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Supporting Egypt's Processed Foods Export Industry

Best Practices Guide For Ocean Container Loading -- Procedures For Egyptian Food Processors

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BEST PRACTICES FOR OCEAN SHIPPING CONTAINER LOADING – Procedures for Egyptian Food Processors

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BEST PRACTICES FOR OCEAN SHIPPING CONTAINER LOADING – Procedures for Egyptian Food Processors

INTRODUCTION

Claims for physical damages to ocean containers, and claims for damaged product run into tens of millions of dollars worldwide every year. Implementing a few simple container-loading procedures can prevent a large percentage of this lost revenue.

The following overview is designed as a guide for shipping managers and those workers actually involved in the loading process to minimize the potential for claims against Egyptian food processors using ocean-shipping containers.

It is important for each company to establish a shipping department and to appoint a competent shipping manager to ensure the successful movement of commodities between your company and your customers. Do not rely on loading crews alone to complete the necessary requirements for shipment.

Remember, *the customer's impression of your company is directly related to the condition of the shipment when it arrives at his loading dock.* Future sales could be influenced by your products' appearance, so make certain your shipping techniques ensure a safe, intact, and timely delivery.

1. PORT RETRIEVAL OF OCEAN SHIPPING CONTAINERS

In order to ensure a well-organized loading operation, obtain the shipping container at least one (1) day prior to the actual loading date. This extra time will allow you to prepare the container for loading and return in the same day. Many shipping lines will allow 2 to 3 days for loading operations (also called demurrage), if this is not the case, request a copy of the tariffs to determine the validity of the shippers regulations.

Hastily loaded shipments usually translate into miscounts of products, damaged cartons, and poorly prepared shipping documents. All of this can be avoided with careful load planning and sufficient time allowances.

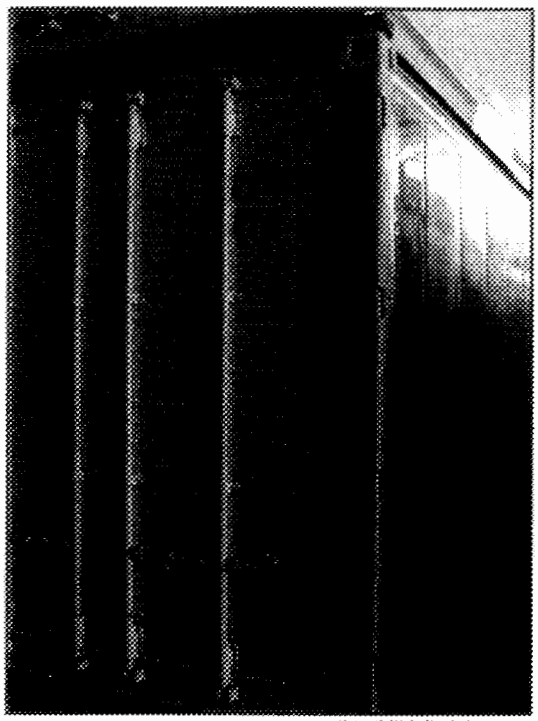
If your company uses internal transportation assets to retrieve ocean-shipping containers directly from the port facility, the following precautions should be used to prevent damage claims against your company.

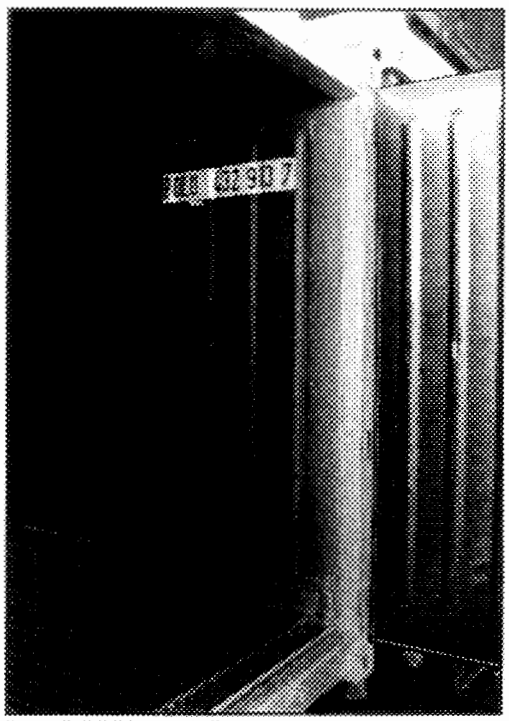
The driver retrieving the container from the port should use the following checklist to ensure that a serviceable and undamaged ocean-shipping container is available for your shipments.

a) ENSURE THAT THE SPECIFIED SHIPPING CONTAINER IS BEING RETRIEVED.

First, check the container invoice number against the container number painted on the exterior. Given the large number of containers being shuttled through most ports, it is not uncommon for the wrong containers to be retrieved by mistake. To ensure that problems won't occur upon returning a loaded container to the port, the pick-up driver MUST check the shipping container invoice number against the shipping container being retrieved.

All containers have unit number displayed at various locations around the container, both inside and outside. Consequently it is very simple for the pick-up driver to check this number against the retrieval invoice locator control number.



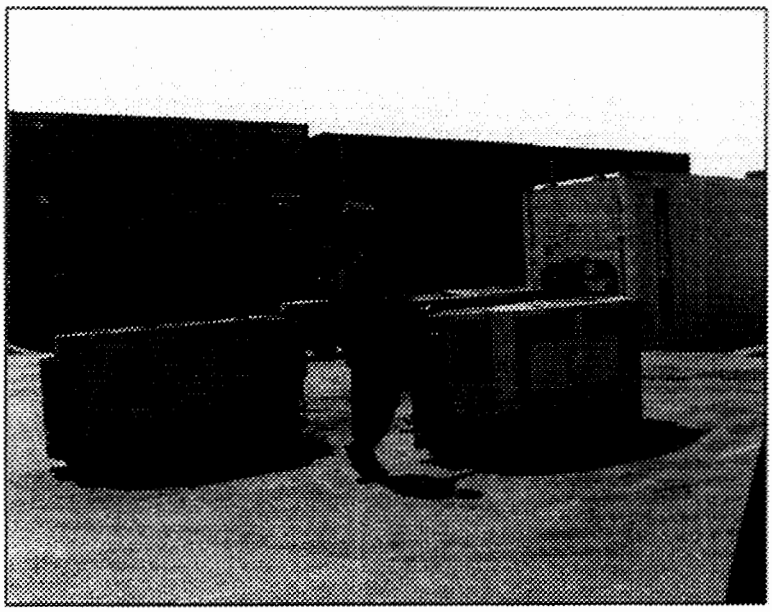


PHOTOS COURTESY OF DAN REEFER S.A.E

In the two photos above, it is easy to see that the container identification numbers are plainly visible, both inside and outside the container.

The container identification number located on the interior sidewall is useful for identification purposes when loading multiple containers at the same time. By placing a destination sign under the container number, the chances of loading the wrong products will be greatly reduced.

b) REFRIGERATED CONTAINERS



PHOTOS COURTESY OF DAN REEFER S.A.E.

Refrigerated containers require special attention. Given the importance of the refrigeration unit's function, it is imperative that the mechanical condition of the power unit be determined prior to departure from the port facility.

