

A glass jar filled with a thick, yellowish concentrated milk product sits on a wooden surface. To the left of the jar is a wooden spoon, and to the right is a piece of bread with a golden-brown crust. In the background, there are some white flowers and a white bowl.

Packaging of Concentrated Milk Product

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1. Introduction



- Concentrated milk products are processed dairy items
- It includes processing such as:
 - Evaporation and
 - Condensation
- Commonly used in Cooking, baking and confectionary, as it :
 - Boost flavor
 - Add richness and creaminess to various recipes because of their small storage,
 - Ability to retain nutrients, and
 - Wide range of culinary applications.

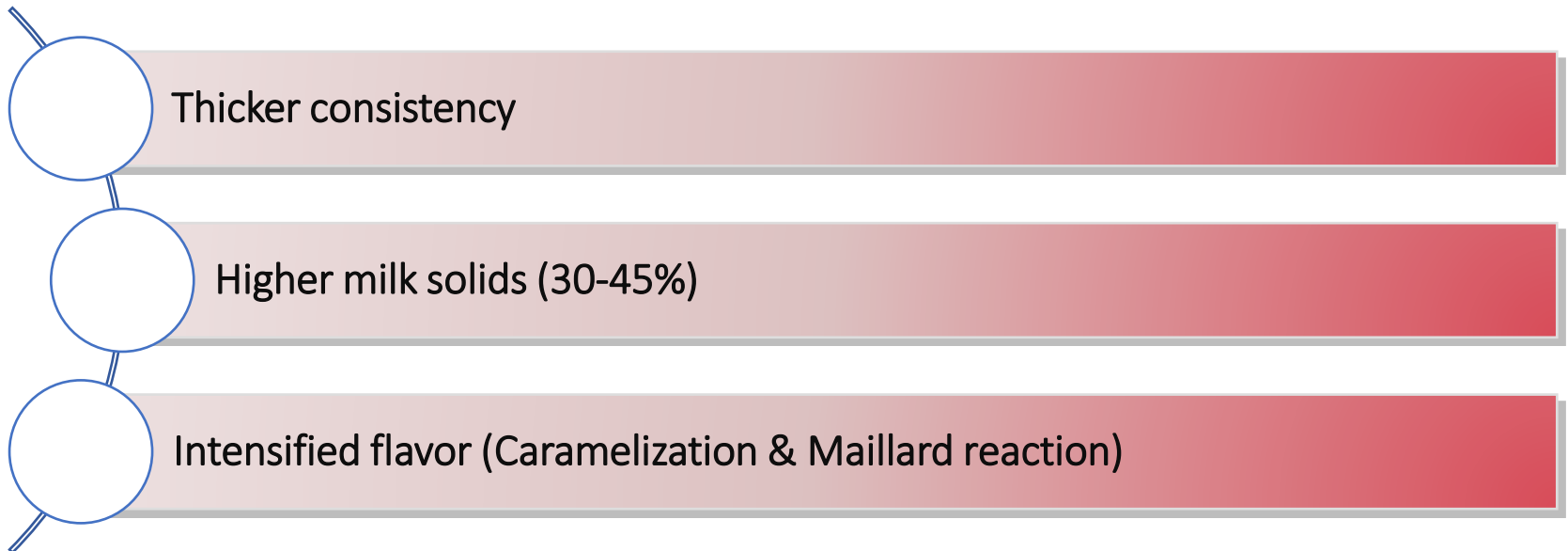
1. Introduction

- They are typically packaged in airtight, sterilized cans or tubes to ensure prolonged shelf life as it require longer shelf life.
- The convenient and compact packaging maintains product integrity.



