

The Cold Chain

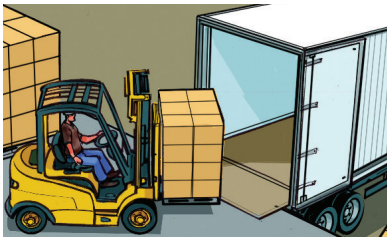
The carriage of cargo in refrigerated containers, also known as 'reefer' containers, presents a number of challenges. This Hot-Spots provides a quick reference to some of the common issues and potential problems at each link of the cold chain and includes loss prevention advice to help ensure the cargo is properly cared for at all stages.

COMMON ISSUES



Harvesting and Shipper's Premises

- Pre-harvest and post-harvest diseases, pests and infestation (excepting banana cargoes, where there is an accepted common practice of stuffing at ambient temperatures)
- Mixed harvests packaged together
- Improper, weak or unsuitable packaging and palletizing
- Inaccurate or improper harvest, batch and grower codes
- Inadequate pre-cooling or quick freezing
- Incorrectly set pre-cooling
- Delayed pre-cooling from harvesting
- Stowage in warm areas or in direct sunlight
- Close proximity of ethylene sensitive and ethylene generating cargoes introducing onset of premature ripening



Empty Release and Stuffing of Container

- Container not suitable for the cargo
- Incorrect settings of temperature, atmosphere and ventilation
- Improper stowage resulting in restricted air flow or short circuiting
- Stowage height too high, restricting return air flow
- Elevated cargo core or pulp temperatures
- Carriage instructions inaccurate or ambiguous
- Power supply to reefer not maintained or unreliable at shipper's premises whilst waiting for transfer to load port



Haulage to Load Port

- Power supply to reefer not maintained or is unreliable
- Container not transferred to load port container terminal in a timely manner
- Inadequate checks by the haulier to ensure carriage instructions are being complied with
- Failure to provide notification of any observed irregularities

LOSS PREVENTION

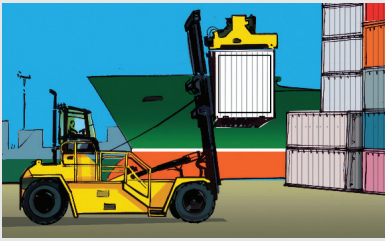
- Effective and timely pre-cooling or quick freezing techniques
- Good stock management and segregation
- Accurate allocation of harvest or batch codes
- Good understanding of the characteristics of the cargo
- Where problems have been experienced in the past, work with shippers to prevent them being repeated

- Appropriate PTIs (pre trip inspections) to be carried out at time of empty release
- Reefer container to be maintained by trained personnel to manufacturer's advice
- PTIs and maintenance to be properly documented and evidenced
- Ensure temperature, ventilation and controlled atmosphere set points are correct
- Clear carriage instructions stated on bill of lading - advising temperature set point and ventilation in m³/h flow rate (not in %)
- Ensure cargo is pre-cooled to carriage temperature before stuffing and stowed correctly
- Ensure reliable power source is connected in a timely manner and the reefer is fully operational
- Ensure container is clean and free from taint

- Use trusted, reliable and knowledgeable haulage companies
- Haulier to check power supply is connected to the reefer
- Haulier recommended to check reefer set points at time of collection
- Container movements properly tracked and recorded
- Haulier should be aware of who to contact in the event of any observed irregularities

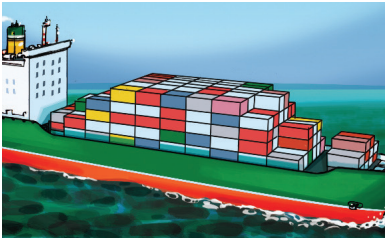
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COMMON ISSUES



At Load Port Container Terminal

- Power supply to the reefer not connected in a timely manner upon arrival and after any internal transfers
- Container movements not properly documented Failure to provide notification of any observed irregularities
- Containers stowed at inappropriate locations and near heat sources
- Inadequate or inaccurate temperature monitoring and log-keeping
- Breakdown or malfunction of the reefer container



On Board Carrying Vessel – Sea Passage

- Power supply to the reefer not connected in a timely manner upon loading and any intermediate ports
- Unreliable power supply – for example, caused by breakdown of ship's equipment affecting power generation and distribution
- Disconnection of power supply too early at discharge port
- Inadequate or inaccurate temperature monitoring and log-keeping
- Failure to provide notification of any observed irregularities
- Breakdown or malfunction of the reefer container



At Discharge Port Container Terminal

- Power supply to the reefer not connected in a timely manner upon discharge from vessel and any internal transfers
- Container movements not properly documented Failure to provide notification of any observed irregularities
- Containers stowed at inappropriate locations and near heat sources
- Inadequate or inaccurate temperature monitoring and recording
- Breakdown or malfunction of the reefer container



Haulage to Consignee

- Power supply to reefer not maintained or unreliable
- Container not transferred to consignee in a timely manner
- Inadequate checks by the haulier to ensure carriage instructions are being complied with
- Failure to provide notification of any observed irregularities



De-vanning of Container

- Power supply to reefer not maintained or unreliable at consignee's premises prior to de-vanning

LOSS PREVENTION

- Reliable power supply maintained and times off-power kept to a minimum
- Stow container in appropriate location away from sources of heat and taint
- Container movements properly tracked and recorded
- Regular temperature monitoring by terminal staff and logs maintained
- Terminal aware of who to contact in the event of any irregularities
- Carrier or container owner to have maintenance and repair service provider with worldwide network

- Reliable power supply maintained and times off-power kept to a minimum
- Ship's generating plant operational to full capacity and with redundancy
- Ship's generator auxiliary services and fuel treatment plant in good working order
- Ship's electrical distribution system in full working order
- Regular and accurate temperature monitoring by ship's crew and logs maintained
- Prompt notification of any observed reefer malfunctions
- Adequate spares and skills onboard to carry out emergency repairs to reefer containers

- Reliable power supply maintained and times off-power kept to a minimum
- Stow container in appropriate location away from sources of heat and taint
- Container movements properly tracked and recorded
- Regular temperature monitoring by terminal staff and logs maintained
- Terminal aware of who to contact in the event of any irregularities
- Carrier or container owner to have maintenance and repair service provider with worldwide network

- Use trusted, reliable and knowledgeable haulage companies
- Haulier to check power supply is connected to the reefer
- Haulier recommended to check reefer set points at time of collection
- Container movements properly tracked and recorded
- Haulier should be aware of who to contact in the event of any irregularities

- Ensure power is connected and reefer operational until time of de-vanning
- Check for any irregularities at time of delivery
- Prompt notification of any observed irregularities

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