Due to the many different varieties of refrigeration units being utilized by various shipping-lines, the transfer driver should request that the port facility staff demonstrate the operational procedures of the particular refrigeration unit being obtained at the port. By physically starting the refrigeration unit, two things will be accomplished:

- The driver will become familiarized with the particular operational aspects of the refrigeration unit; and
- It will be easy to ascertain the operating condition of the unit being retrieved.

If a refrigerated container should arrive at your facility and is later found not to be operational after loading, time and potential loss of product will result.

c) SHIPPING CONTAINER INSPECTION

Each year, shippers pay extremely high claims for shipping container damages that were not damaged while in their possession. Most damages occur during loading and unloading operations, or during the container's movement to and from the port facility.

Damage claims can be avoided by pre-inspecting the container at the port facility and careful attention to loading and unloading operations. It is imperative that each container be inspected for damages prior to the container retrieval driver signing the delivery invoice.

In the event a private trucking company is utilized for retrieval of the ocean container from the port facility, a physical inspection should be made prior to acceptance at your factory door. If any damage to the ocean container is found, a telephone call should be made to the shipping company to inform them of the physical damage, to determine what actions are required to release your company from any responsibility. It is also an excellent idea to take photographs of the container to illustrate any damages found during the inspection and prior to loading operations.

Once the proper shipping container has been located, the pick-up driver should do a walk around inspection prior to hooking up the power unit (truck tractor).

The following check list should be followed to ensure that there is no obvious or hidden damage to the shipping container.

I. Check for Exterior Container Damage:
- Exterior Wall Damage (Holes, Warped Metal, and Bent Side Rails)
- Graffiti (Indicate Any Graffiti On Retrieval Invoice Prior To Exiting The Port)
- Damaged Refrigeration Unit (Impact Damage, Leaking Liquids, Loose Container Mounts)
- Lights (Damaged Or Missing Lens Covers)
- Insure That All Exterior Road Lights Are Operational
- Damaged Air Hose Connections and Electrical Plug Connection Receptacle

II. Check for Container Under-Carriage Damage:
- Damaged 5th Wheel Pins (Bent Or Broken)
- Bent Chassis Frames
- Axle Damage
- Axle Spring Damage
- Damaged Landing Gear Supports And Missing Handles

III. Check for Road Wheel, Tire, and Bearing Damage on Chassis If Utilized:
- Broken Wheels
- Missing Lug Nuts
- Flat Tires

- Damaged Tires (Cuts, Retread Rubber Defective)
- Inspect For Leaking Bearings
- Inspect For Broken Brake Linings

IV. **Check for Interior Damage to the Container:**

- Floor Damage: (Forklift Damage, Bolts, Nails From Previous Load Securing Operations)
- Interior Wall Damage: (Holes, Torn Insulation, Graffiti, Inside Refrigerated Containers, Check For Torn Air Delivery Chutes If Installed.)
- Door Damage: (Hinges, Door Lock Handles, Holes, Door Alignment, and Damaged or Missing Rubber Insulation Strips)
- Roof Damage: Check outside and inside
- Rubbish: DO NOT accept shipping containers with rubbish or debris from previous shippers.
- Residue From Previous Shipper: (Paint, Acid, Oil etc.)
- Insect Infestation: Check for insect infestation from previous shippers.
- Odors: If the container has strong odors, do not accept the container

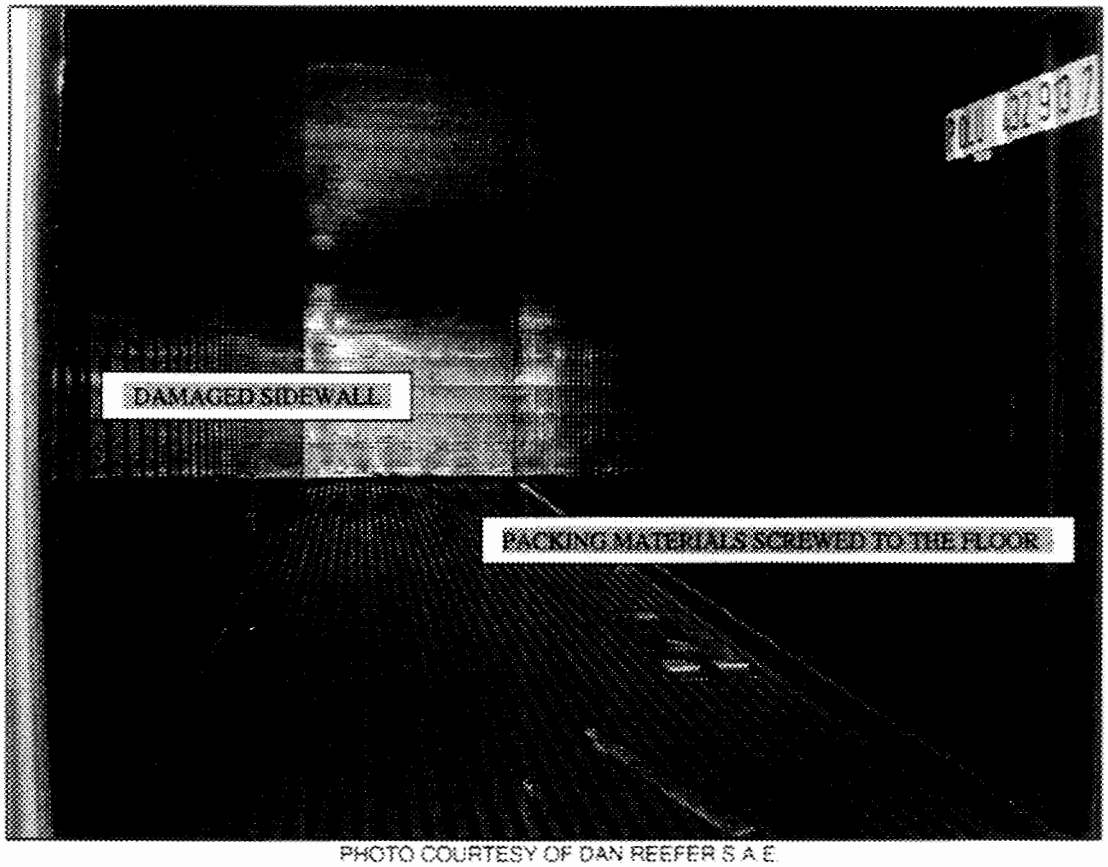


PHOTO COURTESY OF DAN REEFER S A E

NOTICE DAMAGED SIDEWALL PANEL AND POTENTIAL HAZARDS SCREWED TO THE FLOOR OF THIS REFRIGERATED CONTAINER.

NOTE: It is extremely important to inspect the container's interior for damaged surfaces before beginning loading operations to prevent product damage and to reduce potential repair claims at the receiving port of entry.

- Temperature Recording Probes: Check to determine if temperature probes are installed in the container, and determine whether these devices are serviceable.

