

PACKAGING OF COAGULATED AND
DESICCATED INDIGENOUS DAIRY
PRODUCTS AND
THEIR SWEETMEATS

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Introduction

- Traditionally, Indian dairy products have been manufactured by individual sweet makers-“halwais” and small entrepreneurs.
- Very little attention is paid to sanitary handling and packaging of these products.
- Traditionally, indigenous products have been packed in leaves, paper cartons or paperboard boxes.
- These materials do not provide sufficient protection to the product from atmospheric contamination and manual handling.
- Consequently, the sweets soon lose their typical body and texture, absorb foreign odours, lose their aroma characteristics and show mold growth. Moreover, the products are stored in open metal trays.

**PACKAGING OF COAGULATED INDIGENOUS AND
FERMENTED DAIRY PRODUCTS**

The material used for packaging must be compatible with the special physical chemical and bacteriological properties of fermented milk.

The packaging materials used are

1. Glass,
2. Polyethylene,
3. Complex card,
4. LD / LLDP, HDPE cups,
5. Co extrusion plastic complexes,
6. Polystyrene- EVOH (polyvinyl alcohol and
7. Ethylene co polymer,
8. Polystyrene –PETG (polyethylene glycol terephthalate),
9. Tetrapack.

Packaging of yoghurt

- In the United States yoghurt is packed in coated paper board containers.
- The product is automatically filled in polystyrene tubs and covered with 0.005mm aluminium foil.
- The inherent brittleness of polystyrene may become a problem. The terpene containing aroma of fruit yoghurt has an effect on polystyrene.
- Fruit acids may also cause pitting of unacquered aluminium lids.
- A polystyrene tub is an excellent package for yoghurt. It is economical, practical and widely used.



Packaging of dahi/lassi

- The traditional pack so far was the earthenware pot with a loose cover of glassine or greaseproof paper.
- The earthenware pots are very heavy, easily breakable and because of oozing of water from its body, the product inside develops shrinkage cracks.
- Recently, injection moulded polystyrene and Polypropylene/ HIPS cups have been introduced with aluminium foil based peelable lids.
- These cups are available in capacities of 200 grams and 400 grams and provide a shelf-life of about 10 days under refrigeration.
- The plastic cups are light in weight, easy to handle and are hygienic.
- Some private dairies are also packing dahi in LDPE pouches of 200ml capacity.



Packaging of Butter milk

- Butter milk is another most popular indigenous fermented milk product.
- It is packed in 200 ml polyethylene sachets.
- Recently some dairies are marketing butter milk in tetra packs.



Packaging of Lassi

- Lassi which is a sweetened butter milk product is packed in polystyrene cups with coated aluminium foil lids.
- The packaging materials such as earthen wares give firmness to product.
- Others are glass jars, PS / PP cups, PVC lined HDPE.
- Tetrapak / Brick are recommended for Lassi, Basundi, Kheer



Packaging of Shrikhand

- Shirkhand is packed in polystyrene/PP Cups.
- HIPS are more common for 100 gm to 1 kg size which are sealed/capped/lined with Al-PE foil.
- Small manufacturers use lined (Glassine) paper board boxes.
- HDPE containers with lid of LDPE made by injection moulding are also in use.
- PP or PE bags, Glassine paper lined containers are also used.



Packaging of cheese

Packaging requirements for natural cheese:

- Must give general protection,
 - Prevent moisture loss,
 - Improve appearance,
 - Protect against micro organisms and
 - prevent oxygen transmission.
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- Cheese is essentially a product with high fat and moisture content. Therefore, package used for cheese should prevent oxidation and mould growth.
 - It should also have fat and grease resistance and be able to protect against micro organisms.
 - Oxygen is eliminated by packing cheese in hermetically sealed containers in vacuum or inert gas atmosphere.



- Processed cheese is usually packed in aluminium foil in cubes with different shapes.
- Tinplate cans are used for 200 gms and above quantity.
- PVDC coated plastic films are suitable for cheese packaging as they provide good oxygen and moisture barrier properties.
- Cream cheese is packed in foil lined card board boxes of heat stable plastic packs.
- Air evacuation and gas flushing is used for cottage cheese,
- Green cheese is packed by waxing and paraffining or alternatively vacuum packed in polyethylene or chyoVac.
- Ripened cheese is packed in laminated cellophane film or pliofilm.
- Cheese consumer packs are generally consists of Lacquered metal cans of laminated consisting of Nylon / PVDC / Copolymer or polyester/ PVDC / copolymer or Nylon / Polyethylene.
- Processed cheese is packaged hot metallic containers.
- Wax coated cellophane, A.P foil, polypropylene, PE, PVDE material is also used for packing processed cheese

Packaging of Ice cream

Requirements of packages for ice cream are

- Protection against contamination,
- Attractiveness,
- Ease of opening and Reclosure
- Ease of disposal
- Protection against moisture loss and temperature fluctuations is desirable.

Bilk ice cream is packed and hardened at a low temperature. Shaped bars are hardened prior to packaging.

