

GOOD

# STORAGE

PRACTICES



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*This publication provides a set of guidelines on good storage practices for food operators and food handlers. To manage and reduce the risk of food-borne illnesses, a comprehensive and effective food safety management system should be adopted.*

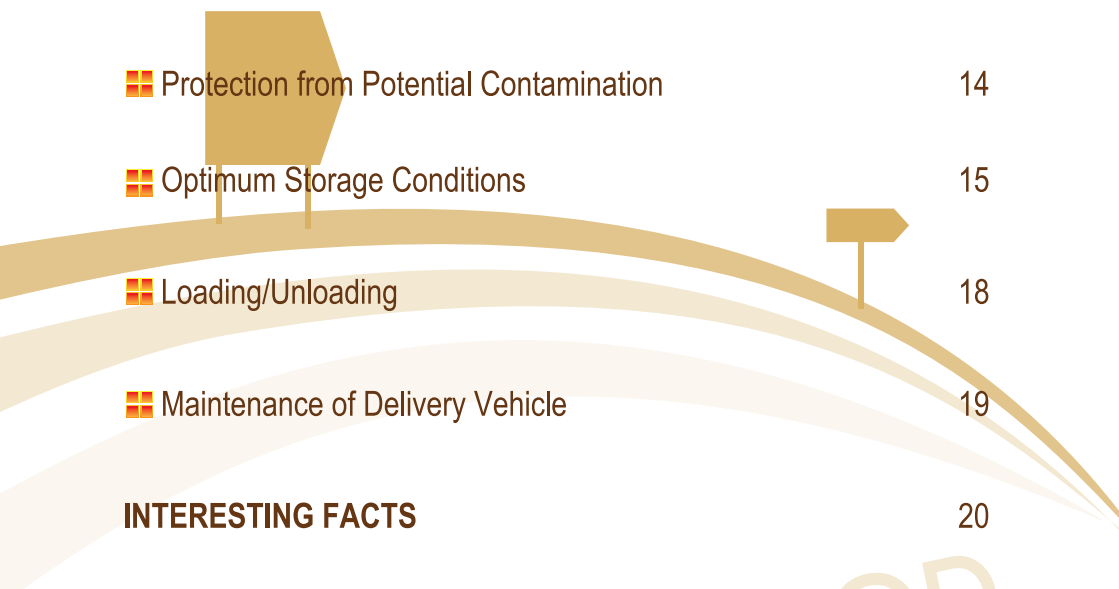
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GUIDE TO GOOD STORAGE PRACTICES

## WHY ARE GOOD STORAGE PRACTICES IMPORTANT?



Proper storage of food items under appropriate conditions would preserve their quality and wholesomeness.

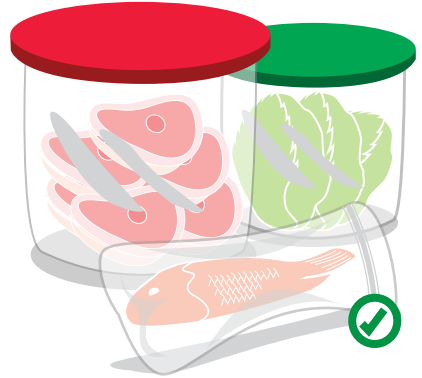
Establishing good storage practices is essential to protect the food from possible contamination.



Improper storage of food items allows bacteria to grow and thrive, causing food spoilage which leads to food wastage and potential food poisoning.

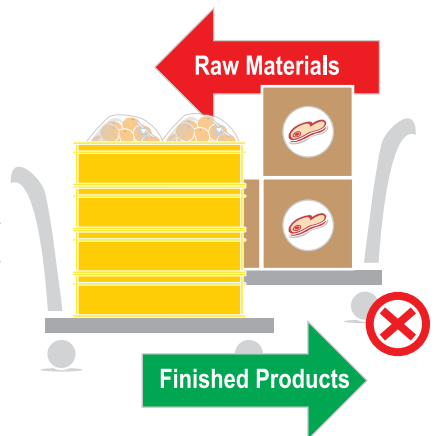
## PROTECTION FROM POTENTIAL CONTAMINATION

Store the food in clean food grade storage containers to prevent contamination by foreign matter.

