



# Reefer Cargo Guide



CMA CGM group

The information contained herein should be treated as a guide only.



## **ANL - a world leader in reefer transport**

ANL pioneered the reefer trades from Australia decades ago and that level of expertise and dedication remains today with our extensive services offering the latest reefer containers.

We are dedicated to reefer cargoes and our reefer fleet is one of the youngest in the trade. It comprises all types of refrigerated containers, including controlled or modified atmosphere systems, to transport your goods to every corner of the world.

A guide to optimum storage conditions, as well as the various packing and stowage procedures can be supplied to our customers to ensure their products will be loaded in ideal conditions and in the correct manner.

We provide a wide range of reefer products and services so as to offer customers an innovative service combining quality and performance at the same time as protecting the environment,

All our reefers are equipped with software to detect any problems the moment they occur to ensure that your goods have a longer shelf-life and keep their market value.



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ANL operates as part of the global container pool of our parent company CMA CGM, which means we can draw upon a large fleet of both 20' and 40' reefer containers designed to transport perishable goods in a temperature-controlled environment.

We have a wide range of reefer containers and different systems for controlling the atmosphere, the temperature and the humidity, depending on the type of merchandise you wish to transport and which part of the world is involved.



Some of the systems that may be offered are;

> **Controlled atmosphere**

Modifying the nature of the air in the container (specifically CO<sub>2</sub> and O<sub>2</sub> levels) significantly slows down the ripening process of fresh produce and lengthens the storage period. A variety of options to achieve this with the EVERFRESH, TRANSFRESH and AFAM + systems.

> **Controlled temperature**

Certain products (ice-cream and fish) require extremely low temperatures of down to -35°C. The technology in our Magnum containers is ideal for this application.

A highly accurate process is cold treatment where certain products (mainly fruit) are kept at a low temperature for a predetermined, uninterrupted period to eliminate parasites (insects, etc).

Some products, such as tomatoes or potatoes, require changes in temperature during the voyage, which is where the multi-temperatures system comes in. Several temperatures can be programmed in at the start for one voyage.

> **Controlled humidity**

Numerous products require a reduced level of humidity, which is why all our reefers are equipped with a system that can lower the humidity by between 55% and 95% as required.

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## How do Reefer containers work?

### > **The principle**

All our reefers are bottom air delivery units designed to distribute chilled air from the floor, via vents designed for this purpose. The advantage is that it produces a consistent and uniform flow of air across the whole cargo, powerful enough to ensure a perfect exchange with the goods.

The power of the refrigeration means we can maintain or lower the temperature of the goods, even in the most difficult conditions. Each reefer can also warm up the produce, as the electrical resistance can reach 30°C, even when the temperature outside is extremely low.

There are two forms of temperature control:

Frozen mode – temperature control is accurately achieved through the return air.

Chilled mode –temperature control is accurately achieved through the supply air flow

### > **Ventilation**

Forced circulation of cool air prevents chilled products from ripening too quickly and removes intrusive odours, ensuring a longer shelf-life and maintaining the market value.

As some products produce unwanted gases and moisture (which can affect quality), our reefer containers are equipped with fresh air exchange systems where cooled outside air is introduced into the container, while the same volume of air is expelled to the outside. The volume (from 0 to 290 m<sup>3</sup>/h) depends on the type of merchandise being transported and can be controlled by the container.

Also included in the Guide section of the ANL website is a comprehensive but not exhaustive list of the various products transported, as well as the parameters and recommended settings for each: temperature, volume of replacement air, etc.

Please use this as a guide and do not hesitate to contact our reefer experts for more information.



## **Reefer Procedures**

From the booking to the delivery of your cargo our reefer experts have drawn up a list of procedures from the moment a container booking is made right through to delivery at its final destination.

