Packaging, Storage and Distribution
### Packaging, storage and distribution

- functions of packaging and types of materials available
- current developments in packaging, including active packaging; modified atmosphere packaging; sous vide
- storage conditions and distribution systems at various stages of food manufacture

- investigate, through experimentation, the suitability of packaging materials for different food products
This presentation will cover storage conditions and distribution systems:

- **During** Food Manufacture
- **After** Food Manufacture
What is **Storage**?

The action or method of storing a food item for future use.
What is **Distribution**?

Involves transport, handling and storage of food products from the manufacturer’s facility to the point of sale.
Storage and Distribution DURING Food Manufacture

**STORAGE:**

Storage in Food Manufacture takes place:

- *After raw materials arrive at the factory* - for example; controlled atmosphere storage of fruits and vegetables.
- *When a product is held while it changes* - for example; bread dough rising (referred to as the delay stage).
- *After the final product has been packaged but before it is distributed* (sometimes called warehousing).
Storage Conditions

**Dry Storage:** Foods kept at **below 24** degrees celsius with controlled humidity

**Freezer Storage:** -18 to -30 degrees celsius

**Cold Storage:** Foods kept at **0-5** degrees celsius. Raw material or manufactured product

**PRODUCT STORAGE**
Storage and Distribution DURING Food Manufacture

Ingredients to be used in food manufacture are usually stored in large stainless steel vats or hoppers after delivery to the factory. Stainless steel is used because it is strong and inert.

A **hopper** is a cylindrical-shaped container with a funnel at its base.

Smaller quantities of ingredients are placed in plastic containers.

No glass is used for storage in food manufacturing because of the danger of breakages.
Storage and Distribution DURING Food Manufacture

**DISTRIBUTION:**

Manufacturers often have very little storage space for products in their factories. They manufacture products *just-in-time* for them to be collected and distributed to warehouses.

Packaging is an important consideration when choosing the method of distribution. For this reason, the shape of the finished product container is important.

During warehousing, transport and distribution, empty space costs money. For example; putting round tins into a square carton wastes more space than putting square boxes into a square carton.

Secondary and tertiary packaging are important in preventing damage to the product’s primary package, and in making the handling of the product during distribution easier.
Transport and Distribution AFTER Food Manufacture

From the central warehouse, the manufacturer sends their manufactured product to food wholesalers, supermarket chains or interstate warehouses by rail or road transport.

Food distributors, wholesalers or warehouses for food chains need to be able to handle goods efficiently, so they demand packaging that suits the system used in their warehousing operations.

In the warehouses the cartons are removed from the pallets and regrouped to make up orders for individual stores. The product is then delivered to the supermarket or store where the cartons are opened and the cans are displayed on the shelves.
The movement of manufactured food from the producer to the consumer is called the ‘food manufacturing chain’. Appropriate packaging is essential for the safe storage and handling of all items. Keep in mind that the consumer at different stages along this manufacturing chain may be another manufacturer or commercial processor.
After harvesting, the tomatoes are placed in bulk pallets and stored in refrigerated conditions while waiting to be delivered to the food manufacturer.

Tomatoes are distributed to the manufacturing site under refrigerated conditions in large trucks. This ensures that the tomatoes do not ripen any further.

The food manufacturer receives the tomatoes and stores them in a cool room while they await processing.

The tomatoes are cooked and canned.

After processing, the cans are packed into a carton which may contain a dozen cans. Cartons enable the cans to be moved in multiples rather than individually. They reduce floor space and allow for easy stacking.

The product is then moved to the manufacturer’s warehouse. To make transportation easier, the manufacturer places a number of cartons on a pallet and shrink wraps the load.

From the central warehouse, the manufacturer sends the canned tomatoes to food wholesalers, supermarket chains or interstate warehouses.