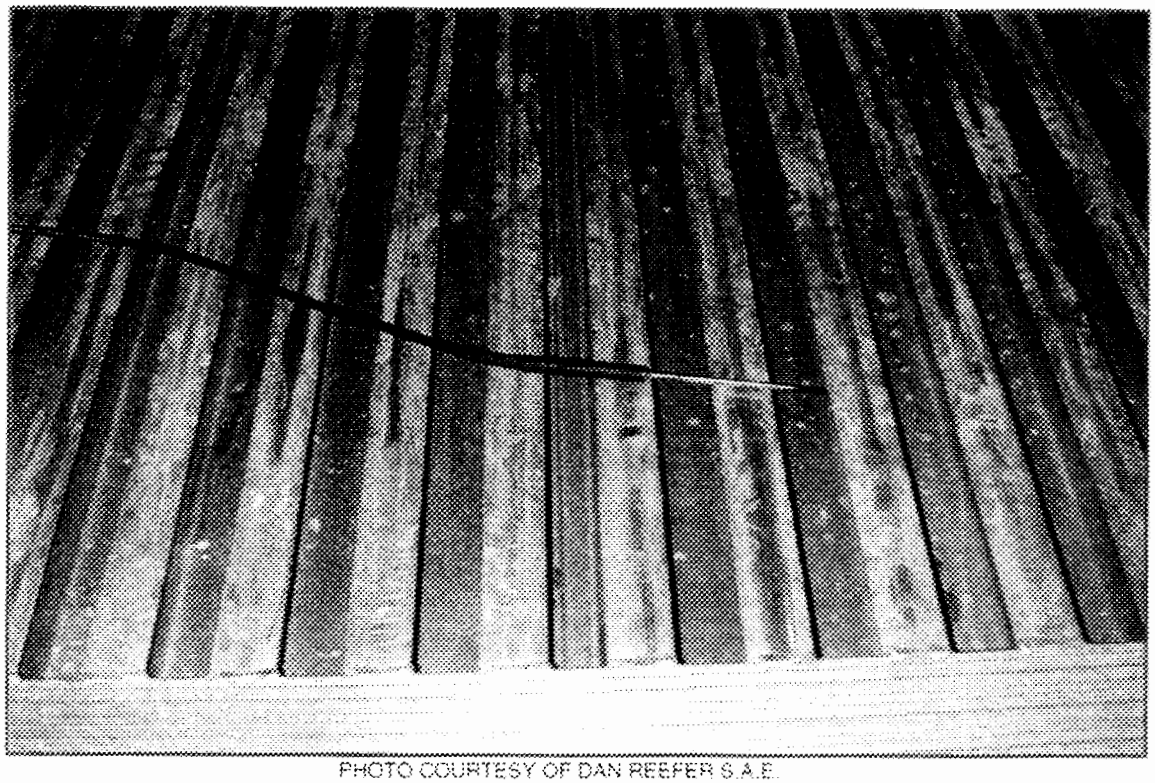


PHOTO COURTESY OF DAN REEFER S.A.E.

NOTICE THE TEMPERATURE PROBE ABOVE, WHICH MONITORS INTERNAL PRODUCT TEMPERATURES. CONTACT THE CONTAINER COMPANY TO DETERMINE PROPER LOCATION OF PROBE IN SHIPMENT TO PROVIDE ACCURATE TEMPERATURE READINGS DURING THE VOYAGE.

V. **Check Container-to-Chassis Locking Devices:**

- Ensure that **all** chassis locking devices are operational
- Inspect for worn lock **receptacles** on the container
- Inspect for worn lock **inserts** on the chassis
- IF ANY OF THESE DEVICES ARE NOT OPERATIONAL OR ARE FOUND DEFECTIVE, REFUSE TO ACCEPT THE CONTAINER OR CHASSIS.

VI. **Use Chains to Lock Down Shipping Container to Flat Rack Trailer Units If Container Chassis Are Not Available:**

- CHAIN LOCKING SYSTEMS SHOULD NOT BE USED IF A LOCK DOWN CHASSIS IS AVAILABLE, DUE TO THE POTENTIAL FOR INJURY AND LOSS OF SHIPMENT.
- Use a minimum of FOUR (4) CHAINS with chain binders to secure the ocean container to the trailer frame. These chains should be spaced equally over the length of the container.
- Ensure that chains and chain binders are in good condition.
- Chaffing Prevention -- Use angle-iron chaffing guards to prevent chain damage to roof edges – minimum length 40 cm. in length and a minimum of 6 cm.-wide in the channel. Place these chain guards under each chain on roof crossings.
- Attach chains to solid attachment points.
- During trips to and from port, inspect chain binder tension regularly to prevent loss of the container.

* Use caution when utilizing chains to secure containers to trailer frames due to the potential injury to personnel.

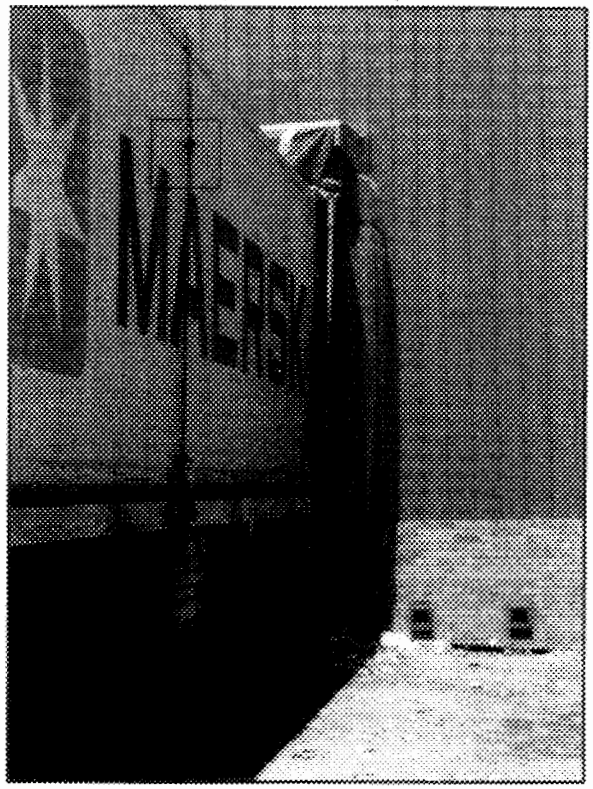


PHOTO COURTESY OF DAN REEFER S.A.E.
NOTICE HOW THE CHAIN HOOK IS BEING FORCED INTO THE SIDE OF THE CONTAINER JUST ABOVE THE "MAERSK" LOGO

2. CONTAINER PREPARATION PRIOR TO LOADING OPERATIONS

It is important to **never** remove the transporting power unit (tractor) form the shipping container when loading operations are in progress, as this will cause the container to tip over.

The landing gear set on any container chassis is not designed to support the weight of a forklift with heavy loads without some type of support to prevent tipping forward.

NEVER EXCEED THE LOAD-LIMIT DESIGNATED FOR THE SHIPPING CONTAINER. THE LOAD LIMITS ARE POSTED ON THE REAR DOORS TO ENSURE PROPER LOAD WEIGHTS. OVERLOADING CAN RESULT IN OVERLOAD FINES AND DAMAGE CLAIMS BY THE SHIPPING CONTAINER OWNERS AND SHIPPING LINE OPERATORS.

a) REFRIGERATED CONTAINERS:

Due to the problems associated with temperature sensitive commodities, the following pre-loading operations **must** be accomplished prior to initiating the loading process.

- **Cleaning Container Interiors:**

  It is always necessary to wash out the interior of any ocean container intended for shipments involving foodstuffs. Cleaning operations with hot water and food grade sterilizing solutions initiated at least 3 to 4 hours prior to loading operations will ensure that the interior has an opportunity to thoroughly dry out. Should the container be loaded while wet, the product cartons will absorb any moisture and will result in carton damage.

