



HINTS AND SUGGESTIONS ON STUFFING AND SEALING CONTAINERS

PAYLOAD

Indications of the capacity of the container are written on the right door of the container. A typical display may look like this : (picture of a 20' reefer container)



Maximum Gross :	30.480 kg 67.200 lbs	Maximum Weight of the container + its content
Tare	3.050 kg 6.730 lbs	Weight of the empty container
Payload	27.430 kg 60.470 lbs	Maximum (gross) weight of the cargo that can be stuffed (difference between Maximum Gross and Tare)

In this case, you can load a maximum of 27.430 kg of cargo. This means the **GROSS weight of your cargo**. Some carriers check the weight of the containers when returned full on terminal before shipment. If total weight of the container exceeds the Maximum Gross (as written on the door) they can/will refuse container to be taken on board of the vessel. Especially with frozen or chilled cargo, or if container is sealed by Inspection Company (like Veritas, Cotecna, SGS, etc) it is impossible to lighten the container on the terminal. Container must be hauled back to loading place for correction of the weight. At the expense of the loading place.

PLEASE CAREFULLY CHECK THE CAPACITY OF THE CONTAINER AND MAKE SURE CARGO WEIGHT DOES NOT EXCEED ADMITTED PAYLOAD AS WRITTEN ON THE DOOR.

We strongly recommend packers and suppliers to actually weigh their cartons/pallets, rather than using some historical weight ratio between net and gross weight. 100 grams of difference on 1 carton for a typical 2700 cartons x 10 kg net weight load, will make a difference of 270 kg, which could mean being just over the allowed payload of the container.

Second hand containers. (shipper's owned). If you happen to purchase second hand reefer container, for its last trip to destination, be aware of the fact that this container will be aged 12/15 years or even older. Last generation reefer containers, used by major shipping lines, have a payload, most often over 29 tons. This is not the case with older containers. **When stuffing second hand, purchased container, it is more than useful to check the allowed payload on the door of the container, and check the weight of the cargo one intends to load.**

Mareco will not accept any liability and will not bear any costs for returning container to loading place, or costs for renewed inspection, or any costs or delays linked to overweight of containers. Loading place has to ensure that weight of the cargo to be stuffed does not exceed allowed payload of the container, as written on the door.

STUFFING REEFER OR CHILLED CARGO

Please make sure cargo is properly chilled or frozen, before stuffing. Reefer containers are designed to maintain a certain temperature, not to decrease the temperature.

Cargo (cartons, pallets) must be stowed in such way that there is no space left in between pallets (cartons), between pallets (cartons) and side walls of the container. **A space of abt 15 cm (marked by a red line inside the container) must be kept open, between top layer and ceiling.** Cold air is forced from the evaporator fans through the T-bar ventilated floor, will go up through the pallets/cartons or between door and last row of pallets/cartons, and will flow back, just under the ceiling, to the intake of the evaporator where it will be cooled again, and be re-injected through the floor. This flow of cold air prevents hot/warm air seeping through walls and ceiling to make contact with the cargo.

PRE COOLING OF CONTAINERS.

Below some comments from a major shipping line.

Pre-cooling of cargo

- **Proper pre-cooling of the products** is crucial as it rapidly removes heat from commodities before shipping, storage and processing.
- All refrigerated cargo should be pre-cooled to the recommended carrying or storage temperature before it is loaded into a container.
- Proper product pre-cooling reduces the rate of water loss and spoilage for many perishables, and helps maintain freshness and quality.
- **Reefer containers are built to maintain the temperature of the products, and not to decrease their temperature.**

Pre-cooling of reefer container

- Pre-cooling of reefer container **is required only when a proper loading bay is available where the temperature in the cold store and in the container are identical.** Proper loading facilities as shown below consist of a tight insulated duct between the cold store and container to prevent warm, highly humid ambient air from entering the reefer container.
- **Pre-cooling of the reefer container should NOT take place if no proper loading facilities are available due to the following reasons:**
- **Condensation on the evaporator coil occurs when warm humid air enters the container during stuffing. This results in the formation of ice, which needs frequent defrosting and eventually affects the cooling capacity that is required for the cargo.**
- High condensation occurs on the interior surfaces of a reefer container such as the T-floors and sidewalls caused by the same hot humid air entering the container during stuffing. This eventually results in ice build-up for frozen cargo and causes damage on packages for perishable cargo. In some cases, condensation on perishables can even contribute to the spread of diseases.
- The above-mentioned problem often occurs in a tropical climate when open reefer cargo loading takes place in high temperature and high humidity environments.
- For frozen cargo, ice build-up is **one of the factors that causes overweight reefers**, and in some cases, results in poor air circulation as the ice formed on the T-floor and sidewall restricts airflow, especially in a situation where the container drain plug is clogged.



Loading of refrigerated cargo in a proper loading facility.

SEALING

After stuffing, container needs to be sealed properly. If not sealed when container is returned full on terminal, shipping lines will do so, but will charge upto EUR 90,00 per seal. Below some pictures of often used seals (Security Bolt Seal)



Seal should be applied on the left handle bar of the right door. (Left door cannot be opened without right door being opened before). Below some pictures of how sealing should be done.



MONITORING THE TEMPERATURE (reefer containers)

As per shipper's instruction, and upon lifting empty container, shipping line will program the container's reefer engine. Shipping line has to make sure that settings are maintained during the whole voyage. Temperatures are monitored and recorded. On older containers, temperature evolution can be read out on a disk, readable for anyone. On last generation containers, this data is digitally recorded on a hard disk, and data can be read and retrieved with a laptop computer, with proper software. Shipping lines, agents in the ports and vessel's crew have such hard and software. In general, carriers will not publish these data, at simple request. They will however, have to publish, whenever a claim is lodged.

If shipper, or receiver, wants to monitor the temperature, independently from container's proper devices, there exist simple low-cost devices one can use. Below you can see picture of a Ryan Recorder. This device can record temperatures upto 75 days (picture show a recorder for a 10-day recording). It comes in a plastic casing which contains batteries, mechanism, and chart paper. It is switched on while container is stuffed, and placed somewhere in the middle of the cargo. It is switched off, as soon it is recovered at destination. By opening, one can easily recover the paper roll, with the recording of the temperature, from day of stuffing, till day of stripping. This recording can be used as supporting document and evidence if at destination it appears container suffered a breakdown, and claim is lodged.

There are some more sophisticated systems on the market. 3M has a very small (size of a credit card) electronic device which records the temperature digitally. Data must be retrieved with a computer, having the right slot, and having the right software. Maybe less convenient for African destinations.



We remain at your disposal to provide more information if needed.

MARECO N.V.
Operations