




**REEFER CARGO SOLUTIONS**







Your chilled and frozen cargo is in safe hands with MSC,  
thanks to our unrivalled customer care,  
expertise and state-of-the-art technology.  
We develop tailor-made logistics solutions to help you  
reach new markets all over the world  
and achieve your sustainability goals.

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**700**  
VESSELS



**155**  
COUNTRIES

**250+**  
ROUTES



**600**  
OFFICES

**500**  
PORTS OF CALL



**110,000**  
MSC GROUP EMPLOYEES

**23**  
MILLION TEU  
CARRIED ANNUALLY



Note: key numbers estimated for 2022

## A FAMILY COMPANY CARING FOR YOUR BUSINESS

**Above all, MSC is a family company with strong values and a deep shipping heritage dating back 50 years. Despite our global presence and large-scale operations, we understand that each customer has different needs, so we go the extra mile to find tailor-made solutions.**

Founded by Captain Gianluigi Aponte, MSC Mediterranean Shipping Company (MSC) is a privately-owned shipping line established in 1970 and headquartered in Geneva (Switzerland) since 1978. The company's international headquarters supervise a worldwide network of 600 offices, each responsible for commercial and operational activities in their respective countries.

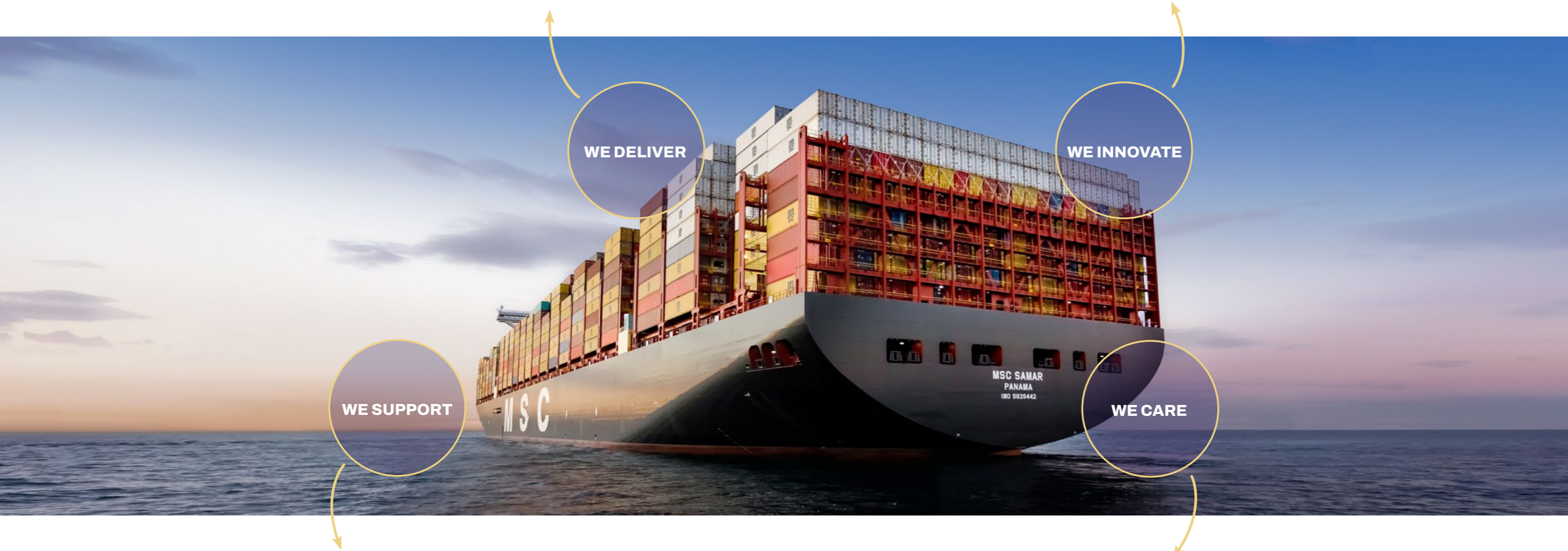
MSC is a world leader in global transportation and is part of the MSC Group shipping conglomerate, a global business in the transport and logistics sector. The Group encompasses a Cargo Division with MSC Mediterranean Shipping Company (MSC), Terminal Investment Limited (TiL), MEDLOG and a Passenger Division led by MSC Cruises and complemented by Mediterranean passenger ferries Grandi Navi Veloci (GNV) and SNAV.