Package forms

Most bulk ice cream is packaged in a liner less bleached sulphate board carton, coated with wax or polyethylene wax blends for protection form moisture and oxygen. Once the carton is opened it is difficult to reclose and the paper board tends to wrap. Although economic considerations favour the simple rectangular paper board carton, improved packaging often leads to higher sales and a marginal price differential may be offset by higher throughput.

1. Aluminium foil cartons
2. Cylindrical containers
3. Plastic containers.



Packaging of kulfi

- Traditional Kulfi is packed in plastic or aluminium moulds which are partially thawed by dipping in fresh water to remove the Kulfi prior to serving.
- Kulfi is frozen as a cylindrical block, which is covered by an insulating cloth, and then sliced for serving by vendors. It may also be produced on stick.



Packaging of chhana

Chhana requires protection from heat, light, O₂, microbial contamination, moisture loss, odour absorption, acid resistance, oil and grease resistance. Therefore the package should have barrier properties and possible for heat sealing.

Packaging materials used for packing chhana

- Vegetable parchment: chhana can keep well 3-4 days at 21-27⁰C, 10 days at refrigerated storage.
- Vegetable paper parchment treated with Na-propionate increases the keeping quality of chhana.
- Wax/plastic coated paper: 55-60 gsm / 0.02 mm ---0.009-0.02 mm.
- Poster paper/Al-foil/LDPE - 150 gauze.
- MST Cellulose (300)/LDPE – 150 gauze.
- Poster paper/Al-foil (0.02 mm)/LDPE.
- Al-foil 0.009 mm, 4-5⁰C 100% RH Poster paper laminate (0.02 mm).
- Al-foil 0.009 mm is found superior to MST-300/LDPE which has minimum keeping quality.

Packaging of Paneer

- All the properties of packaging material as required for Chhana are also required for Paneer.
- Vegetable parchment paper and PE bags are generally used.
- PE gives greater keeping quality (7 days at 5⁰C) than that given by vegetable parchment Paper.
- The Cryovac system using shrink film is being successfully used. Retortable tins are also used.
- Long life can be given by Metallized polyester or Nylon – PET / METPET/ PE or Aluminium foil or Nylon or LDPE/LLD.
- Paneer is packed in tins along with the brine. These tins are sterilized and it may be having a slight cooked flavour and maillard browning which will increase with storage period.
- Paneer is also vacuum packed in laminated pouches to have an extended shelf life. Paneer is also packed in EVA/EVA/PVDC/EVA film under vacuum which may have a shelf life of 3 months under refrigeration

Packaging of Rasogolla

- Tin cans with resistant lacquer + SO₂ (100 ppm maximum) are generally used which gives highest shelf life to the product.
- Earthen pots which may be lined with leaves are also used in some areas of the country.
- HIPS or PP cups are also used along with heat sealable caps.
- Retailers use HIPS / polypropylene cups with press on lids.

Packaging of Desiccated Indigenous Dairy Products

Packaging of khoa

- Under existing trade practice, producers and traders do not employ any packaging for khoa.
- By employing proper packaging the shelf life of khoa can be enhanced.
- Hot packaging of khoa in pre-sterilized cans can improve the shelf life up to 14 days at room temperature and 75 days under refrigerated temperatures.
- Three times increase in shelf life was claimed by packing khoa in rigid polypropylene containers with lid and khoa packed in pre-sterilized laminate pouches (paper, Polyethylene and aluminium foil).
- Vacuum packaging and packing in Cryovac Shrink wrap pouches will prevent growth of aerobic micro organisms. However, these two packaging methods do not offer protection against bacteria growing inside khoa.
- Bulk packaging of khoa is done in PP buckets.

Packaging of peda

- Peda is generally packed in paper board containers lined with parchment paper or grease proof paper.
- However, plastic trays, tubs can be used to pack peda to enhance its marketability.
- Paper board lined with PE or PP liner or glassine can be used. Glassine can also be used.
- Peda packed in multilayer transparent laminate pouches under modified atmospheric packing of Nitrogen and CO₂ has a shelf life of 15 days at room temperature and 30 days at 20 °C.
- Peda samples packed with oxygen scavenger exhibited a shelf life of 2 month at 37 °C and 6 months at 20 °C.

Packaging of kalakand

- Glassine or parchment wrapper and packed in card board boxes / PE is used.

Packaging of burfi

- Burfi is packed in paper board boxes inner lined with parchment paper in sizes of 500 gm, 1 kgs and 2 kgs.

Materials used are:

- LDPE, MSAT, HDPE, MSAT+HDPE, Glassine
- PE lamination: Saran/Cellophane/Saran/PE & Paper /Al-foil

The shelf life of burfi is about 10-15 days at room temperature

Packaging of sandesh

- Traditional studies are carried out with LDPE pouches.
- The packaging material used is similar to Chhana – 0.038 cm folding paper board cartons. 0.079, 0.08, 0.008 cm with Parchment liner having PS, HDPE bags, Nylon-6 and Tin cans 0.041 cm are used.
- Tin cans, Nylon-6 and recent material CXA 148/LDPE is used. Folding paper board: PS/ HDPE/ Nylon-6, Tin.
- Earthen Pots are also used.
- Leaves of Banana, etc. heat pressed to give shape are still in use in some rural areas of our country.