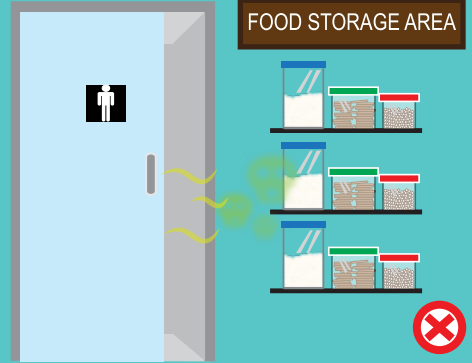


Food packaging materials should be properly stored to prevent contamination by foreign matters.

Incoming raw materials should be received at appropriate areas away from the movement of finished products/ready-to-eat foods.

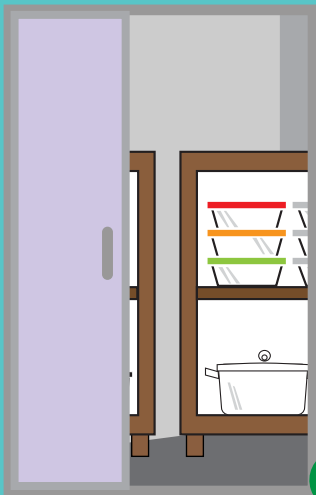


Food storage and packaging materials area should be situated away from toilets, dust, smoke, objectionable odours and other contaminants.



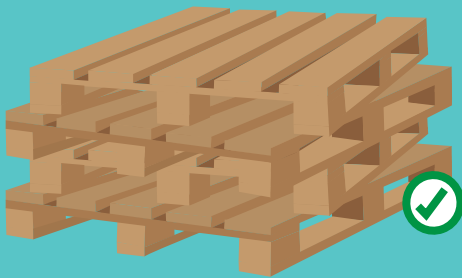
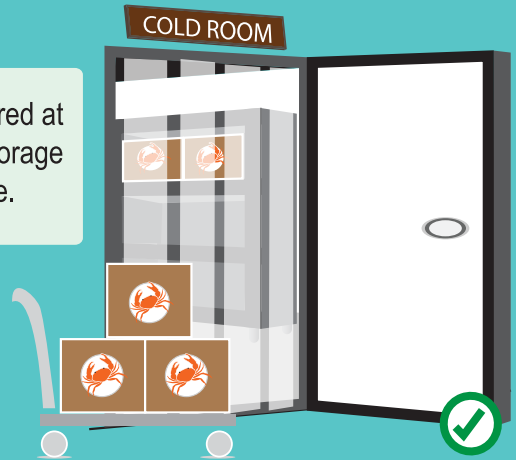
Store utensils and crockery on clean raised shelves and racks.

Keep storage areas clean, not cluttered and pest-free. All unused items and equipment should be removed or segregated as they might become potential breeding and harbourage sites for pests.



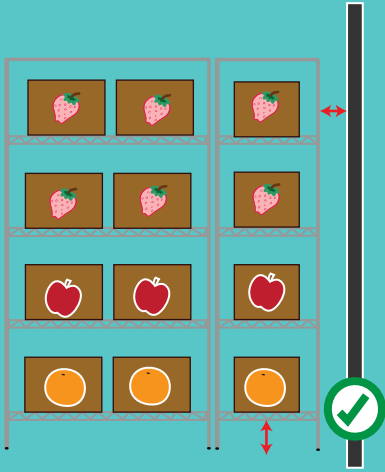
## OPTIMUM STORAGE CONDITIONS

The food items received should be stored at the designated areas under optimal storage conditions with sufficient storage space.