## WHY MSC?

As a leader in transport and logistics, MSC reaches every corner of the globe. We bring your cargo safely and quickly from A to B, using tailor-made end-to-end transport solutions across road, rail and sea.

Our fleet is among the most modern in the world, and we invest in state-of-the-art equipment and technology to transport your cargo securely and efficiently to its destination.



WE DELIVER

WE INNOVATE

WE SUPPORT

WE CARE

We pride ourselves on offering the best customer service in the industry, and we make every effort to meet your individual needs and build long-term partnerships. We are known for our local and global expertise, professionalism, and top health and safety record.

As a key player in global supply chains, we remain fully committed to contributing to the realisation of the United Nations 2030 Agenda for Sustainable Development. At MSC, sustainability is a strategic imperative and, above all, a business priority. More on [www.msc.com/sustainability](http://www.msc.com/sustainability).





## THE REEFER EXPERTS

Our customers and business partners appreciate our in-depth understanding of their local markets and our deep sector-specific knowledge.

Our network of reefer experts at each of our locations provides customers with the very best service and equipment to meet their individual requirements.

We understand the importance of preserving the condition of our customers' cargo from the moment it is loaded until the minute it reaches its delivery point.

Over many years, we have developed a strong service offering and built one of the largest and most environmentally-friendly reefer container fleets in the world.

We transport all kinds of chilled and frozen cargo, including:

**FRUIT  
AND VEGETABLES**



**MEAT  
AND DAIRY PRODUCTS**



**FISH  
AND SEAFOOD**



**PHARMACEUTICALS**





# END-TO-END SOLUTIONS

Over the past **50 years**, MSC has literally gone **'the extra mile'** by expanding our services beyond ports. Little by little we have developed an **integrated** road, rail and barge **network** across the world. We offer **door-to-door transport solutions**, even to the most remote areas.



### PRE-TRIP INSPECTION

At the depot, our reefer experts carry out a thorough inspection of the container in preparation for loading. This helps our customers meet the relevant regulatory requirements and retain the sale value of their cargo at its destination.

### PICK-UP AND LOADING

We travel to you to load your cargo into our reefer units.

#### Our reefer units

- ✓ 20ft or 40ft cubes
- ✓ Controlled through an integrated microprocessor
- ✓ Fresh air adjustment and dehumidification
- ✓ CFC-free insulation ensures minimum temperature loss

### INLAND TRANSPORTATION

While the containers are in transit over land, MSC can provide a Genset portable diesel generator to keep the container operating at the required temperature.

### COLD STORAGE WAREHOUSES

We provide cargo-related solutions, including depots and logistics solutions such as refrigerated warehouses and container maintenance.

### INLAND TRANSPORTATION

We bring the containers directly to the port, where they undergo strict security checks.

### CONTAINER TERMINAL

While reefer containers are on board our vessels or in a port, they are always plugged into a constant power source.

### SHIPPING

Our reefer containers are fitted with software programmed to display specific alarm codes should a malfunction be detected. This immediately notifies our fully trained engineers, who can attend to the unit directly.

### FINAL DESTINATION

We deliver your goods in optimal condition to any address in the world. If necessary, containers can be stored at cold storage warehouses on the way.





# YOUR PRE-SHIPPING CHECKLIST

There are a few factors to keep in mind when transporting chilled and frozen cargo. Our experts will provide full support to ensure that your goods maintain their quality all the way to their final destination.



## FROZEN CARGO e.g. meat, fish, ice cream

- ✓ The cargo must be pre-frozen to the correct temperature
- ✓ The cargo inside the container must form a solid block, with no spaces between boxes and the walls of the unit, to allow air to circulate and maintain a steady temperature
- ✓ Maximum load height must be below the red load line of the container
- ✓ Ventilation of the container must always remain closed and humidity off
- ✓ Packaging must be able to resist moisture and allow for a vertical flow through boxes to maintain the desired temperature



## CHILLED CARGO e.g. fruit, vegetables

- ✓ Chilled cargo requires the highest level of care to avoid compromising size, freshness, firmness, texture, colour, flavour, aroma or chemical balance in transit
- ✓ Goods must be pre-cooled ahead of transportation to achieve optimal temperature levels before loading, and to reduce the impact of outside temperatures during transportation
- ✓ The reefer unit ventilation must be set according to the cargo requirements



# THE PERFECT TEMPERATURE

Perishable goods require precise temperature control to maintain their quality all the way to their final destination. At MSC, we follow four highly standardised control procedures to optimise the cooling process. These include **Cold Treatment (CT)** and **Controlled Atmosphere (CA)**.