- **Pre-Cooling Operations:**

  It is imperative to pre-cool the interior of any refrigerated container prior to commencing any loading operations. This procedure is necessary to prevent heat absorption between the interior surfaces and the product cartons, which will result in a defrost condition.

  It will be necessary to pre-cool the container with the doors closed for a period of up to 2 hours or until the prescribed shipping temperature has been reached inside the shipping container. This operation can be accomplished either through an electrical hook-up or via the external power supply unit attached to the container or the container chassis. If an external refrigeration power unit is utilized, it is important that sufficient fuel supplies are available to maintain electrical supply while the container is not in the port facility.

  Once the prescribed temperature has been reached inside the container, the interior temperature should be confirmed with a calibrated thermometer to ensure proper operation of the refrigeration unit.

  NOTE ON REFRIGERATION SAFETY PROCEDURES:

  1. If a **loaded** refrigerated container is to be left overnight away from the port, it is important to post a guard to ensure that the refrigeration supply is maintained throughout the night to prevent loss of product.

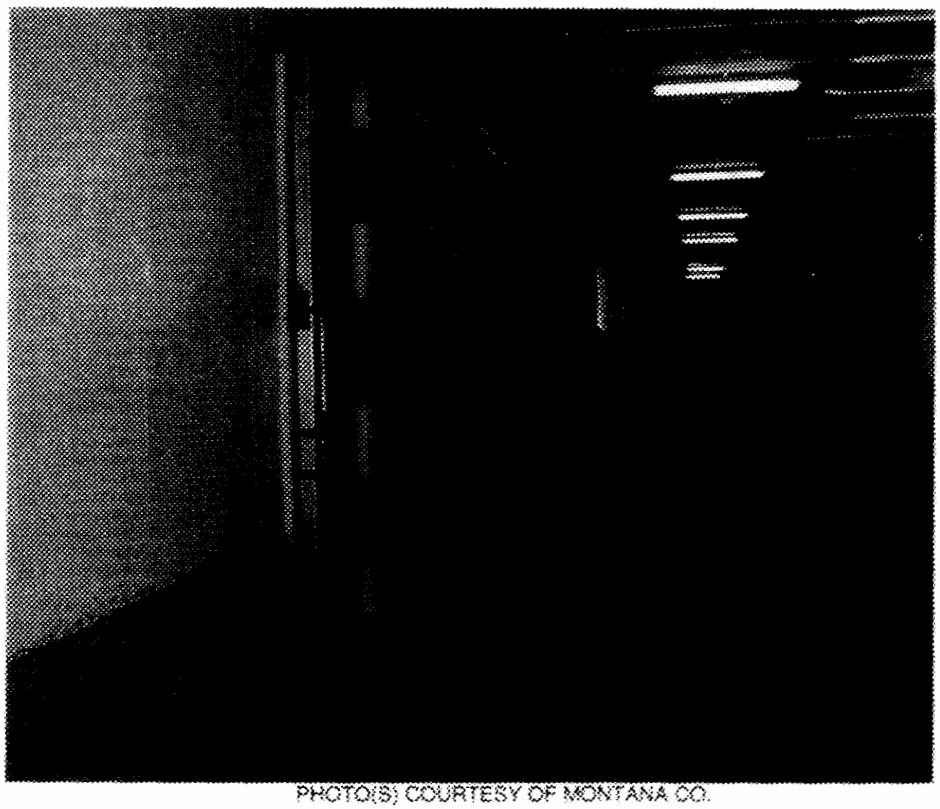
  2. In the event a diesel power unit is operating a refrigeration unit, it is imperative that the fuel levels are sufficient to maintain refrigeration equipment while transporting the container to the port once loading operations are completed.

  3. It is vital that there are sufficient supplies of fuel to operate diesel powered refrigeration equipment should the loaded container remain at the loading dock overnight.

  The loading dock should be enclosed to prevent intrusion of heat into the container while product loading is underway. The container should be loaded as quickly as possible to reduce the intrusion of ambient heat and humidity.

The photo to the left is an excellent example of a cold/hot air barrier used to maintain the pre-chilled temperatures inside the shipping container during extended loading operation.

This dock barrier is best employed with an intermediate chilled/staging loading dock between the deep cold freezer storage area and the loading dock. These loading dock improvements will greatly reduce product loss due to defrost damage.

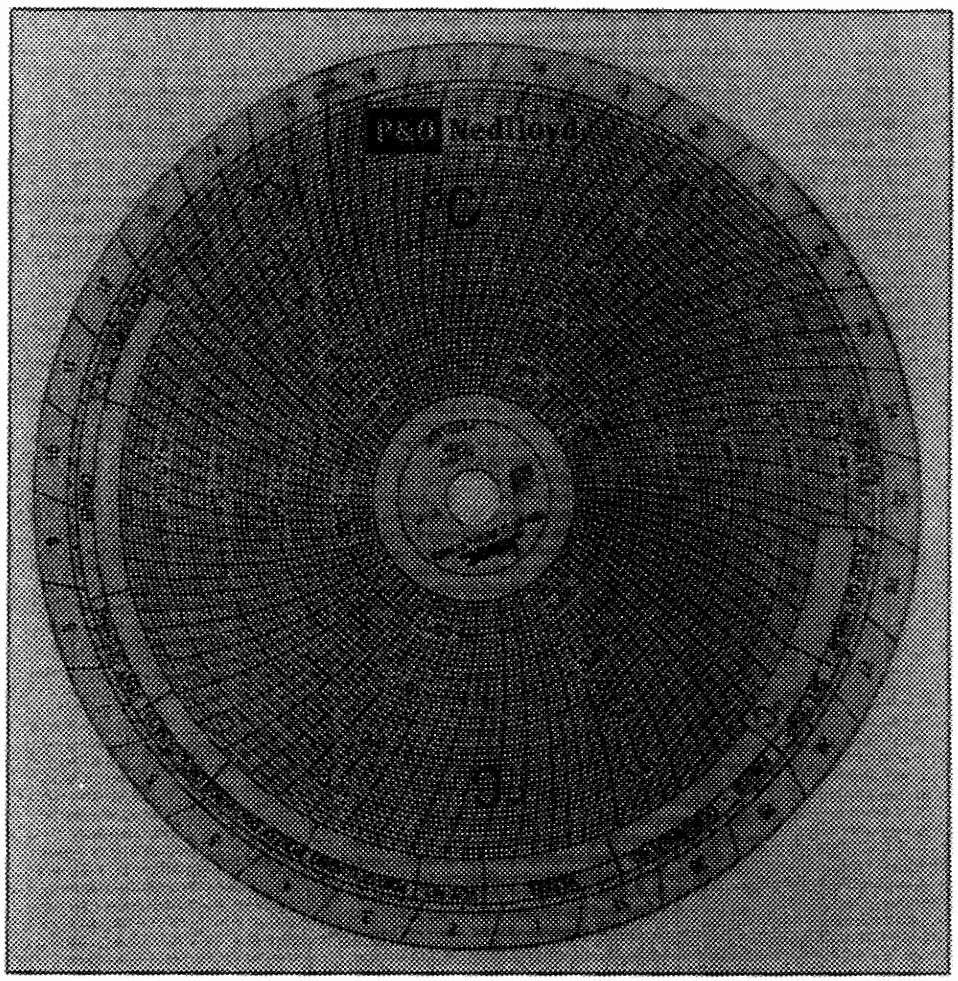


PHOTO(S) COURTESY OF MONTANA CO.
INTERMEDIATE CHILLED STAGING DOCK
BETWEEN FREEZERS AND LOADING DOCK DOORS

In the event that the loading dock is not refrigerated, it will be necessary to turn off the container refrigeration equipment container to avoid evaporator icing by air drawn into the container from the outside.