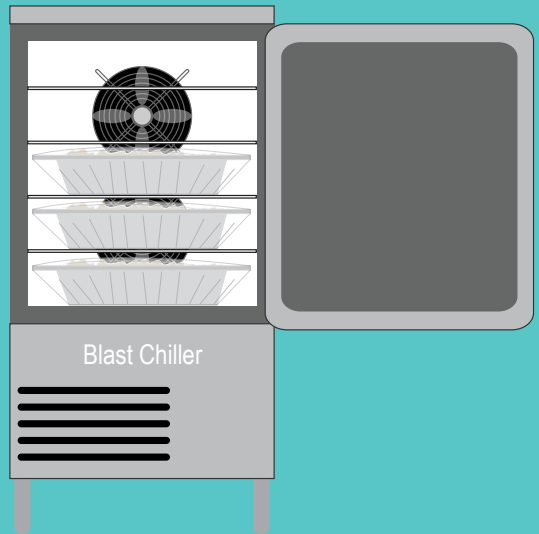
Keep food storage rack or pallets in good and sanitary conditions.

# Principles of Good Storage Practices



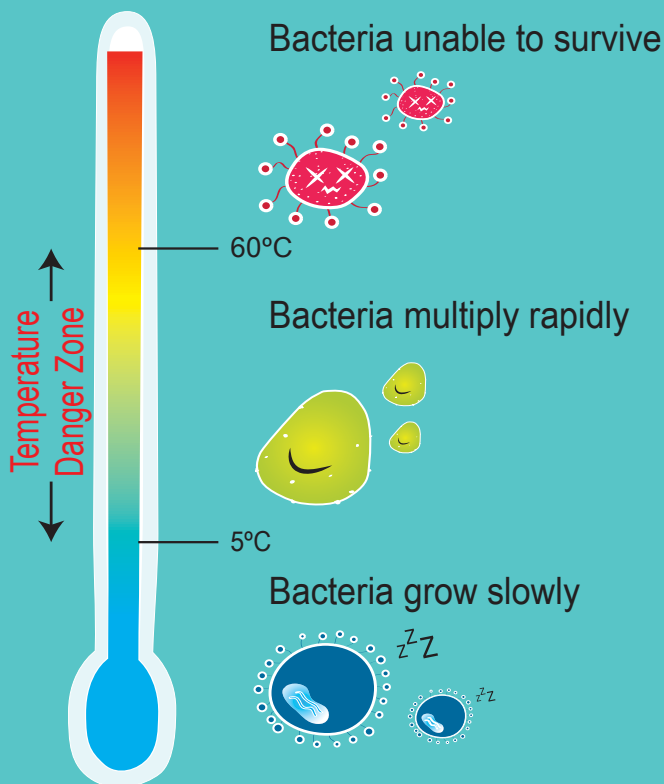
Store food items or ingredients off the floor and away from the wall.

Cooked food items which are hot should be blast chilled before storing into a chiller or freezer.





Food spoilage micro-organisms multiply rapidly in food when stored at temperature between 5°C and 60°C. This is known as the temperature danger zone. Therefore, always keep cold food below 5°C and hot food above 60°C, outside of the temperature danger zone.



Maintain chilled and frozen food at 4°C or below and -18°C or below respectively.

# Principles of Good Storage Practices

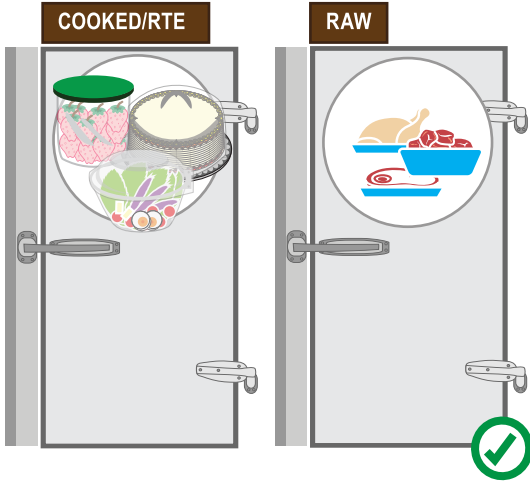
Food items that require ambient or cool storage should be stored in an area that is cool, dry, well-ventilated and away from sunlight.