## COLD TREATMENT

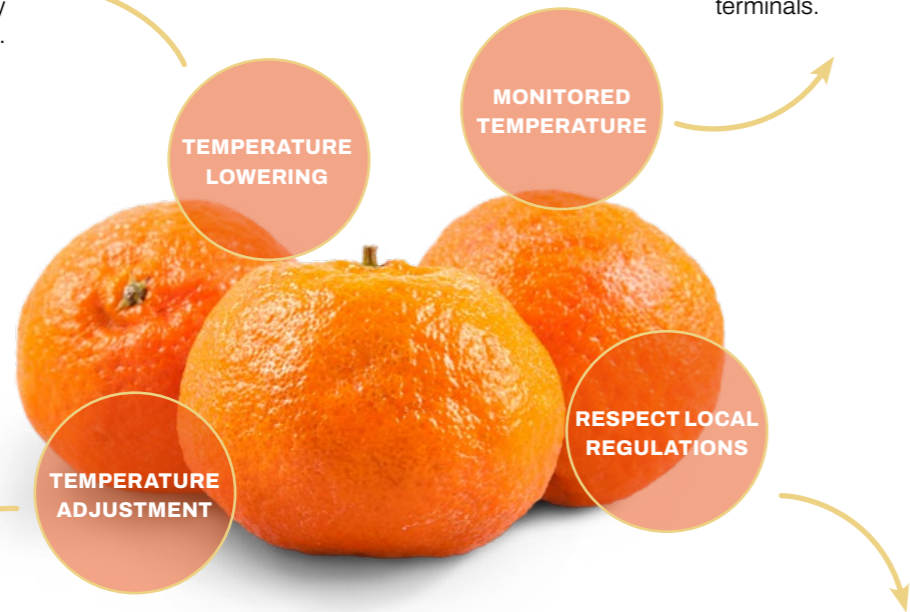
CT is a chemical-free way to eliminate fruit flies and other insects that might damage the biodiversity and agricultural industries of importing countries.

**The process lowers the temperature of the fruit pulp and maintains it for a specified period of time.**

The exact settings vary depending on the country of origin, the type of commodity and the country of destination.

**Our reefer equipment monitors temperature readings through three probes (or sensors) placed in the core of the fruit during the voyage and at terminals.**

The exact settings vary depending on the country of origin, the type of commodity and the country of destination.



Once the cold treatment has been successfully completed during the voyage, **MSC informs the shipper immediately and the temperature can be readjusted.**

