

Putting salad, to sleep

Ever wondered how food is kept fresh from the time it is harvested to the day it is consumed?

For several decades, Air Liquide has been a major player in the food market, helping suppliers preserve food and extend its shelf-life and freshness by packaging it in protective atmospheres. These atmospheres inhibit bacterial activity, minimize enzymatic reactions (like discoloration), and can even put salads to sleep!

1. Food from the producer

Imagine a foodstuff processor wants to sell a producer's goods in a major retail outlet. This is only possible if the product is appropriately packaged, and meets the retailer's shelf-life requirements. At this point, the processor approaches Air Liquide's expert food teams.

2. A chain of expertise

In addition to strict hygiene controls, a salad requires a special set of conditions to preserve it. First, the 'cold-chain' (a set of temperature parameters) must be carefully respected. Through ALIGAL¹, Air Liquide offers a series of solutions to establish and maintain this cold-chain, including quick-chilling and transportation services.

ALIGAL Database

Food type + Cold-Chain + ALIGAL = shelf-life

Product type	ALIGAL mix	Shelf-life
Dried foods	100% N ₂	Several months
	85% Argon	
Salads	10% CO ₂	8 days
	5% O ₂	
Redmeat	70% O ₂	4 days
	30% CO ₂	

3. Recommending the right ALIGAL solution

Air Liquide food business developers consult the Group's database of customer references and development tests to identify the appropriate gas preservation solution, simultaneously taking into account the foodstuff type, the packaging to be used, and the desired shelf-life. When necessary, further trials are run with the customer to confirm this choice.

5. Supplying gas as a food component

The required gases are supplied to the customer's packaging units via cylinders, liquid storage tanks, or onsite production units. ALIGAL gas mixes, specially-tailored to the food industry, are produced in line with HACCP² food safety and traceability methods, and are fully food compliant. The oxygen, carbon dioxide and nitrogen or argon are fed into a gas-mixer, and then piped to the packaging machine. Air Liquide also offers its customers an integrated microbiological filtration facility to enhance food safety.



Gas

4. Salad is still breathing

Salads also require oxygen to stay fresh until they are consumed. This is because they are leaf products, and continue to respire, even after harvest. However, too much oxygen also leads to the gradual breakdown of the cut leaves... The speed of the breakdown and enzyme activity can be slowed by adding to the oxygen the right balance of carbon dioxide (CO₂). The gas mix is completed either with nitrogen or with better-performing argon.

6. Packaged up, ready to sleep

Freshly-cut salads are usually wrapped in vertical form-filled bags. The salad moves along a production line before entering the chute where it is to be packaged. The ALIGAL gas mix is injected into this same chute (so filling the packets) via a gas lance. Once each bag has been filled with lettuce, it is sealed, trapping the gas and the lettuce inside. Air Liquide's expert food teams intervene to optimize and control this final step. The salad, now in 'hibernation', is ready to be sent to the supermarket.

¹ ALIGAL is Air Liquide's dedicated food market brand. ALIGAL preservation solutions are specially adapted for use in entire food and beverage value chains.

² HACCP : Hazard Analysis Critical Control Point, or applicable in Europe.