Storage conditions may differ for some food items upon opening the packaging. These conditions will be indicated on the packaging by the manufacturer. For example, refrigerate after opening.



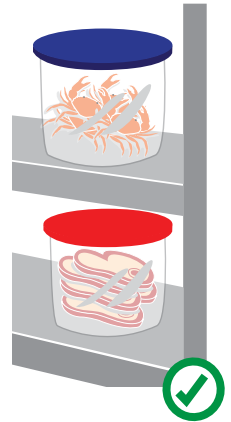
## PROPER SEGREGATION



Store raw and cooked/ready-to-eat (RTE) food items in separate chillers or freezers where possible.

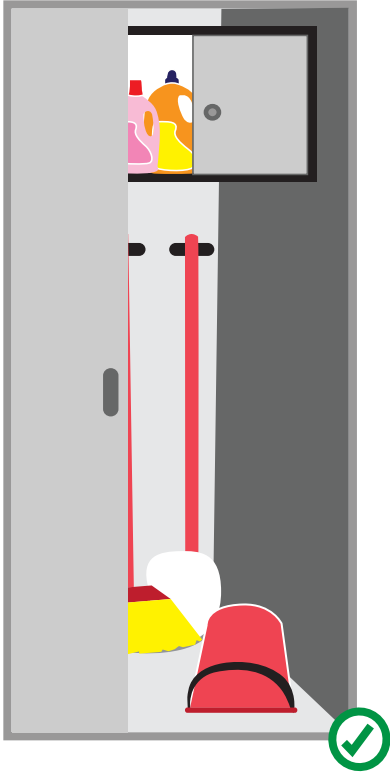
Otherwise, there should be appropriate segregation between cooked/RTE and raw food, with the cooked/RTE food being kept above the raw food at all times.

Raw red meat, white meat and seafood should be properly segregated from one another.



All expired, spoilt, damaged and rejected food items should be sealed, labelled and segregated in a designated area until they are disposed off appropriately.

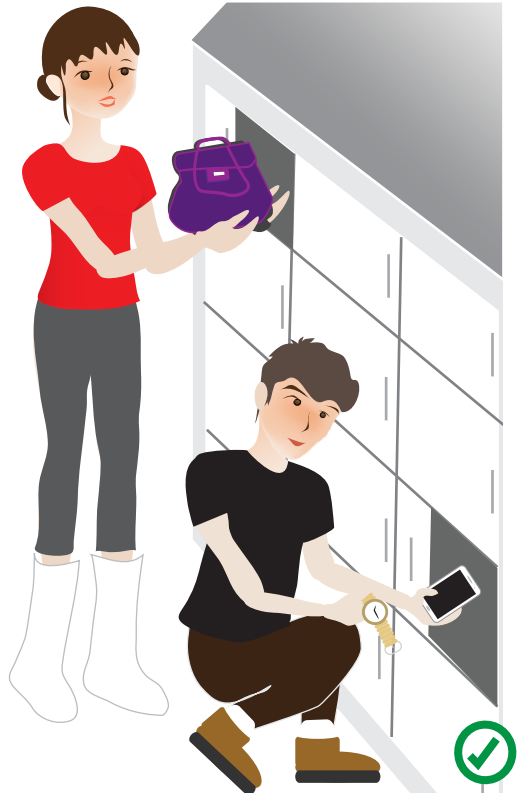
## CLEANING STORE



Cleaning tools such as mops and brooms are kept at a designated area away from food storage and preparation areas.

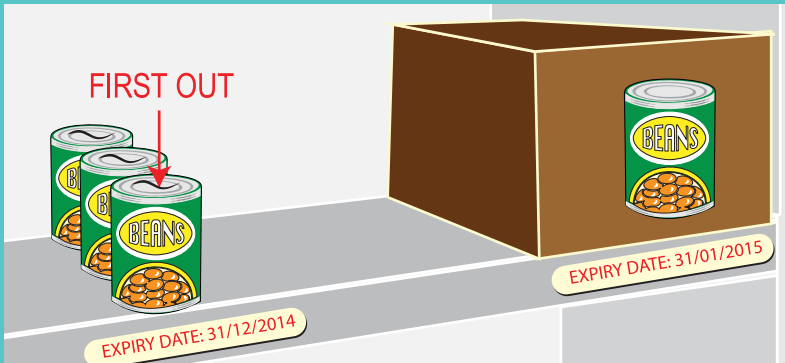
Cleaning agents are clearly labelled and stored away from food storage and preparation areas to prevent chemical contamination.

