Packaging of Concentrated Milk Product

CONTENTS

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

- Thicker consistency
- Higher milk solids (30-45%)
- Intensified flavor (Caramelization & Maillard reaction)

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
- ✓ Sweeting 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

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

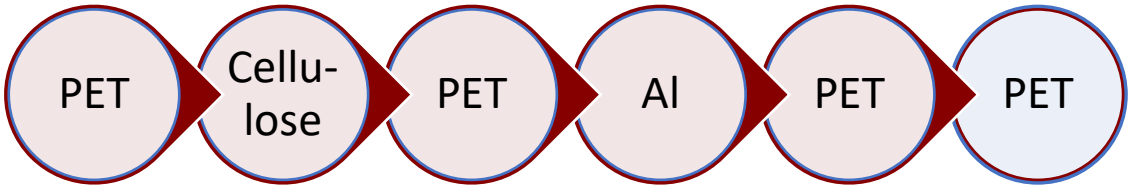
Basic parts:

- 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
- Adams I.U., Happiness I.U. (2010) Estimation of toxic metals in canned milk products from unlaquered tin plate cans. Journal of American Science, 6 (5) 173-178.
- (Tonnes, M. (2000). Packaging of milk and dairy products. *Economic Survey*, *1*, 81.))
- 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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