

Packaging of Milk Powder



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1. Introduction

The moisture content in dried products is nearly very low, of approximately **4–5%**, which results in the product being hygroscopic in nature (i.e., high intensity to absorb moisture).

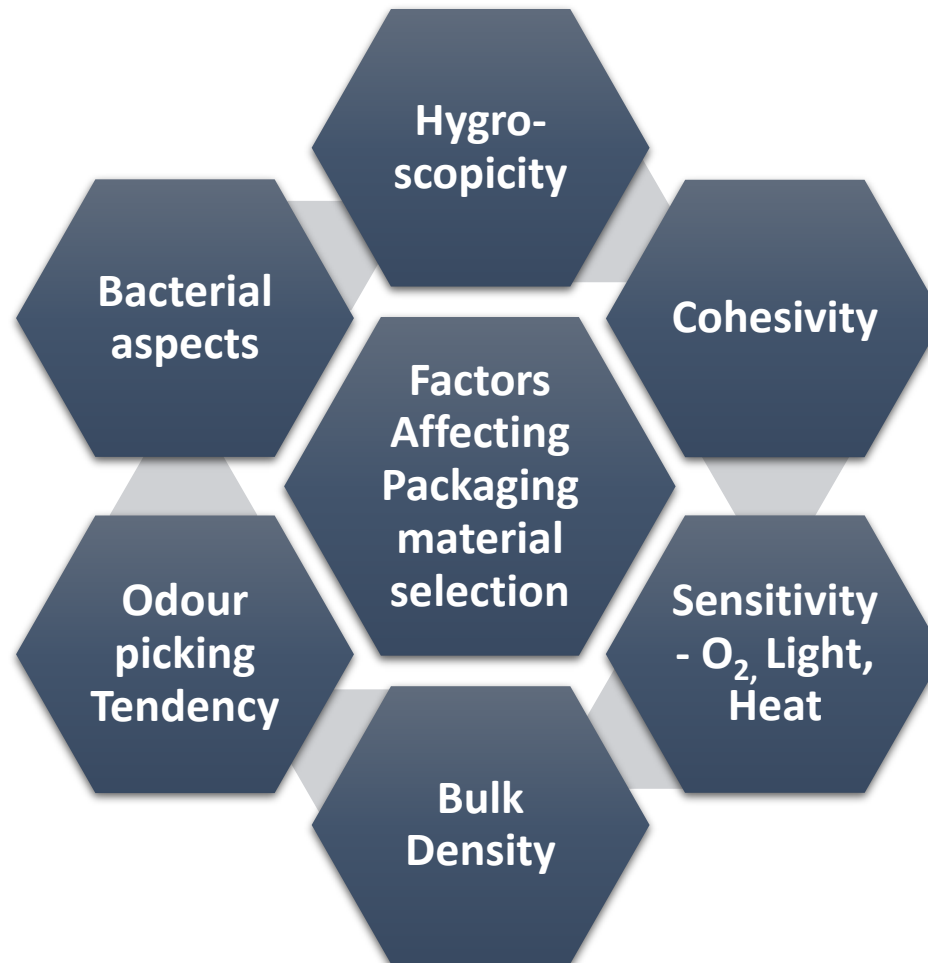
Resulting **stickiness** and **lumpiness**, which can drastically shorten shelf life. Therefore, water-vapor resistant packaging materials are required for packaging of dried products.



1. (a) Characteristics of milk powder

#	Parameters	Value
1.	Particle size	83.87 and 128.76 micron
2.	Moisture content	2-3%
3.	Total solids content	97-98%
4.	Moisture content	0.5 to 34.8 mg per 50 ml of solvent
5.	Insolubility index	4-5 %
6.	Bulk density	High
7.	Loose density	541.36 (For SMP) & 449.75 kg/m ³ (For WMP)