Personal items should not be brought into the food storage and preparation areas. Store personal items at the allocated staff lockers or areas.



## PROPER PRODUCT IDENTIFICATION AND TRACEABILITY

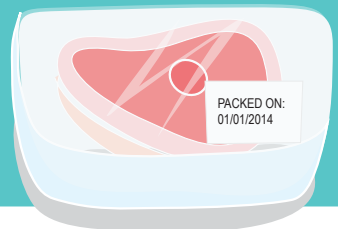
Food items should be rotated based on 'First In First Out' (FIFO) or 'First Expire First Out' (FEFO) and adequate records should be kept to monitor the stock movement.



Proper labelling allows proper stock rotation and is also useful for traceability purposes in the event of a food recall.

Examples of date-marking on food products are:

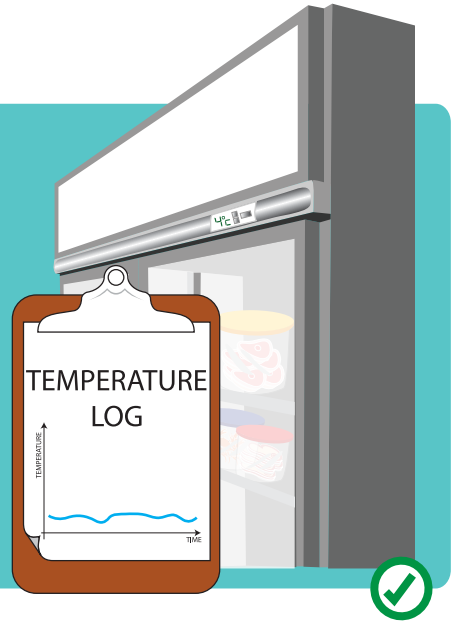
- USE BY
- SELL BY
- EXPIRY DATE
- BEST BEFORE
- PACKED ON



## RECORDS AND MAINTENANCE

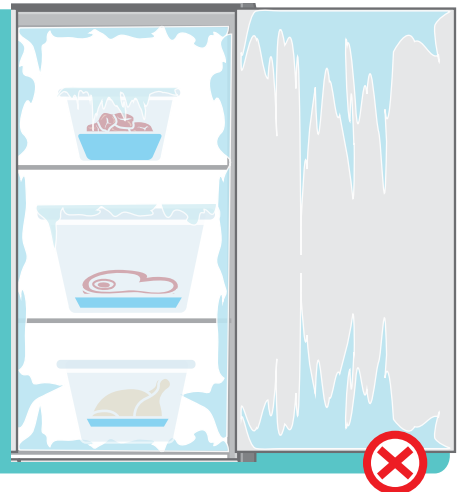
Monitor and record the temperature readings of chiller and freezer regularly to ensure that the storage temperature does not fluctuate too much from the set temperature as it might affect the shelf-life of the food product.

Where possible, use a calibrated thermometer to measure the temperature of the chiller and freezer to ensure the temperature readings are accurate.



Maintain freezer regularly to prevent the formation of ice crystals on the ceiling, walls and floor of freezer as well as on food.