1. Introduction

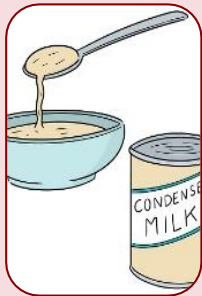
1.1. Characteristics of concentrated milk



1. Introduction

1.2. Type of Concentrated Milk Products

Condensed Milk Product



Processing involves 3 steps:

- ✓ Heating with evaporation under vacuum condition
- ✓ Concentration to ~30-40%TSS
- ✓ Sweetening with added lactose crystal/sucrose
- ✓ Moisture content: 60-70%

Evaporated Milk Product



- ✓ Heated at low pressure (partial vacuum)
- ✓ Free water evaporated into vapour at below boiling point of milk
- ✓ Operational temperature: 43–60°C
- ✓ ~70% moisture content

Other derivatives of concentrated milk products



Khoa

- Further heating of evaporated milk till 1/3 consistency results khoa as a product
- TSS: 65%
- Usage: sweets production



Dried milk powder

- Processing involves 3 steps:
- Evaporation
- Drying generally via spray drier
- Moisture content: ~ 2-3%

2. Factors Affecting Selection of Packaging Material

A vertical diagram showing seven factors affecting packaging material selection. Each factor is represented by a blue circle on the left, connected by a thin blue line, with a corresponding dark blue horizontal bar to its right containing the text in yellow. The factors are: Barrier Properties, Light Protection, Seal Integrity, Durability, Cost-Effectiveness, Adaptability, and Printability & Consumer Convenience.

Barrier Properties: moisture and oxygen barrier

Light Protection: As product is light sensitive to

Seal Integrity: To maintain the product's freshness and shelf life.

Durability: Enough to withstand transportation and handling

Cost-Effectiveness: To ensure economic viability

Adaptability: Resistance to corrosion or reactions with the product

Printability & Consumer Convenience

3. Kinds of Packaging Material



Barrel

MOC: Wood or metal
Size: 100-300 Kg or more
Lining: wax or polythene liners (internally)
Filling Temp. ~15.5°C



Drum

MOC: Metal (EX: Tin, Steel drum containers)
Size: 50-250 Kg
Lining: Same as for barrel
Filling Temp. ~15.5°C.



Metal cans

Metal type: plain tin, steel coated tin
Lining: With or without lacquering
Size range: 0.2 – 5 Kg



Plastic bottles

MOC: PET & HDPE
Size: 250 mL to 1000 mL



Glass bottles

MOC: Glass
Size: 250 mL to 1000 mL

4. Packaging Machine

1. Barrel/ drum filling machine

- Designed to fill drums and barrels
- Used for variety of food product with aim of storage for longer duration.
- Can be semi-automatic or fully automatic machine

Benefits:

- Increase production efficiency,
- Reduce waste, and
- Ensure accurate filling



4. Packaging Machine

2. Can filling machine

- Essential in filling a wide variety of both free-flowing and non-free-flowing powdered or granulated products.
- Assures the smooth procedure for various sizes and shapes of packaging cans

Basic parts:

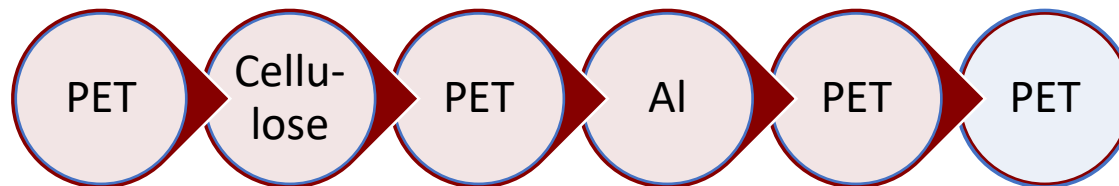
- Hopper
- Auger Filling Head
- Control Panel
- Sensor
- Weigher/Measuring Cup



5. Innovation In Packaging Material

Aseptic tetra-packs

- ✓ These types of packs used to pack evaporated milk in today's trends, and currently marketed by brands such as Nestle and Turm etc.
- ✓ Packaging done in aseptic environment (by keeping out the microorganism)
- ✓ 6 different types of layer are used with inner lining of LLDPE/PET layer



6. References

- Ramonaityte D. T. (2001) Copper, zinc, tin and lead in canned evaporated milk, produced in Lithuania: the initial content and its change at storage. Food Additives and Contaminants, 18 (1) 31–37.
<https://doi.org/10.1080/02652030010008805>
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- [Evaporated Milk 340 G / 319 ML - New Tetra Pack Evaporated Milk PNG Image | Transparent PNG Free Download on SeekPNG](#)
- <https://l1nk.dev/6qTTL>
- [Layer arrangement in the Tetra Pak packaging. | Download Scientific Diagram \(researchgate.net\)](#)

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