



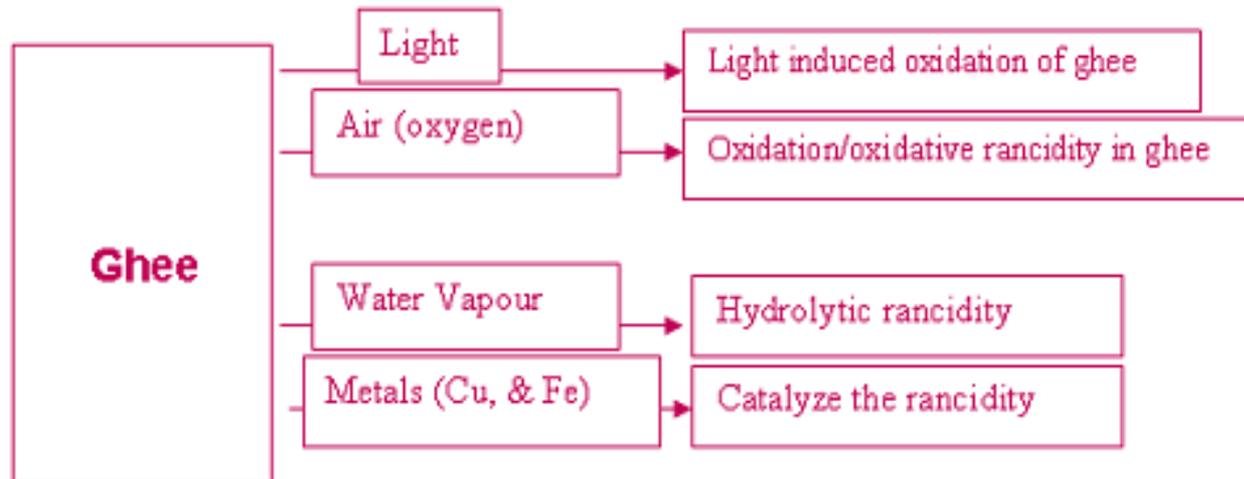
# Packaging and storage of ghee

- ✓ Ghee has long keeping quality; can be stored for 6-12 months under ambient temperature provided proper packaging and filling.
- ✓ Should be filled up to brim in rust free tin cans/container for bulk packing.
- ✓ Regular pack sizes available in market are 15 lit, 5 lit, 1 lit and 500 ml. Self standing laminates are used for 14 lit and 500 ml packs having barrier to moisture, air and light.
- ✓ Exposure of ghee to sunlight for long time causes oxidation and produce off-flavors.



# Packaging of Ghee

Exposure of ghee to light, air, water vapour and metals causes deterioration of ghee .



Glass bottles, Food grade plastic containers (high density polyethylene pouches, laminates with metallic layer support (aluminum) and tin cans are used for packaging ghee.