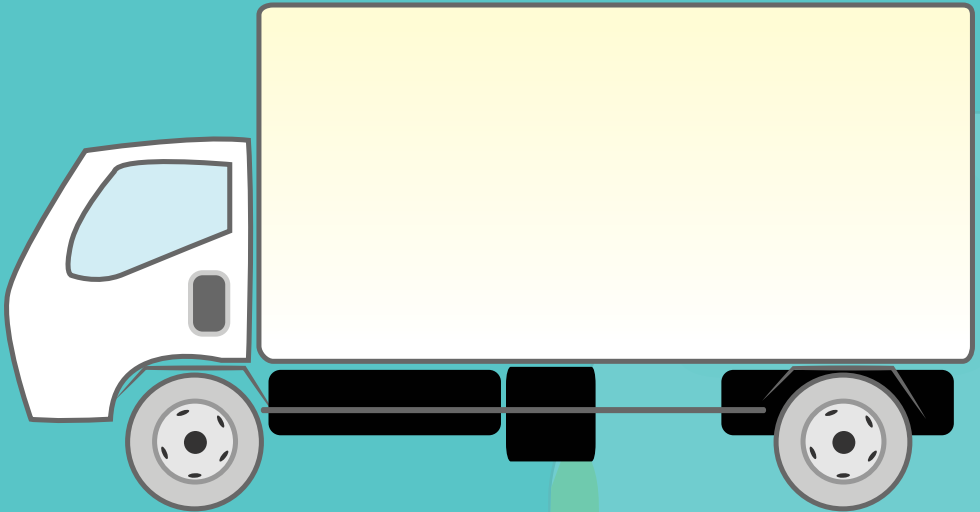
Engage regular maintenance service for both chiller and freezer to ensure that they are in good working condition.



## PROTECTION FROM POTENTIAL CONTAMINATION

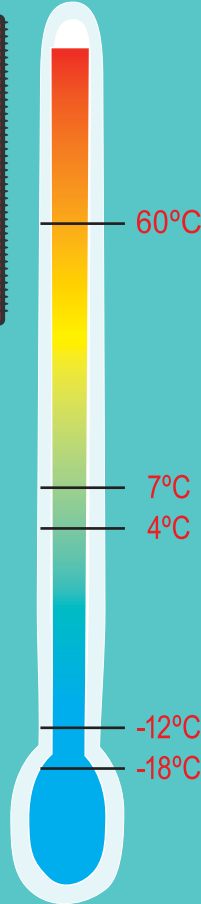
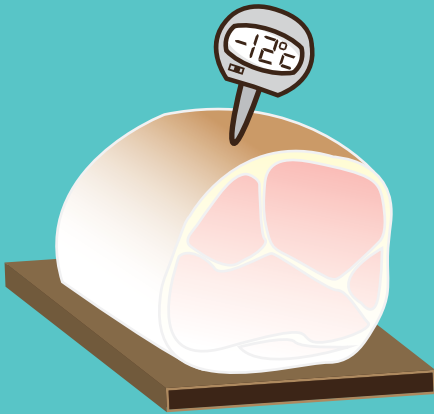
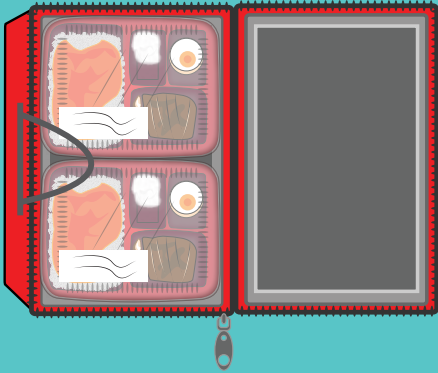
Delivery vehicles should have covered storage cabins to prevent physical contamination from the environment.

Use only designated vehicles to deliver food. The same vehicle should not be used to deliver non-food items.



## OPTIMUM STORAGE CONDITIONS

### GENERAL



Hot catered meals should be kept above 60°C in insulated hot boxes or bags. These meals should be delivered at the time when they are supposed to be consumed.

Chilled food products should be maintained at 4°C or below and with a core temperature not exceeding 7°C.

Frozen food products should be maintained at -18°C or below and with a core temperature not exceeding -12°C.

