NIPPON GASES
The Gas Professionals

SanFresh®

MAP solutions to keep food fresh and safe

More than just a gas supplier, Nippon Gases is your strategic partner.

At the heart of food production processes, gases play a vital role, whether controlling temperatures or modifying production environments. Our expertise goes beyond conventional expectations, providing solutions that keep products frozen, chilled, crisp, fresh, and even sparkling.

Through continuous innovation, we refine our systems to increase the efficiency of production processes and set industry standards.

Backed by expert support, scientific advice, and years of collaboration with industry leaders, Nippon Gases provides tailor-made solutions. From large-scale industries to small laboratories, our comprehensive offering includes gases, consultancy, materials, equipment, and installations. We prioritise efficiency, providing independent treatments to enhance production, while maintaining our commitment to sustainability in everything we do.

Modified Atmosphere Packaging (MAP)

MAP involves replacing the air in a package with a specific gas or gas mixture to optimise product preservation by delaying spoilage mechanisms. Our carefully formulated gas mixtures, including nitrogen, argon, carbon dioxide, and oxygen, ensure extended shelf life, and superior quality by maintaining freshness, colour, flavour and aroma.

This advanced packaging method extends food shelf life by 50 to 500% compared to traditional air packaging, marking a significant leap forward in food preservation technology.

Advantages

— Preservation of the original organoleptic qualities of the food.
— Preservation of freshness for a longer period.
— Conservation of colours, flavours and aromas.
— Significantly extended of shelf life.
— Avoidance of vacuum crush.
— Economic and operational benefits.
— Versatility to meet specific storage needs.

SanFresh®
Nippon Gases MAP Solutions

SanFresh® MAP technology extends the shelf life of food products without compromising their quality, thereby setting a new standard in food packaging solutions.

SanFresh® offers a comprehensive range of gases for packaging and tailored services to meet the evolving needs of the industry. From proposing the ideal gas or gas mixture for each food item to conducting on-site tests to fine-tune packaging processes, analysing the results and supplying the necessary equipment and materials for optimum gas utilisation, we are a reliable partner for the food and beverage industry.

Nippon Gases offers SanFresh® in various supply options for food packaging, ensuring that companies can find the perfect solution for their needs.

Gases Used in Food Preservation

Modified Atmosphere Packaging (MAP) makes it possible to combine the properties offered by each of the food-grade gases to optimise the product's shelf life.

Gases	Physical properties	Advantages	Disadvantages
Oxygen	— Colourless — Odourless — Tasteless — Oxidising	— Supports the metabolism of fresh vegetables — Maintains the colour of fresh meat — Inhibits anaerobes	— Favours the oxidation of fats (rancidity) — Favours the growth of aerobes
Carbon Dioxide	— Colourless — Odourless — Water and fat soluble	— Bacteriostatic — Fungistatic — Insecticidal — Better action at low temperature	— Causes the package to collapse — Causes exuding — Spreads quickly through the package
Nitrogen	— Colourless — Odourless — Tasteless — Insoluble	— Inert — Displaces oxygen — Inhibits aerobes — Prevents the oxidation of fats — Keeps the package from collapsing	— Favours the growth of anaerobes (100% nitrogen)
Argon	— Colourless — Odourless — Tasteless — Higher solubility than N_2 in water	— Better flavour preservation — The best in displacing O_2 — Inhibits aerobes — Prevents fat oxidation — Prevents packaging collapse	— Flavours anaerobic growth with 100% Ar

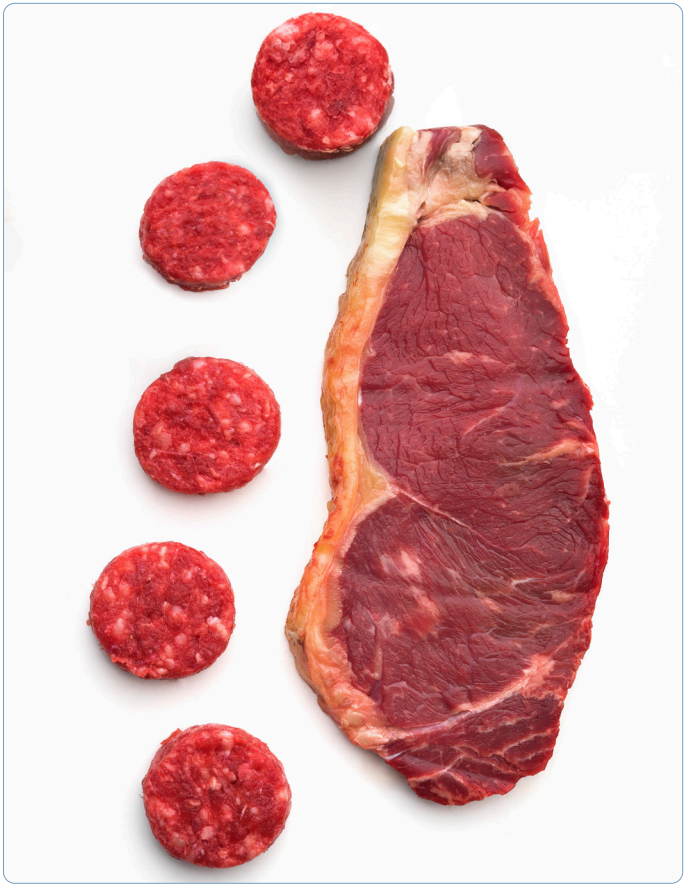
Applications

SanFresh® offers tailored gas mixtures based on the product's needs and characteristics.