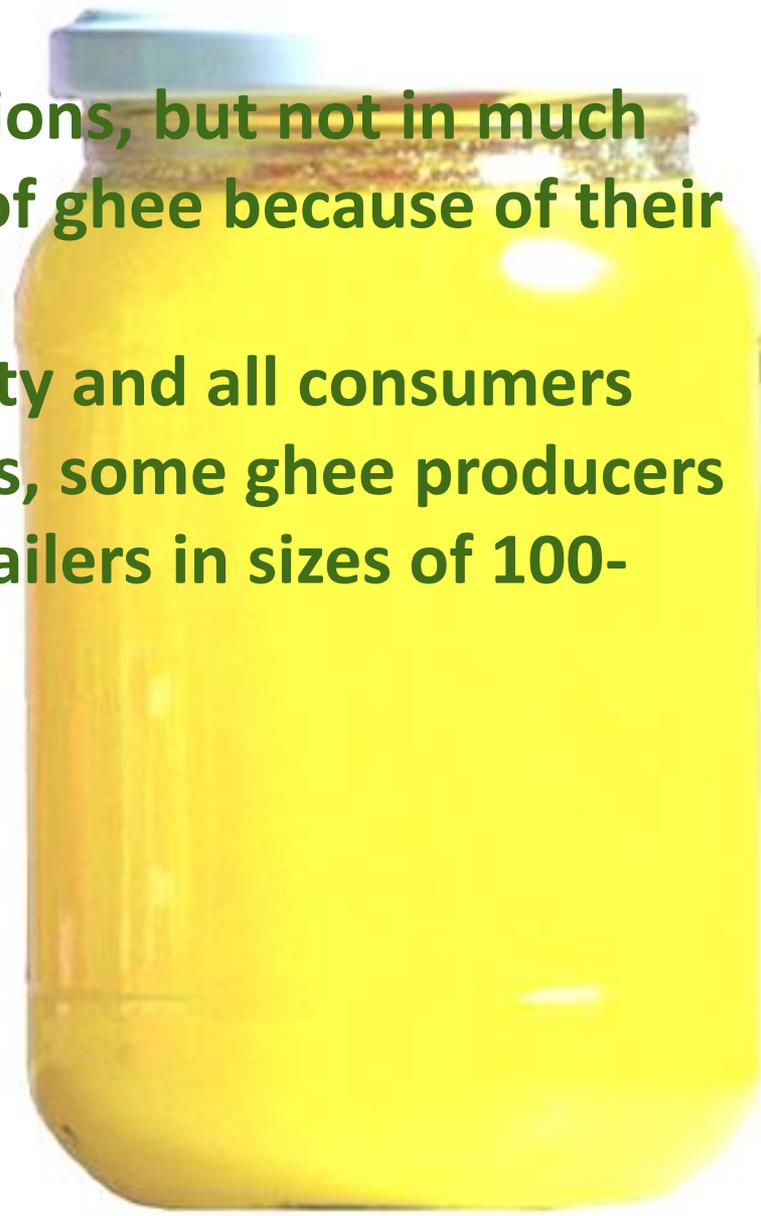
## **Tin Cans:**

- **Lacquer coated tin cans are used for bulk pack of 15 lit and 5 lit that should be sealed properly to prevent entry of oxygen as it causes oxidation in product during storage.**
- **Tin cans be properly lacquered because rusted cans are liable to accelerate the lipid deterioration.**
- **Drawback in tin cans is the cost. Higher cost renders its use and to search for cost competitive packaging material.**



## **Glass Bottles:**

- **Provides excellent protection to product quality as it do not react with food material.**
- **Can be used for high-speed operations, but not in much use for bulk or large size packaging of ghee because of their fragility and high weight.**
- **Being ghee an expensive commodity and all consumers cannot afford to buy large size packs, some ghee producers package ghee in glass bottles for retailers in sizes of 100-500g.**



## **Semi-rigid Containers:**

- **Replaced tin plate containers.**
- **Mainly made from high density polyethylene (HDPE).**
- **Advantages: lightweight, economical and transport-worthy.**
- **Several types viz., blow moulded HDPE, PET (polyethylene terephthalate) bottles, PVC (polyvinyl chloride), lines cartons and tetra packs.**
- **Blow moulded HDPE are available in form of bottles (200, 400 g), jars (1 kg and 2 kg) and jerry cans (2 kg, 5 kg and 15 kg).**
- **PET bottles have excellent clarity odour free and have gas barrier properties.**

## **Flexible films/pouches/laminates:**

- Flexible pouch may be made from laminates or multi layer films of different composition.**
- Packaging ghee in flexible pouches is cheapest.**
- Selection of laminate or multi layer film is governed primarily by compatibility of contact layer, heat-sealing ability and heat-seal strength and shelf life required.**
- Indigenously available flexible materials: HDPE, polypropylene, aluminium foil, nylon, PVC, polyester and numerous laminates of flexible films.**
- Sachets made from laminate of PVC Al foil/PP (polyvinylidene chloride/polypropylene) are suitable for long-term storage of butter oil and ghee.**

# Desirable characteristics of packaging material for ghee:

**Material should not react with ghee**

**Easily available at low cost**

**Should be non toxic**

**Should not allow printing ink to penetrate into product**

**Should protect against tempering**

**Should have good barrier properties against spoilage agents**

**Should withstand wear and tear during transportation**

## Storage of Ghee

- **At higher temperature of storage, development of oxidized flavor.**
- **At low temperature storage, although it delays acid development thereby; prolongs shelf-life but it imparts greasy and pasty texture to ghee.**
- **Storage temperature of 21 C is recommended for upto 12 months.**



# Factors Influencing Keeping Quality of Ghee

**Temperature of storage:** Higher temperature of storage, lower will be keeping quality and vice versa.

**Initial moisture content:** Higher the initial moisture content, lower the keeping quality and vice versa.

**Initial acidity:** Higher initial acidity, lower the keeping quality and vice versa.

**Exposure to metals:** When ghee comes in contact with metals (iron and copper), its keeping quality gets reduced.

**Exposure to light:** Greater exposure to sunlight causes oxidation of ghee thus; reduces the shelf life.

**Method of packaging:** Higher the air-content in head-space, lower will be keeping quality.

## Preservation of Ghee

- **Packaging in air tight container (as ghee susceptible to oxidation. Reaction of oxygen with unsaturated fat, aggravated by metallic contamination or sunlight).**
- **Antioxidants can be added (Butylated hydroxyanisole (BHA) at conc. of not exceeding 0.02%).**
- **Use of ghee residue to extend shelf-life ghee (phospholipids present in ghee acts as antioxidants).**
- **Curry leaves and betel leaves can extend shelf-life of ghee.**

# Marketing of Ghee

- Several multinationals (Britannia & Nestle) enter into business of ghee manufacturing and marketing.
- India Amul and Sagar Ghee is popular brand names marketed by GCMMF.
- Mother Dairy also have good market share of ghee.
- Local merchants sell desi ghee in unorganized sector.
- Ghee in India is used for cooking or frying, as it enriches taste of food. Ghee in melted form is used for garnishing rice or spreading lightly on chapattis.
- A regular export item from India: exported to Nepal, Bangladesh etc.