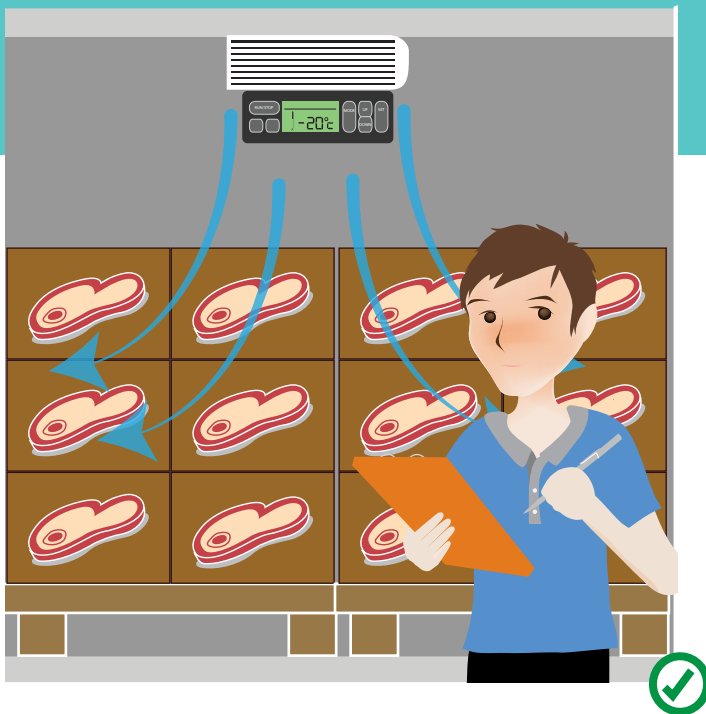


## CHILLED/ FROZEN FOOD

Pre-cool the refrigerated vehicle to the set temperature before loading.

Do not exceed the storage capacity to ensure good cold air circulation to all corners of the cabin.

Monitor and record the temperature readings of the cabin to ensure the conditions are appropriate for the storage of the food items.



# Transportation of Food



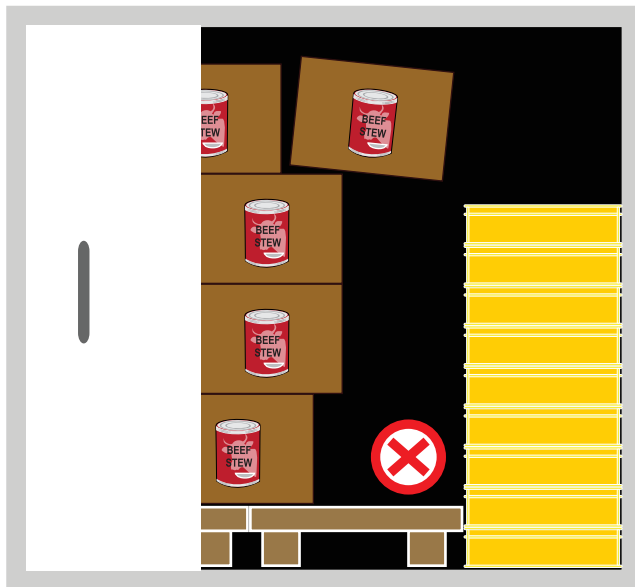
Load/Unload the chilled and frozen food products as quickly as possible to minimise fluctuation in temperature of the products and the storage cabin.

## LOADING/ UNLOADING

Arrange the food products in a safe manner, so that they do not topple during transportation.

Do not place food trays or containers directly on the floor of the cabin.

Handle the food products with care to minimize any damage to the food product and packaging.