* **Temperature Recording**:

Most modern refrigerated containers have temperature-recording devices that utilize a paper graph or electronic storage capabilities to record temperatures during shipments (See temperature recording probe on page 6).



SAMPLE CHART COURTESY OF P&O NED LLOYD SHIPPING CO./DAN REEFER S.A.E.

Notice how the above example of a paper-recording chart provided by P&O Nedloyd Lines allows spaces for recording various shipping data. These data include: container number, temperature setting requirements, vessel, voyage number, port of discharge, date of shipment, and cargo.

The temperature-recording graph/chart has a two-fold purpose. The chart/graph is used to indicate the temperature fluctuations during shipment and can also be used as evidence in product loss claims for insurance or court purposes.

It is highly recommended that removable graph/charts be annotated in an indelible ink (**do not use pencil**) to indicate all pertinent information related to the shipment. By annotating this graph, the shipper can insure that the same graph is available should a claim be made for a shipment lost due to loss or refrigeration. It is recommended that a distinctive mark or the signature of the shipping dock manager be used to ensure that a forgery cannot be produced should a claim occur during shipment.

- **Temperature Indicator Devices:**

Another form of insurance against potential refrigeration loss claims is the interior recording device. This device is battery operated and will operate for a specified number of days to record all temperatures during a specified shipping schedule.

The interior-temperature-recoding device is retrieved and opened by the receiving company upon arrival to determine the temperature levels maintained during shipment. In the event of a refrigeration loss and the subsequent loss of product quality, this additional proof of temperature levels will be invaluable in a claims dispute.

These temperature-recording devices are relatively inexpensive when compared to the potential loss of a shipment. Consider these devices as low cost forms of insurance.

PHOTO COURTESY OF THE OSKON CO. LTD.

The temperature- recording device pictured above will record up to 16,000 digital readings during the life of the unit. Many of these low cost units are re-useable, which reduce the overall unit cost when spread over several shipments to repeat clients. Data is collected through computer inputs after arrival at a shipment's destination.

- **Air Vent Closure:**

Most containers have built-in vents to allow air circulation for specific loads requiring fresh air venting. Normally there are two vents, one located in the front and one in the rear, but there are exceptions to this rule. Some containers many only contain one (1) air vent.

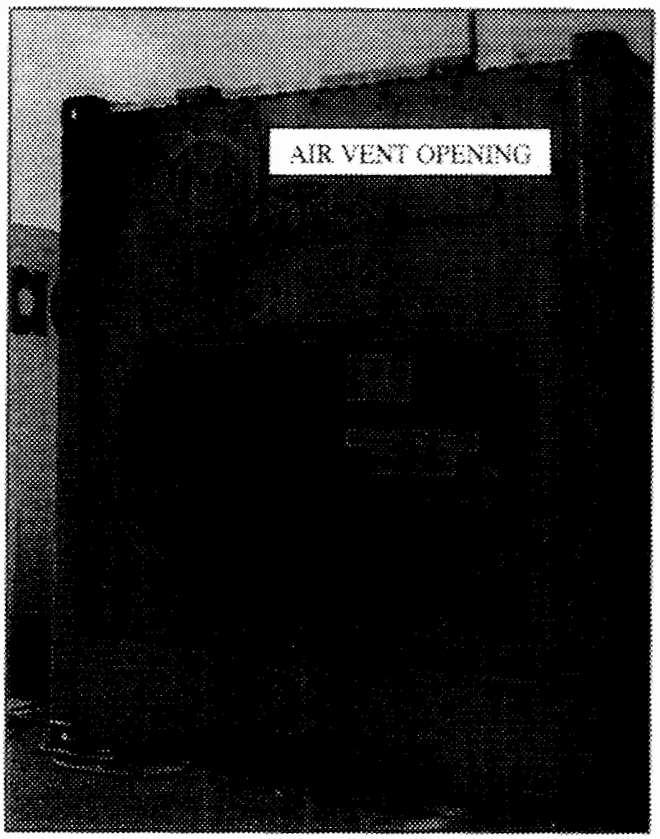


PHOTO COURTESY OF DAN REEFER S.A.E.

Regardless of the number of air vents, it is very important to identify and adjust these air vents according to container directions before shipping.

All vents MUST be placed in the **closed** position prior to refrigerated loading operations, unless otherwise specified by the shipping container manufacturer or should the intended load require these vents to be in the open position. If these air circulation vents are not closed, loss of refrigeration will result.

b) **DRY CONTAINERS:**

Dry load containers are not as difficult to prepare for loading as refrigerated containers, but they still require pre-loading preparations.

The following checklist should be performed *before and after* loading operations have been completed.

- **Cleaning Interiors:**

  Since many dry containers are lined with wooden floors and some with wooden interior panels, cleaning with water may not be appropriate. Usually a thorough sweeping of the floor will suffice.

  Many dry containers are utilized for shipping heavy equipment. This requires blocking and it is important to inspect the floor for any remaining nails, bolts, and other foreign objects that might be imbedded in the floor from previous shippers. Often, carton damage and product loss can be prevented by this simple inspection.

- **Inspection for Holes in Containers:**

  It is important to inspect for holes in the roof, floor, and sidewall surfaces to prevent damage from moisture intrusion into the interior of the container.

If the shipping container is retrieved at the port facility by your company driver and is found to be unserviceable, it should be rejected and replaced by another unit. When an outside trucking company delivers a container to your facility, an immediate inspection should be made prior to acceptance and initiation of loading operations.

In the event a replacement-shipping container cannot be provided by the port facility, postponement of the shipment should be considered until a serviceable unit can be provided to avoid commodity damage while in transit.

It is imperative that a photographic record of any pre-existing minor damages be taken prior to loading the container. Should a claim arise for container damages, these photos will be your only protection to prove that any damage was pre-existing. Any major damages should be grounds for container refusal.

In the event container damage is found after delivery from the port, an immediate call to the container operator/shipper should be made to inform the company of the damage to ascertain the procedure required to absolve your company of liability.

All container damages should be listed on the shipping line delivery invoice to prevent later claims.

Attach these photos to the office copies of the shipping invoice so that they will be readily available should they be required later.

- **Fresh Air Vents:**

  If fresh air circulation is required, it will be necessary to open both front and rear vents to ensure proper ventilation.

  Should fresh air ventilation not be required, closing these vents should be considered to reduce intrusion of moisture and salt air influence. This ventilation decision is the responsibility of the shipper and should be reflected on the shipping manifest.

- **Plastic Covering on Floors and at Rear Container Doors:**

  It is advisable to use a plastic sheeting liner on the floor, near vent openings and over the last few rows of the shipping cartons and to cover the inside of the rear doors as this will prevent intrusion of water into the interior should weather stripping rubber seals leak.