### **When the booking is made, we will need the following information:**

Nature of the merchandise

Place of origin and final destination

Quantity, weight and dimensions of merchandise

Type of packaging being used (crate, drum, pallet, etc)

Temperature of transport required (specify °C or °F)

Fresh air exchange volume required (specify cf/m or cm/h)

Optional choice of modified atmosphere or controlled atmosphere

Dates when goods will be available from the packing point and the expected date of delivery to their destination

Specific requirements (for example, multi-temperature, cold treatment, etc.)

### **Pre Trip Inspection (PTI) of the container**

The PTI is a detailed inspection of the container and is meticulously carried out by our reefer experts to ensure that the container is:

- clean
- there are no odours
- the system is in perfect condition



## **Pre-Cooling Cargo**

All refrigerated goods should be pre-cooled to the temperature required during their transport by reefer before being loaded. Reefer containers are designed to maintain this temperature and not to lower it.

To avoid the problems associated with condensation, pre-cooling is only possible if there is a suitable cold store available for packing.

## **Packaging**

The packaging must:

- be designed, manufactured and stowed in a way that ensures optimal protection of the goods
- be able to withstand repeated handling in diverse and varied environments without damage
- be able to withstand the vertical pressures incurred when piling up crates
- be able to tolerate humidity
- allow good air circulation through the container to ensure optimum temperature control





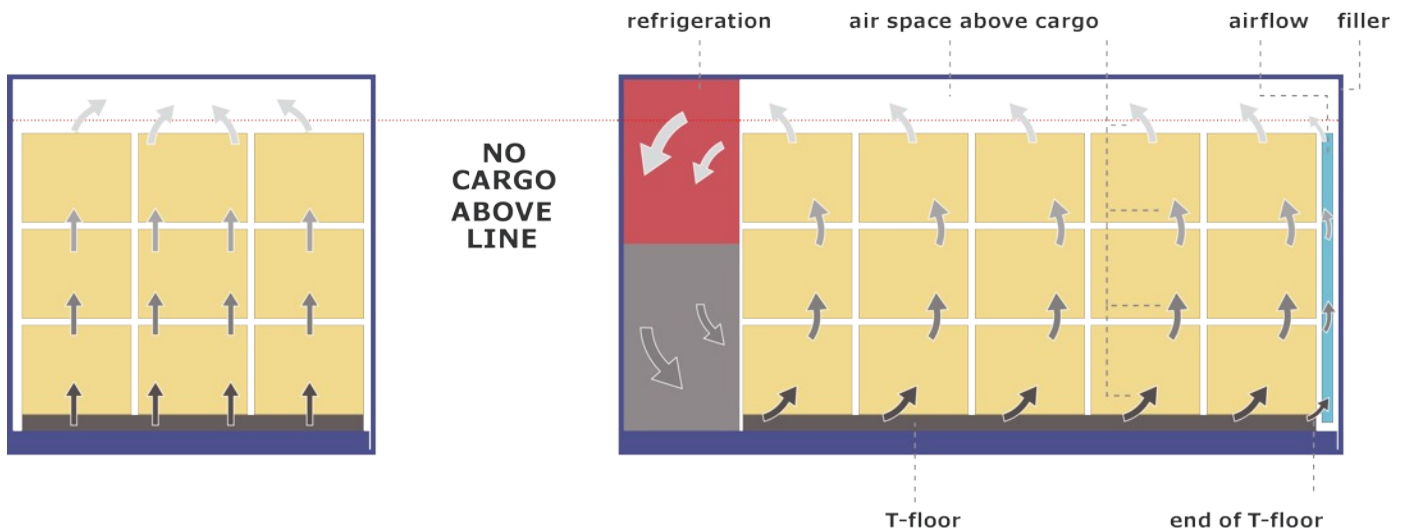
## Packing and stowage

Packing and stowage of the merchandise inside the container are done by the shipper.

Key points to note:

As all our reefers are bottom air delivery, the entire floor surface of the reefer must be covered by the cargo. If that is not possible, then material such as cardboard, etc, is used to cover the remainder.