Meat

Fresh Red Meat - Beef, Lamb, and Pork

The shelf life of fresh red meat depends on factors such as low bacterial counts, stable low temperatures, and specific packaging methods that reduce oxygen and increase carbon dioxide levels. Due to meat's susceptibility to microbial growth, strict hygiene and temperature control are essential to prevent spoilage and potential illness. Consumers prefer meat with a fresh and red appearance, attributed to oxymyoglobin, which is maintained by packaging in low oxygen and high carbon dioxide environments. This method significantly inhibits bacterial growth, prolongs shelf life and preserves the colour and freshness of the meat.



Processed Meat Products

Processing methods such as marinating, smoking, and cooking alter the microflora of meat and require different storage strategies to prevent spoilage. Cooked meat products benefit from MAP with lower carbon dioxide levels to avoid acidity, and added nitrites ensure a stable pink colour. Sausages present a unique challenge for gas packaging as their integrity depends on limiting carbon dioxide to a maximum of 30% in the gas mix.

Applications

Poultry

Spoilage of poultry, including chicken and turkey, is primarily due to microbial growth and rancidity. High carbon dioxide gas packaging can extend the shelf life of poultry by inhibiting spoilage bacteria without significant discolouration problems.

Dairy Products

Dairy products, prone to microbial spoilage and lipid oxidation benefit significantly from Protective Atmosphere Packaging (PAP), enhacing their hygienic and sensory quality. The longevity of cheese is enhanced by a carbon dioxide-enriched environment, inhibiting mould and bacteria growth. The industry is exploring direct CO_2 injection into dairy products as a novel preservation method to extend shelf life and mantain the growth of beneficial microorganisms.

Vegetarian and Vegan Products

Preservation of vegan products often uses technologies similar to those used for meat and dairy products, adapting to the unique properties of plant-based ingredients to maintain freshness, extend shelf life, and prevent spoilage.

Precooked Meals

Precooked meals benefit from packaging that eliminates oxygen, preventing aerobic microbial growth and oxidation. Nitrogen, an inert gas, displaces oxygen, ensuring quality and safety tailored to the specific needs of the product. Innovative packaging technologies are essential in food preservation to enhance safety, extend shelf life and maintain the sensory and nutritional qualities of the products.

Applications

Bread and Snacks

The primary goal is to keep bread soft and snacks crunchy while preserving flavour by minimising oxidation and moisture changes. Nitrogen is used to displace oxygen and prevent oxidative rancidity that leads to staleness and loss of crispness in bread and snacks.

Seafood

The perishable nature of seafood requires strategies to inhibit bacterial growth and enzymatic activity that lead to spoilage. Gas mixtures, particularly carbon dioxide for its antibacterial properties and nitrogen for package integrity, are used to slow down bacterial growth and extend the shelf life of seafood, while maintaining sensory and nutritional quality.

Fruit and Vegetables

To maintain the freshness, appearance, and nutritional value of fruit and vegetables, carefully controlled atmospheres are used with specific oxygen and carbon dioxide levels matched to the respiration rates of the produce. This prolongs freshness and nutritional value, reduces waste and increases consumer satisfaction with "just-picked" fruit and vegetables.

Beverages

In the beverage bottling process, Nippon Gases provides innovative solutions to challenges such as oxidation and sealing of non-carbonated products.

- The use of a 'stripper' with gaseous nitrogen injection eliminates volatile contaminants and ensures high fluid purity.
- Nitrogen inertisation prevents recontamination of storage tanks.
- Liquid nitrogen also proves invaluable in the bottling process, reducing the risk of oxidation and aiding mechanical sealing.

This commitment to innovative technologies underlines our dedication to preserving the quality and extending the shelf life of beverage products.

Supply Forms

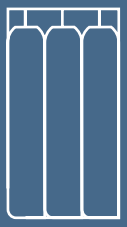
Nippon Gases offers various forms of supply to meet the diverse needs of the food industry, catering to businesses of all sizes and requirements*.

CONTAINER
over 400 kg

DEWAR
Liquid
4-50 l

CYLINDER
Gas
Up to 50 l

BUNDLE
Gas
10-12-16-28 cylinder

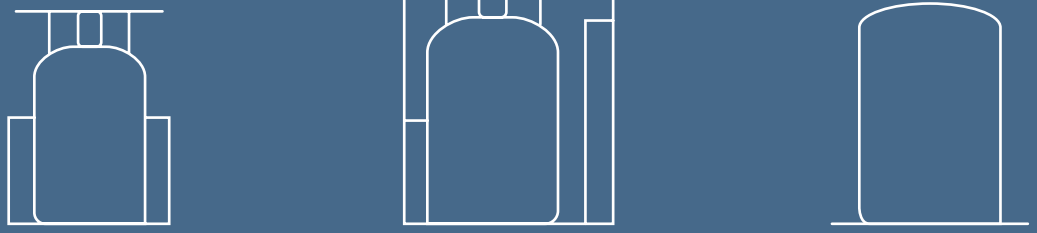


* Please note the form of supply and the respective sizes may vary from country to country.

PGS
Liquid
169 l

EASEBULK®
Liquid
630-800 l

MICROBULK®/TANK
Liquid
3,000 l or more



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