  Lining the container floor with 6-mil plastic sheeting will also insulate the shipping cartons from contact with the floor to avoid intrusion of odors if the commodity is susceptible to absorption of foreign odors.

3. LOADING OPERATIONS:

a) Container Identification:

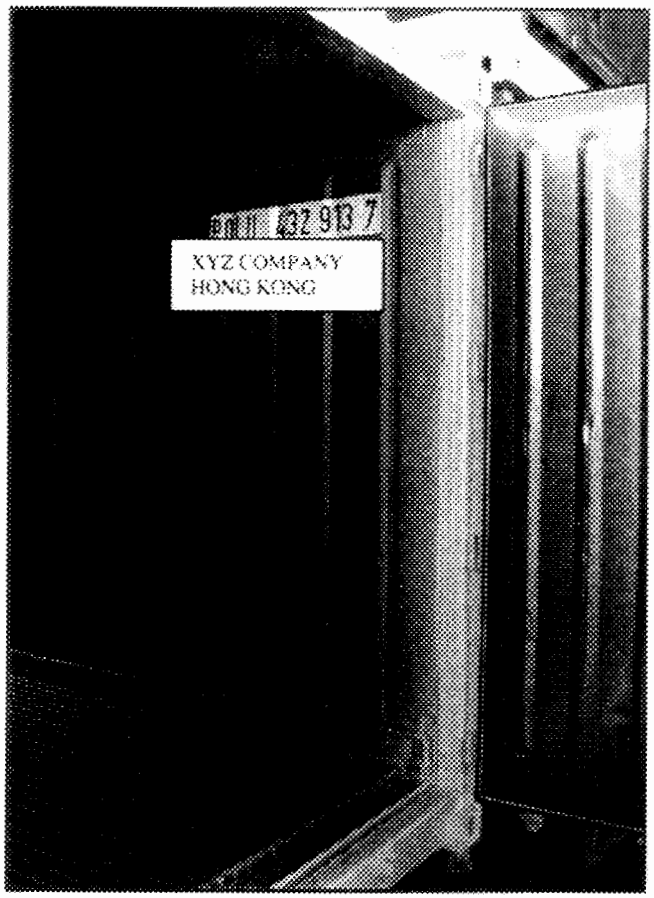


PHOTO COURTESY OF DAN REEFER S.A.E

It is very important to identify the **container number**, **customer name** and the **intended destination** on the loading sheet as well on the rear of the container during loading operations. In the event that two containers are loaded simultaneously, this will prevent the possibility of loading a shipment into the wrong container.

With the above-mentioned information available to the loading crew, less chance for error is likely. In addition, posting this information at the rear of the container will remind the loading crew which commodities to be selected and loaded into each container.

NOTE: Replace all floor drain hole plugs prior initiation of loading operations

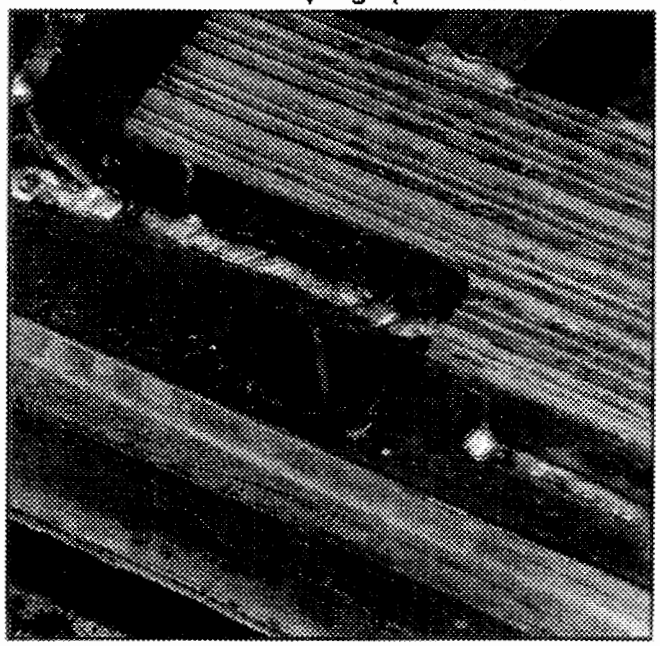


PHOTO COURTESY OF DAN REEFER S.A.E.

b) **Pre-Staging of Shipment:**

In the event the intended shipment is refrigerated, it is very important to load the container as quickly as possible to prevent the shipment from degrading due to defrost effects outside the cooler/freezer.

If possible, pre-stage the shipment to allow for rapid loading into the shipping container. By "pulling" the shipment prior to arrival of the shipping container, there will more opportunity to double check the shipment for accuracy of manifest quantities.

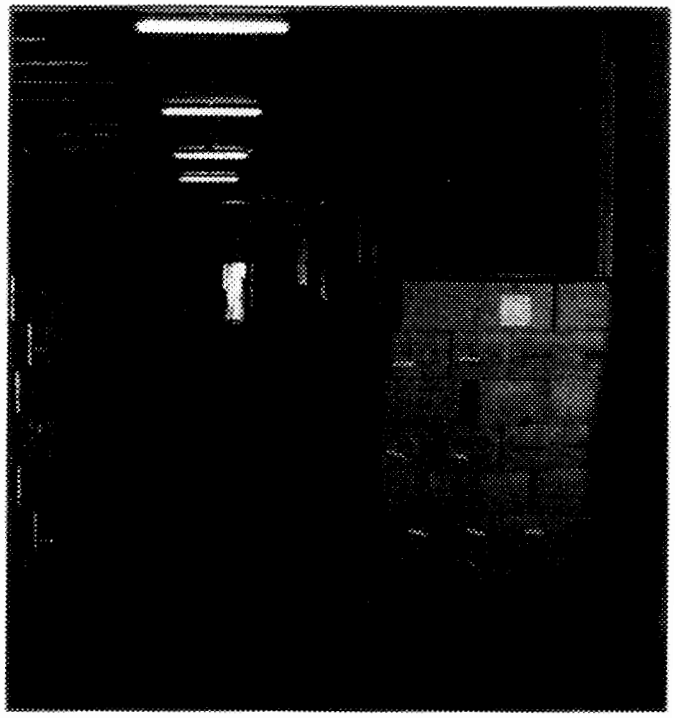


PHOTO COURTESY OF MONTANA CO.

Pre-staging shipments on chilled intermediate cool docks is the most effective method to maintain product temperature during handling and loading operations

It is important to provide the loading crew with a loading check list to check off each commodity as it is loaded. Each item in the shipment should be listed and a tally column provided to check off each item as it is loaded. A loading checklist will remind the loading crews of which items have been loaded and which items still remain on the dock.

The loading dock manager should appoint one person to handle all accounting while loading operations are underway. The load checker will ensure that all items on the invoice are loaded and that any extra items will not be loaded by mistake. The load checker should not be involved in the actual hands-on loading operations. All of his attention should be entirely focused on comparing the items loaded against the shipping invoice.

c) **Air Spacing Between Cartons:**

Loading refrigerated shipments may require air spacing to ensure proper air circulation and thorough refrigeration.

By alternating spaces on the sides of the container and using a "staggered" stacking technique for each level of the shipment, airflow can be achieved utilizing a tunnel effect.