**MSC helps you to comply with local regulations.**

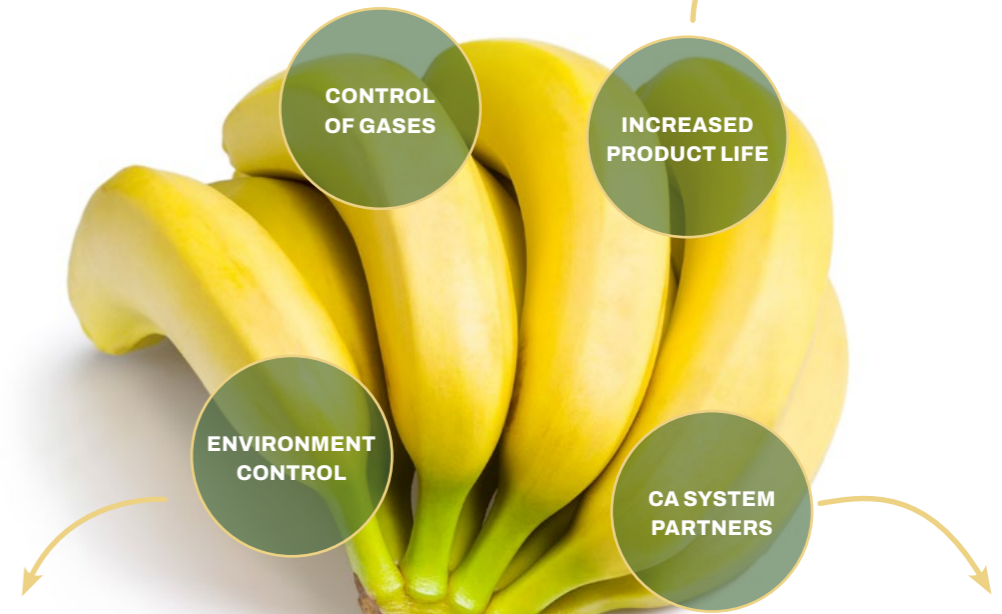


## CONTROLLED ATMOSPHERE (CA)

CA is a highly advanced process to regulate the atmosphere composition in the reefer container during storage or transit.

**CA maintains the initial concentrations of gases** such as oxygen, nitrogen and carbon dioxide by adding or removing quantities of these gases.

**This process increases product shelf life** and keeps fruit and vegetables in perfect condition for longer.



For low-respiring commodities, **gases are injected at the beginning of every shipment to build up the CA environment** and keep it under control throughout the journey.

MSC uses various CA systems with the support of our partners, such as **StarCool® CA, XtendFRESH®, Liventus®, Maxtend® and Purfresh®.**

### IN 2021, WE DELIVERED:

Over **2** million TEU of reefer cargo

Over **41,000** TEU of Controlled Atmosphere (CA) shipments

Over **22,000** TEU of Cold Treatment (CT) shipments

### KEY BENEFITS OF OUR CT AND CA SERVICES

✓ Longer shelf-life of the commodity

✓ Maintain the appearance, freshness and quality of perishable foods over longer distances

✓ Opening new markets to perishable goods

✓ Attractive prices and reduced CO<sub>2</sub> emissions compared to air freight



# THE PERFECT TEMPERATURE



## DEHUMIDIFICATION

It is important to control humidity levels to maintain the quality of the products: too much humidity may cause mould, while too little may cause dehydration.



## VENT SETTINGS

Proper ventilation is vital, as fruit and vegetables "breathe" during transportation. This produces heat and gases such as ethylene, which speeds up the ripening process and reduces shelf life, and CO<sup>2</sup>, which suffocates cargo and causes discolouration. Fresh air is required to remove such gases.

All MSC-operated reefer containers **equipped with the humidity sensor can dehumidify.**

**Dehumidification devices enable you to set temperatures above or equal to minus 10°C.**



**Our reefer units are fitted with vents to adjust the level of fresh air, depending on the commodity.**

**The air is cooled by passing the evaporator coil and circulating throughout the cargo by fan.**







## ENABLING SUSTAINABLE SUPPLY CHAINS

MSC is committed to promoting a sustainable use of the sea and marine resources, and to minimising the environmental impact of our business activities.

### RESPONSIBLE INNOVATION

As a leader in transport and logistics, MSC is at the heart of global trade, connecting people and continents. We contribute to the growth of many different sectors, and we care deeply about developing international trade in a responsible way.

We invest heavily in the latest green technology, systems and processes to help achieve cleaner seas, land and cargo. The average age of our reefer containers is under seven years old, and we use two of the best-performing and most energy efficient units in the world: the Transicold PrimeLINE® "R-513A ready" and the Transicold NaturaLINE®.

### BUILDING A BETTER FUTURE

We believe that cold chains and cooling technology can make a dramatic difference in enhancing the supply of quality food and reducing food loss around the world. MSC's reefer solutions allow fresh commodities to reach different trade areas, securing food supply regardless of the season and preventing food waste in the event of low local market demand. Our CA containers help perishable goods to travel further and for longer, potentially opening up new markets for exporters and importers.

By increasing the supply and affordability of quality food, reliable cold chains can help reduce poverty, foster responsible consumption and promote the right to health.

Find out more at [msc.com/sustainability](https://www.msc.com/sustainability)







**MOVING THE WORLD, TOGETHER.**

[msc.com/reefer](https://www.msc.com/reefer)