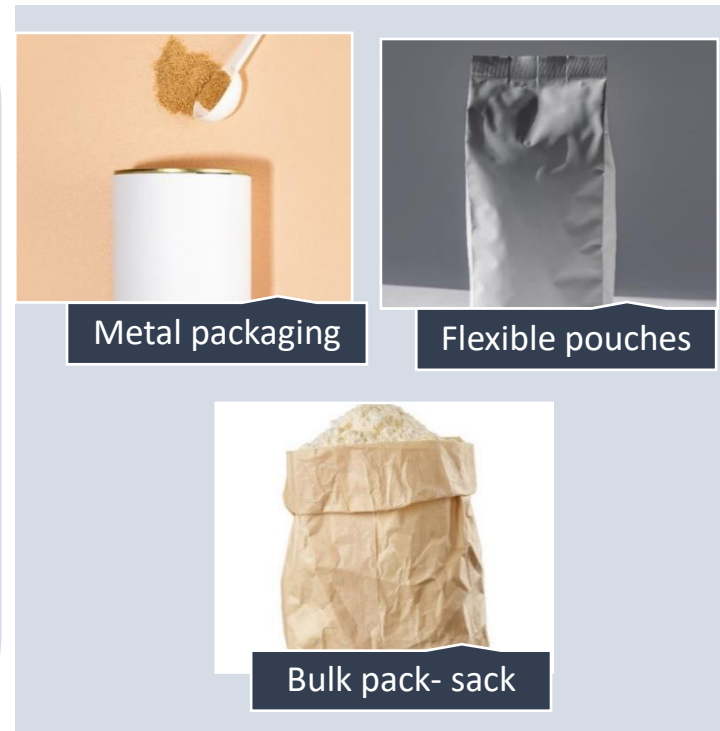
1. (b) Factor Affecting Selection of Packaging Material



2. Types of Packaging Material

Two types of packaging used to milk powder:

- Metal packaging
- Composite Soft packaging material
 - **Bulk packaging:** Sacks
 - **Retail packaging:** Metal can, flexible pouches etc.



Major package used for powder packing

3. Packaging Material (SKUs)

1. Bulk packaging

- **Sacks**
 - Most adaptable method of storage for any secondary use/processing commercially in offseason
 - Material used: **polyethylene lined multi-layered paper covering**
 - 2 kind of sacks are used
 - a. **Tote bag** (800 to 1000kg)
 - b. **Big bag/ bag in box** (5 - 100 Kg)



3. Packaging Material (SKUs)

2. Retail packaging

2.1 Flexible Packaging Material

- **Cartons** lined with Al-foil-PE: Bag-in-box type (coated Al-PE bag or plastic-coated paper inside cartons)
- **Laminates**: Paper, PE, Foil, Metallized, BOPP/PE or PET
- **Kraft paper** with/without PE lining
- **Poly-films**: For Ex; PET/PE/Al-foil/ PE
- **HDPE bottles/bags**: for skim milk powder



3. Packaging Material (SKUs)

2. Retail packaging

2.2 Metal cans: Tin coated steel Can or other

Advantages: variable size available, easy for retail, durable, hard, and provides most effectively barrier properties against moisture, light and oxygen.



4. Packaging Machine

1. Sack filling machine

- Ensures accuracy, speed, and reliability in bulk packaging operations
- Used for bags or containers, streamlining packaging processes



4. Packaging Machine

2. Can filling machine

- Have adjustable filling head, with a handwheel.
- Accurately dispenses and seals contents, ensuring efficiency in powder packaging
- Have capacity to fill wide range of cans.



4. Packaging Machine

3. Pouch filling machine

- Form fill and seal machine are mostly used in combination with other supporting equipments.
- Most versatile and efficient industrial equipment



4. Packaging Machine

4. Inline bag in box filling machine



- Bag in box type packaging is performed
- Automatic line for high-speed filling
- single-head, modular, scalable and tailored



5. References

- (Tonnes, M. (2000). Packaging of milk and dairy products. *Economic Survey, 1*, 81.))
- Egyankosh/ agrimoon
- Proper Bulk Bag Storage - Bagwell Supply
- Hot Stamping Paper Composite Can Packaging <http://bit.ly/3ubYSBI>
- Milk Powder Packing Machine, Model: UA - 050A at Rs 550000/unit (www.google.com)
- Milk Powder Can / Container Filling Machine - Threepac Solutions Pte Ltd
- GEA Avapac Automatic Bag Filler

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