

Food Packaging Technology

B. Tech. (Agricultural Engineering) 4th Year

Level of Packaging (Primary, Secondary, and Tertiary packaging)

On the basis of functions in protecting and handling food products food packaging is commonly classified into primary, secondary, and tertiary packaging.

A primary packaging, like a metal can or a glass jar, comes in direct contact with the food. It must be nontoxic and compatible with the food and should not lead to undesirable changes in color, flavor, and taste.

A secondary packaging is a necessary and integral part of food packaging. It can be an outer box, case, or wrapper. Its primary role is to hold or unitizes several cans, jars, or pouches. A secondary package must protect the primary package from damage during transportation. It also prevents dirt and contaminants from soiling the primary packages and unitize groups of primary packages.

Tertiary packaging groups several secondary cartons together into pallet loads or shipping units.

Level	Definition	Functions	Materials Used	Examples
Primary Packaging	First layer of packaging that comes in direct contact with the food.	Protects food from contamination (microbial, chemical, physical) Preserves quality, freshness, flavor, and shelf life Provides essential information (labeling, ingredients, expiry date) Prevents moisture and oxygen transfer	Plastics (PE, PP, PET) Glass Metal (Tin, Aluminum) Paper and paperboard Edible films and coatings	Milk pouch or bottle Biscuit wrapper Yogurt cup Canned food container Chocolate foil wrap
Secondary Packaging	Groups one or more primary packages together and does not directly contact food.	Provides additional protection during storage and transport Facilitates handling, stacking, and display Enhances marketing and branding Reduces damage to primary packages	Cardboard boxes Cartons Shrink wraps Paperboard sleeves	Cardboard box holding multiple biscuit packets Shrink-wrapped bottles of soft drinks Cereal box containing inner plastic bag
Tertiary	Used for bulk	Protects large	Wooden or plastic	Palletized cartons of

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Packaging	handling, storage, and transportation of food products	quantities during transport Enables efficient warehousing and logistics Prevents mechanical damage Facilitates loading and unloading	pallets Crates Corrugated fiber board boxes Stretch and shrink films	bottled water Crates of fruits and vegetables Large shipping containers
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Packaging Level	Contact with Food	Main Purpose	Examples
Primary	Direct	Protection & preservation	Milk pouch, can
Secondary	Indirect	Grouping & branding	Carton box
Tertiary	No contact	Transport & storage	Pallets, crates

Exercise:

Short Answer Type Questions

1. Define primary food packaging.
2. What is the main function of secondary packaging?
3. State any two functions of tertiary packaging.
4. Give two examples of primary packaging materials.
5. Why is primary packaging critical for food safety?
6. Differentiate between primary and secondary packaging (any one point).
7. What is meant by unit load formation in packaging?
8. List two materials commonly used for tertiary packaging.
9. What role does secondary packaging play in marketing?
10. Why is barrier property important in primary packaging?

Multiple choice questions

1. Which of the following best describes a 'primary container' in the context of food packaging?

- A. The outermost layer of packaging visible to the consumer on the shelf.
- B. The largest shipping container used to transport the product.
- C. A container that holds other containers together, like a cardboard case.

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D. A container, such as a can or jar, that is in direct contact with the food.

2. A six-pack ring holding soda cans together or a paperboard box containing several yogurt cups are examples of what type of container?

- A. Secondary container
- B. Dispensing container
- C. Primary container
- D. Tertiary container

3. For a package to be considered a primary container, what must be true?

- A. It must hold at least two or more individual items.
- B. It must have a resealable lid.
- C. It must be made of glass or metal.
- D. It must be in direct contact with the food.

4. Which of the following best describes the function of a primary container in food packaging?

- A. It is the large shipping crate used to transport products to the retailer.
- B. It is an outer box that groups multiple individual food items together.
- C. It is a container that comes into direct contact with the food product.
- D. It is a decorative wrapper designed solely to attract consumer attention.

5. What is the main purpose of using coloured glass bottles for products like beer and wine?

- A. To filter out harmful UV light and prevent product degradation.
- B. To make the product look more appealing and traditional to consumers.
- C. To increase the physical strength and resistance to breakage of the bottle.
- D. To prevent consumers from seeing the sediment that naturally forms.

Answer

1	2	3	4	5
D	A	D	C	A