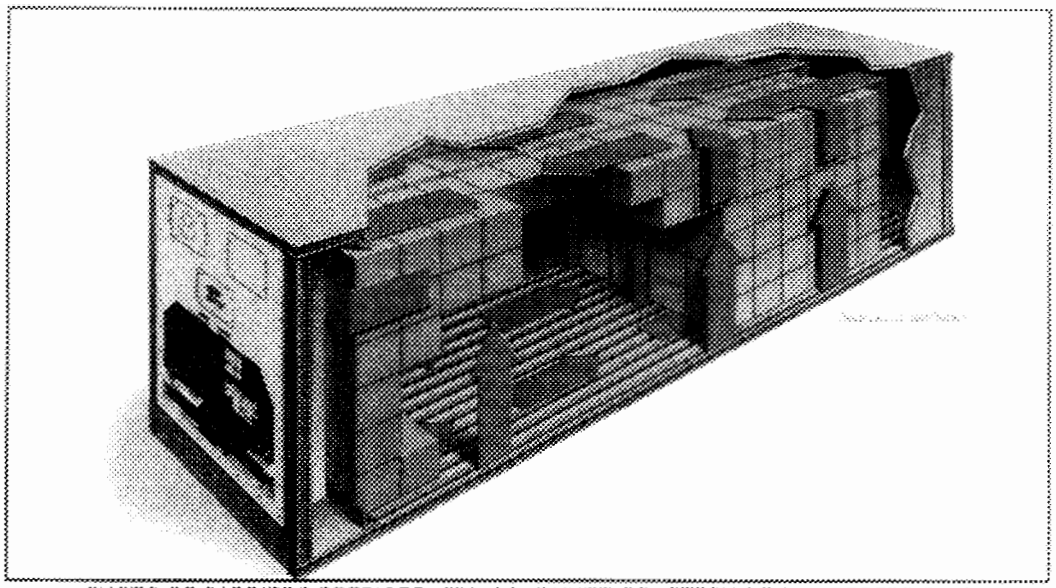


PHOTO OF CARRIER® REFRIGERATED CONTAINER COURTESY OF DAN REEFER S.A.E.

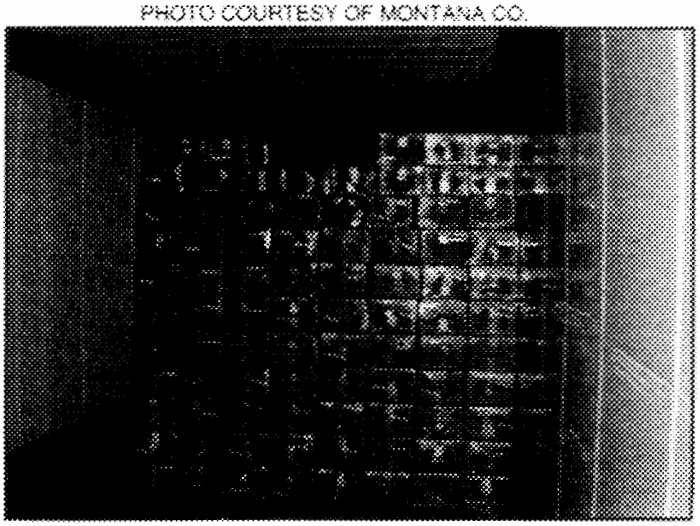
EXAMPLE OF COMPLETE AIRFLOW THROUGH AND AROUND CARTONS

d) **Refrigerated Shipments**:

Only cartons that are at the required shipping temperature should be loaded on a refrigerated container. THE SHIPPING CONTAINER WILL NOT LOWER THE PRODUCT TEMPERATURE TO THE REQUIRED LEVELS – IT WILL ONLY MAINTAIN TEMPERATURES OF THE PRODUCTS LOADED.

e) **Proper Load Distribution**:

PHOTO COURTESY OF MONTANA CO.



It is imperative to properly balance the entire load to reduce the potential for product damage during shipments. If the load is not balanced properly, the contents will shift during container handling operations.

By pre-determining the count of cartons in width and length, the required load height can be determined before loading operations begin. Using this method ensures the even loading of the shipment.

Note the airflow channel at top of the load stack pictured above, which allows proper circulation.

LOAD HEIGHTS MUST NOT EXTEND ABOVE THE LOAD HEIGHT LIMITS INDICATED BY THE RED LINE PAINTED ON THE WALLS OF REFRIGERATED OCEAN CONTAINERS.

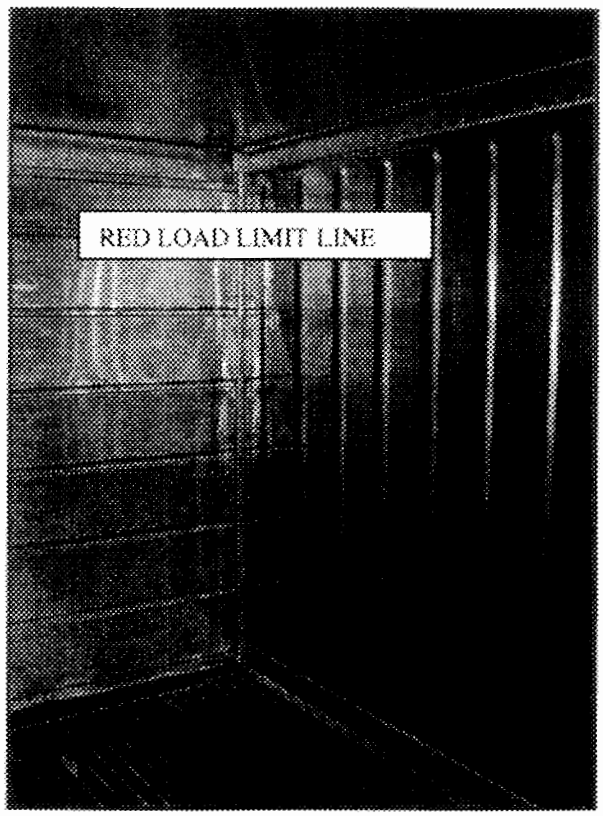


PHOTO COURTESY OF DAN REEFER S.A.E.

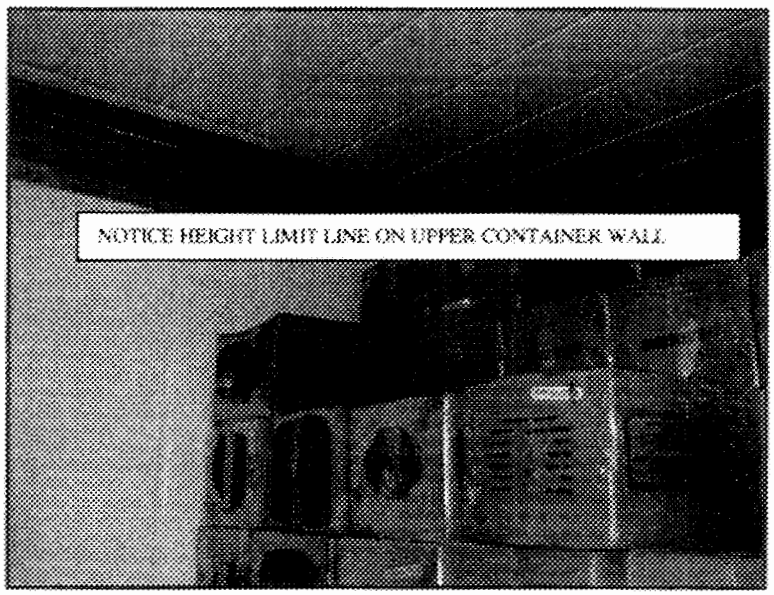


PHOTO COURTESY OF MONTANA CO.

