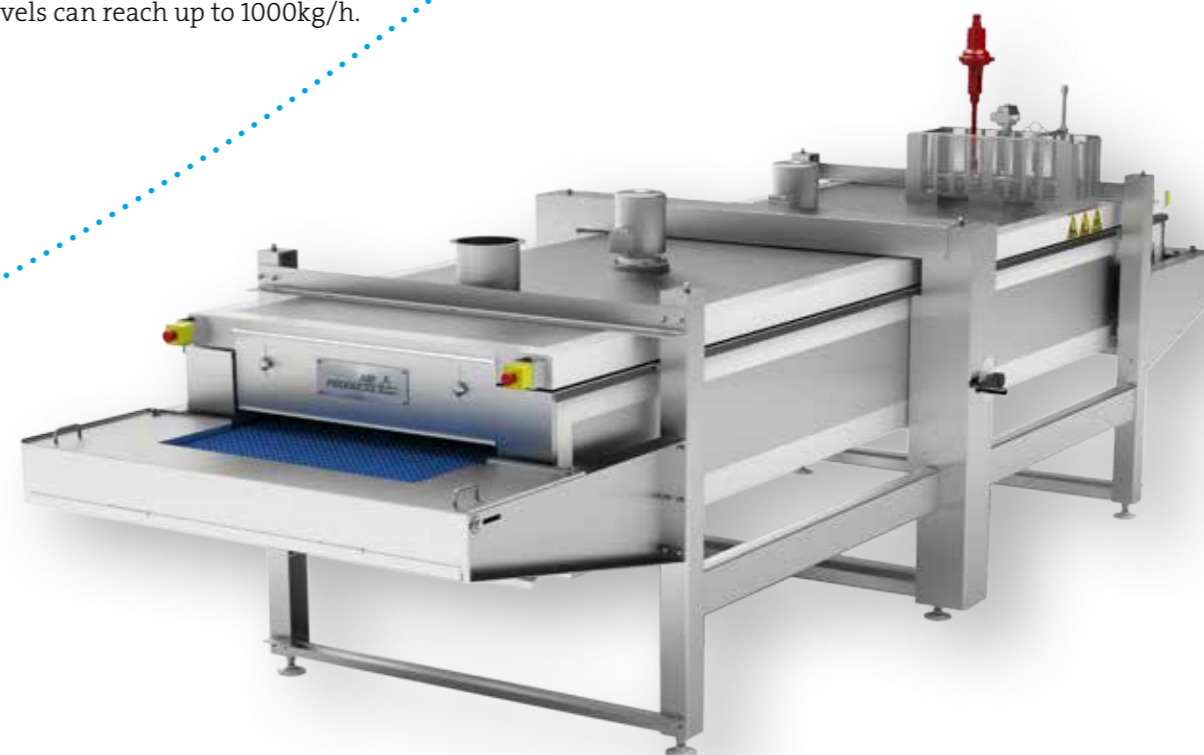
**Freshline® batch freezer** – Our batch freezer or chilling unit is specifically designed for freezing and/or ultrafast refrigeration, using nitrogen as a refrigeration agent. On average, it can freeze 100 to 200kg/h.

**Freshline® LIN-IS system** – Our controlled temperature LIN-IS system enables the even cooling of dough, stuffing and other bakery products to the ideal consistency for forming and further processing.

**Freshline® TRS tunnel freezer** – To meet the growing use of high speed cutters and thinner cake slices, our Freshline® TRS tunnel freezer was specially designed for continuous crust chilling of products prior to slicing. The tunnel takes up a small amount of space and reaches production capacities of up to 1200kg/h.

**Freshline® Mixer** – By injecting nitrogen into our specially designed mixer, bakery products can be mixed and frozen or chilled evenly without the risk of clumping.

**Freshline® Tumbler** – Our Freshline® Tumbler is a coating technology ideally suited for the high-value frozen desserts sector. Our tumbler combines two processes in one system – enrobing with sauce and IQF freezing. It can deliver an ideal balance of hard products (such as nuts or fruit) and liquids, producing original coated delicacies. The tumbler works by using a highly efficient batch production method that evenly coats ingredients during the freezing process. This system is suitable for production rates of upto 1200kg/h.



## Modified Atmosphere Packaging (MAP)

The application of MAP technology has led to a dramatic increase in the shelf life of many bakery products, generating quality and cost benefits.



**The principal spoilage mechanisms for bakery products are mould growth, staling, and moisture migration.**

Yeasts may cause a problem in certain filled or iced products. Since the moisture content (aw) of bakery products is generally less than 0.96, bacterial growth is inhibited and rarely a problem. However, it is possible that *Staphylococcus aureus* and *Bacillus* species may be able to grow in certain products and hence pose a potential food poisoning hazard. Consequently, good hygiene and handling practices must be observed throughout.

**The use of MAP can significantly extend the shelf life of bakery products.**

Since moulds are aerobic micro-organisms, they are very effectively inhibited by CO<sub>2</sub>/N<sub>2</sub> gas mixtures. Moisture migration from the pack is prevented by using barrier materials for MAP, however MAP appears to have little effect on the rate of staling. It should be noted that staling rates are increased at chilled temperatures and hence most cold-eating bakery products are normally stored at ambient temperatures. For hot-eating bakery products, such as pizza bases, the staling process, which is caused by starch retrogradation, is partially reversed during the reheating cycle.



## Food quality and traceability pledge

Air Products and its subsidiaries have been providing gas-based equipment, services and products to the food and beverage industry globally for more than 50 years. Our portfolio is comprehensive and offers flexible solutions for freezing and chilling food, modified atmosphere packaging, beverage applications and wastewater treatment.

Through a strict regime of internally and externally audited management systems, our gases meet and often exceed the Government and EU requirements for food quality and traceability. All of our gas cylinders are supplied

to the highest specification and include tamper-proof shrink wrap systems to prevent contamination complete with a batch numbered certificate of conformity for traceability. Also, for added security, our unique Freshline® Plus cylinders, specially developed to offer new standards of hygiene and safety in food packaging environment, are equipped with a bacterial filter and an antimicrobial coating that provide you the extra peace of mind that you have the highest purity of food grade gases.

Choosing Air Products will ensure you meet the highest hygiene and safety standards.

## Halia Wastewater solutions

As well as our Freshline® solutions, Air Products also offers water treatment solutions, including:

- Improvement of existing wastewater treatment systems and increasing their treatment capacity with oxygen injection
- Temporary aeration requirements
- Wastewater disinfection for reuse applications
- New system design

# Ask Air Products ...and expect more

Air Products' Freshline® solutions offer you the high-purity gases and equipment, the international supply capability, and – most important – the unmatched industry experience and technical support to help you succeed just about anywhere in the world.

We can help you improve your productivity, lower your costs, maximize your returns, and, as a result, allow you to continuously grow in a very competitive market.

Next to our standard applications, we also offer custom made solutions to ensure your needs are met and your expectations reached, always.

What you are looking for doesn't exist yet? Air Products can help you!



Our experts are always happy to invest their food know-how in joint R&D projects. Together we can develop new concepts and processes that will allow you to meet the future with a head-start from your competition.

**For more information about joint R&D or on any of our offerings, call Air Products today to speak with a food industry expert, or visit us at the website below:**

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