### The correct way to stuff a bottom-air delivery container with chilled cargo



NB: In case of frozen cargo, avoid filler

For chilled cargo, the cartons should be stowed in a block, so that there is no space between them or between them and the walls of the container, in a way that the top and bottom vents are aligned allowing a free flow of air through the merchandise. The same recommendations apply to frozen goods to avoid any heat from outside coming into contact with the cargo.

***See our separate cargo stacking guide.***



## **During the journey**

Our reefer experts monitor the containers at every stage of the journey to ensure they are functioning correctly:

- on entering and leaving the container yard
- when being loaded on to a train or truck
- when parked in the port terminal
- during the journey on board ship

Throughout the journey, our personnel regularly monitor the reefer containers using an electronic microprocessor and data-loggers, which record all parameters. Even when the reefer is unplugged, the data-logger continues to record temperatures in the container:

- Supply air temperature
- Return air temperature
- Ambient temperature
- Cargo temperature (optional)
- Humidity level

Other actions which could impact on the quality of the merchandise are also monitored and recorded:

- Tuning operations
- Modifying the parameters
- Interventions
- Breakdowns
- Alarms
- Connecting / disconnecting the containers

## **On delivery**

Our reefer experts check the container's temperature and ensure everything is working properly right up to the moment the goods are delivered to their final destination.

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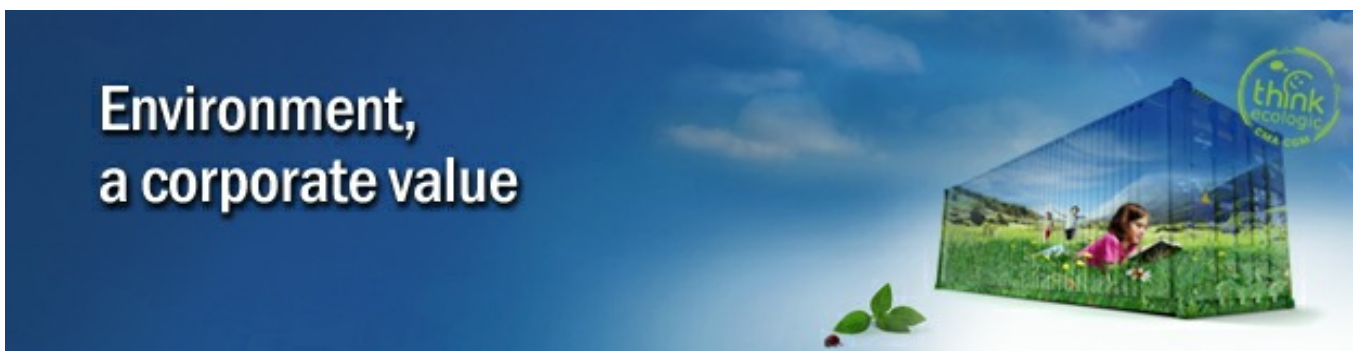
## **Innovative technology for the benefit of the environment**

As part of a proactive policy, we are committed to developing solutions which combine quality and innovation with protecting the environment.

As such the CMA CGM Group has closely examined eco-friendly solutions, particularly with regards to energy use and CO2 emissions and has bought 2,000 reefer containers equipped with low-energy motors which cut fuel consumption by up to three times per voyage, also reducing carbon emissions.

In an ongoing drive to optimise the fleet's environmental performance, 3,000 reefer containers equipped with energy use management software have also been acquired. It means the temperature of the goods is being minutely controlled throughout their journey, as a result of which less electricity is consumed. A further 6,000 containers are in the process of being fitted with this software. These latest generation reefer containers are in keeping with our policy to work towards sustainable development.

The Group is also committed to a policy of acquiring new vessels in order to have a fleet which integrates the latest technologies in terms of protecting the environment.



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