If a shipment contains cartons of different weights or dimensions, it is important to estimate the percentage of heavy versus lightweight cartons to properly distribute the weight evenly over the container's interior.

f) **Load Shift Prevention**:

Should the spacing of the cartons not fully fill the floor space up to the rear doors, it will be necessary to provide a barrier to prevent the load from shifting during shipment.

Under normal circumstances, a bulkhead constructed of wood can be used to prevent a load shift. Some countries forbid the importation of wood products inside the container for any purpose; so other methods must be used to prevent load shifting. One alternative to using a wooden barrier is to use inflatable paper bulkheads, which can also be used to prevent load shift.

In refrigerated shipments, it is important not to block the air circulation at the rear doors, as this space is required for complete return air circulation to the front of the container. In the event there is open floor space from the last row of cartons to the rear doors, place enough cartons on the floor to reach the rear doors, as this will ensure proper air circulation return through the floor channels.

Always attempt to space cartons evenly so as to cover the entire distance from the front to the rear to prevent leaving open spaces at the rear that will allow the load to shift during shipment movements.

It is a good practice to photograph the load prior to closing the doors prior to movement of the container to the port facility. Photos will provide a visual record of the condition of the shipment prior to delivery to the shipping line.

g) **Documentation**:

Typically, the shipper and/or the shipping agent prepare all shipping documents. This guide will not go into great detail, due to the country specific nature of each type of shipment.

NOTE: However, it is advisable to include one (1) copy of the shipping documents inside the container at the rear door if possible, in the event the shipping documents and the container become separated.

BILLS OF LADING MUST CONTAIN:

- **Any product-specific shipping instructions; AND**
- **FOR REFRIGERATED shipments, instructions must include the required temperature levels to be maintained during the voyage.**

h) **Transit Security Devices**:

It is extremely important to apply container security seals to ensure that the load is not tampered with while in transit.

PHOTO COURTESY OF DAN REEFER S.A.E.

Plastic or metal tamper-proof rear door seals are available from most shipping companies to prevent tampering. Seals are routinely installed by customs services and agricultural agencies of many countries to insure proper import clearance. Although customs seals are used between countries, it is important to use seals between the shipper's facility and the port to prevent theft.

I) **FINAL CHECK LIST Prior to Sending Shipping Container to Port Facility:**

Develop an internal final checklist document to ensure completion of all shipping requirements using the following suggestions:

1) Provide all export documentation, customs clearances, and health certificates, if required, with the shipping container to avoid delivery delays at the port facilities.

2) Indicate container number, container owner, shipping line, and vessel information on the shipping invoice to ensure proper handling and tracing.

3) Provide company and personal phone, fax and e-mail information for emergency contacts on the shipping documents should problems occurs during shipment.

4) Enclose one copy of shipping invoice inside container.

5) Ensure load shift barrier is in place at rear of container if required.

6) Annotate the temperature-recording graph/chart prior to departure on refrigerated shipments. If internal temperature recorder is being utilized, place unit inside the container (after activation) at the location specified by the temperature instrument manufacturer.

7) Photograph the load prior to closing rear doors to record status of load prior to shipment.

8) Close and seal rear doors – **RECORD SEAL NUMBERS ON BILL OF LADING.**

9) Adjust any vent openings according to load requirements.

10) Adjust the thermostat on refrigerated containers to the proper temperature for the specific commodity being shipped before departing for the port.

11) Indicate all commodity specific shipping requirements on the bill of lading prior to shipment to the port facility (temperature requirements, venting requirements, and hazardous material warnings if required).

12) Inspect and secure all shipping containers to chassis attachment devices.

13) Deliver all documents to delivery driver for transfer to shipping port.

14) On refrigerated shipments, have two individuals check temperature settings to ensure proper temperature levels.

15) Have shipping checklist signed by shipping dock foreman to ensure accountability in the event there are problems that arise after shipment departs production facility.

16) On the day of shipment, have traffic department notify the receiving customer of the departure of the container from your facility.

17) Follow-up with the customer on the day of expected delivery to ensure that the shipment was received and ascertain condition of shipment.

18) Shipping managers should follow-up with loading crews on any problems encountered once the shipment is received by the customer.

4. FINAL CONSIDERATIONS

Utilizing the above-mentioned precautionary measures, can significantly reduce the chances of shipping related problems. Shipments need not be difficult if some thought is given to the entire shipping procedure.

Remember, the next order from your customer will be influenced by the condition of the previous shipment.

"STOP THAT BOAT !!!!! - WE FORGOT TO CHECK THE TEMPERATURE SETTING ON OUR LOAD OF FROZEN FOOD."

APPENDIX

Monitoring Temperatures In Transit

One of the concerns that many processors and distributors of frozen and chilled foods have expressed is that their products may have been abused in transit. Abuse in transit or during handling can adversely affect quality, which can result in consumer complaints and loss of markets. If a processor or distributor is unable to document abuse, that operator is liable for damage. One of the tools that many operations throughout the world employ to monitor temperature are portable temperature recording or monitoring systems. The following list of suppliers may be able to help you.

SUPPLIERS OF TEMPERATURE RECORDERS

3M Corporation
3M Health Care
3M Building, 275-4E-01
P.O. Box 33275
St. Paul, MN 55133-3275, USA
EMAIL microbiology@mmm.com
TEL (612) 737-5090
FAX (612) 737-7678

Measurement Dynamics LLC
125 Titus Avenue
Warrington, PA 18976, USA
Tel (800) 656-1114/(215)343-5075
FAX (215) 343-4670
EMAIL md@nrc-ind.com
WEB www.measurement-dyamics.com
Ask for Road Warrior

Cooper Instruments and Systems
33 Reeds Gap Road
Middlefield, CT, 06455-0450, USA
TEL (860) 347-2256
FAX (860) 347-5135
EMAIL sales@cooperinstruments.com
WEB www.cooperinstruments.com

Telatemp Corporation
351 South Raymond Avenue
Fullerton, CA 92831-4624, USA
TEL (714) 879-2901
FAX (714) 870-8136
EMAIL telatemp@pacbell.net
WEB www.telatemp.com

Ryan Instruments
8801 148th Avenue, NE
P.O. Box 599
Redmond, WA, 98073-0599, USA
TEL (425) 883-7926
FAX (425) 883-3766
WEB www.ryaninst.com
EMAIL ryan@ryaninst.com

Dickson Recorders
930 Westwood Avenue
Addison, IL 60101-4917, USA
TEL (800) 323-2448/(630) 543-3740
FAX (630) 543-9898
EMAIL info@dicksonweb.com
WEB www.dicksonweb.com

Cox Recorders
Sales & Marketing
1470 W. Ninth Street, Suite C
Upland, CA 91786
TEL (909) 946-4441
FAX (909) 946-0909
EMAIL upland@coxtechnologies.com
WEB www.coxtechnologies.com