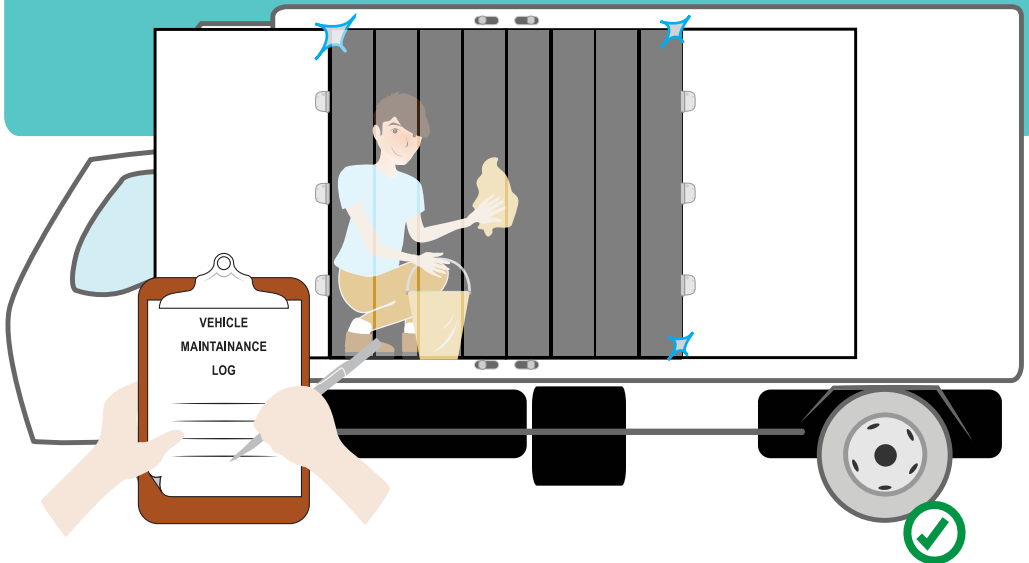


## MAINTENANCE OF DELIVERY VEHICLE

Inspect, clean and sanitize the vehicle everyday. A general cleaning after each delivery is recommended to ensure that the vehicle is maintained in a sanitary and hygienic condition at all times for the transportation of food.

Ensure that the vehicle is routinely serviced and is in good working condition.

Refrigerated vehicles should be fitted with temperature recording devices.

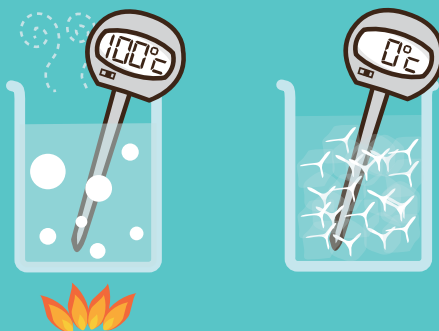


## DO YOU KNOW?

Use food grade plastic containers to prevent the transfer of any chemicals onto food.



A simple in-house method to check the accuracy of the food thermometer can be done by verifying the upper limit (100°C) using boiling water and the lower limit (0°C) using ice.



## TIPS ON GOOD STORAGE PRACTICES

- ✓ Cover and store food products or ingredients off the floor and away from the wall.
- ✓ Consider the following when storing food:
  - a) Manufacturer's instruction on packaging labels.
  - b) State of the product packaging (e.g. opened or intact).
  - c) Established norms for the storage of the particular food products.
- ✓ Contain and cover food adequately with appropriate packaging material. Food packaging materials should also be properly stored.

### PROTECT.



### CLEAN.



- ✓ Keep storage areas clean, pest-free and free from unused items.
- ✓ Inspect, clean and sanitise the vehicle at the end of each day's operation.

### Chilled/Frozen food

- a) Maintain the temperature of chilled food at 4°C or below and with a core temperature not exceeding 7°C.
- b) Maintain the temperature of frozen food at -18°C or below and with a core temperature not exceeding -12°C.

### Hot Catered Meals

- c) Transport hot catered meals in insulated boxes or bags, so that the food is kept at above 60°C.

### TEMPERATURE.



✔ Store non-conforming food items, cleaning agents, cleaning tools and personal items at designated areas, segregated from food storage and preparation areas.

✔ Store raw and cooked/RTE food items:

Either

a) in separate chillers or freezers;

OR

b) in the same chillers or freezer with an appropriate segregation between cooked/RTE and raw food. Cooked/RTE food should be kept above raw food at all times.

**SEGREGATE.**



**RECORDS & MAINTENANCE.**



✔ Monitor and record storage temperature of chillers and freezers regularly.

✔ Maintain cold rooms and refrigerated vehicles in good working conditions.

✔ Keep storage racks or pallets in good conditions.

✔ Use proper stock rotation system through FIFO or FEFO system.

**INVENTORY MANAGEMENT.**





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