Volume 4, Issue 3
March I 2026

Agri Roots
e- Magazine

www.agrirootsmagazine.in

ISSN: 2583-9071

Packaging and Labelling of Milk and Milk Products: Ensuring Safety, Quality and Consumer Confidence

ARTICLE ID: 0344

Dr. Vidhu Kumar

[1]Animal Nutrition Division, ICAR–National Dairy Research Institute, Karnal, India – 132001

Milk is a highly perishable and sensitive food commodity that can deteriorate rapidly if not handled properly. Effective packaging and appropriate labelling play a vital role in maintaining milk quality, ensuring safety, and delivering accurate product information to consumers. This article explains the objectives, materials, and types of packaging used for milk and dairy products, along with essential labelling requirements under Indian food safety regulations. It also outlines the regulatory framework for establishing dairy processing plants in India. Proper compliance with packaging and labelling standards not only safeguards public health but also enhances market trust and product value.

Milk is one of the most nutritious and widely consumed foods across the world. However, due to its high moisture content and rich nutrient composition, it is extremely prone to microbial contamination and spoilage. Without suitable protection, milk can lose its freshness, quality, and nutritional value within a short time.

Packaging and labelling, therefore, become essential components of the dairy supply chain. While packaging protects milk from contamination and environmental damage, labelling provides consumers with critical information regarding the product's identity, quality, safety, and usage instructions. Together, these processes ensure that milk and dairy products reach consumers in safe and marketable condition.

Meaning and Purpose of Packaging

Packaging refers to the process of filling and sealing milk in food-grade containers in such a way that it remains protected from contamination and maintains its quality during storage, transportation, and distribution.

Objectives of Packaging

The primary goals of dairy packaging include:

1. Protection from contamination: Shielding the product from dust, dirt, insects, microorganisms, and other external hazards.
2. Preservation of quality: Maintaining flavour, colour, aroma, texture, and nutritional value.
3. Extended shelf life: Allowing safe storage for a longer duration.
4. Safe transportation: Preventing leakage, breakage, or damage during handling and transport.
5. Consumer safety: Delivering hygienic and standardised products.
6. Information display: Providing essential product details through labelling.
7. Market appeal: Attracting consumers through neat and appealing packaging.
8. Regulatory compliance: Meeting food safety standards and legal requirements.

Essential Characteristics of Packaging Materials

Materials used for packaging milk and dairy products must possess the following qualities:

- Food-grade and safe for direct contact with food
- Non-toxic and chemically inert
- Neutral in taste, odour, and colour
- Strong and durable
- Resistant to moisture, oxygen, and light
- Hygienic and easy to clean or sterilise
- Capable of airtight sealing
- Economical and commercially viable
- Preferably recyclable or environmentally friendly

Types of Packaging

Based on function and level of protection, dairy packaging is generally classified into three categories:

1. Primary Packaging

This is the layer that directly contacts the product and ensures its immediate protection.

- Examples: Poly pouches for milk
- Plastic cups for curd
- Tin cans for milk powder

2. Secondary Packaging

This packaging surrounds primary packages to provide additional protection and grouping convenience.

- Examples: Carton boxes for milk pouches
- Trays for curd cups

3. Tertiary Packaging

Used for bulk handling, storage, and long-distance transportation.

Examples:

- Plastic crates
- Pallets
- Stretch wrapping films

Common Packaging Materials for Dairy Products

Liquid Milk

- LDPE/LLDPE poly pouches (most widely used)
- Tetra packs (for UHT milk)
- HDPE or PET bottles (flavoured milk)
- Glass bottles (limited or institutional use)

Milk Powder

- Tin containers
- Multi-layer laminated pouches
- HDPE jars

Curd and Buttermilk

- Plastic cups (PP/PS)
- Poly pouches
- Traditional earthen pots (limited use)

Ghee

- Tin containers
- Glass jars
- Food-grade plastic containers

Butter

- Aluminium foil wrappers
- Parchment paper with foil
- Plastic tubs

Condensed or Evaporated Milk

- Tin cans
- Laminated pouches

Paneer and Cheese

- Wax paper
- Laminated films
- Vacuum-sealed pouches

Special Packaging Requirements for Milk

Milk packaging must meet specific standards to ensure safety and quality:

- Use of approved food-grade materials
- Proper sealing to prevent leakage
- Hygienic automated or semi-automated packing systems
- No reuse without proper cleaning and sterilisation
- Compatibility with cold chain storage
- Clear mention of processing type (Pasteurised, UHT, Sterilised)
- Standardised pack sizes (e.g., 200 ml, 500 ml, 1 L)
- Mandatory regulatory markings

Labelling Requirements for Milk and Milk Products

Labelling is the display of essential product information on the package to inform and protect consumers.

Under Indian food safety regulations, the following details must be clearly printed on all pre-packaged milk and dairy products:

1. Product Identification

- Name of the product (e.g., Cow Milk, Toned Milk, Ghee)
- Category or class of milk (Full cream, Double toned, Skimmed)
- Declaration of raw milk

2. Processing Information

- Type of heat treatment (Pasteurised, UHT, Sterilised)

3. Net Quantity

- Declared in metric units (ml, L, g, kg)

4. Date Marking

- Manufacturing/packing date
- Use-by or best-before date
- Batch or lot number

5. Nutritional Information

Per 100 ml or per serving:

- Energy
- Fat
- Protein
- Carbohydrates
- Sugars (if applicable)

6. Ingredient List

All ingredients are listed in descending order of quantity.

7. Allergen Declaration

- Clear statement indicating the presence of milk and other allergens.

8. Manufacturer Details

- Name and address of manufacturer/packer

- Food safety license number

9. Storage Instructions

Examples:

- "Keep refrigerated."
- "Boil before use."
- "Consume soon after opening."

10. Language Requirement

Information must appear in Hindi or English (additional languages optional).

Special Declarations

Certain products, such as milk powder, require additional warnings regarding usage restrictions, especially for infant feeding.

Regulatory Requirements for Setting Up a Dairy Processing Plant

Licensing Categories

- Small businesses (up to 500 litres/day): Basic registration
- Medium capacity units: State license
- Large units or interstate operations: Central license

Hygiene and Sanitation

- Personal hygiene of workers
- Use of non-corrosive equipment
- Rapid cooling of milk to 4°C or below
- Regular cleaning and sanitation
- Proper waste disposal system

Quality Control

- Testing of raw milk
- Microbiological examination of finished products
- Internal quality assurance or approved external laboratory testing
- Calibration and documentation of equipment

Production Standards

- Compliance with fat and SNF standards
- Microbial limits
- Approved processing specifications

Application Procedure

- Online application through the official portal
- Submission of plant layout, water analysis report, product list, and food safety management plan
- Inspection and approval process

Timely license renewal and regulatory compliance are mandatory to avoid penalties.

Conclusion

Packaging and labelling are not merely marketing tools; they are fundamental pillars of dairy safety and quality assurance. Proper packaging protects milk from contamination and spoilage, while accurate labelling empowers consumers to make informed choices. Compliance with food safety standards strengthens public trust and supports the sustainable growth of the dairy sector. As consumer awareness increases, maintaining high packaging and labelling standards will continue to play a crucial role in delivering safe and nutritious dairy products to society.