



# LENTIL PACKAGING



**AATMANIRBHAR BHARAT**

**PM Formalisation of Micro Food Processing  
Enterprises Scheme (PM FME Scheme)**

# INTRODUCTION

2

❖ Packaging is the cornerstone of the food processing industry

❖ The packaging transform the food from one stage to another by using different techniques

❖ Hence, it is driven by factors as health and hygienic, food safety, quality and nutrients



## Cont...

3

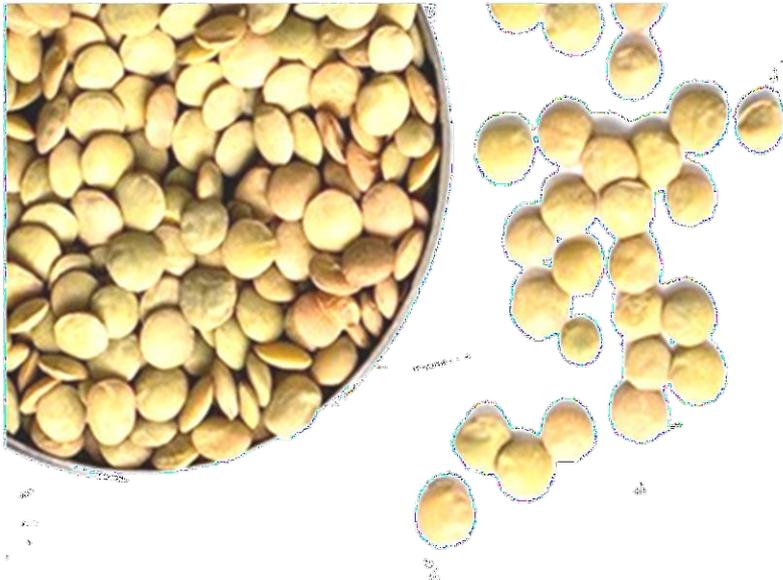
❖ Beside these, it includes marketing and distribution, maintenance of taste, year-round availability and long shelf life.

❖ Worldwide, the sales of processed foods are estimated to be \$2 trillion whereas that of packaged food range around \$1 trillion



# FOOD PACKAGING

4



The International Packaging Institute (IPI) defines packaging as the enclosure of products, items or packages in a wrapped pouch, bag, box, cup, tray, can, tube, bottle or other container form to perform one or more of the following functions: containment, protection, preservation, communication, utility and performance.



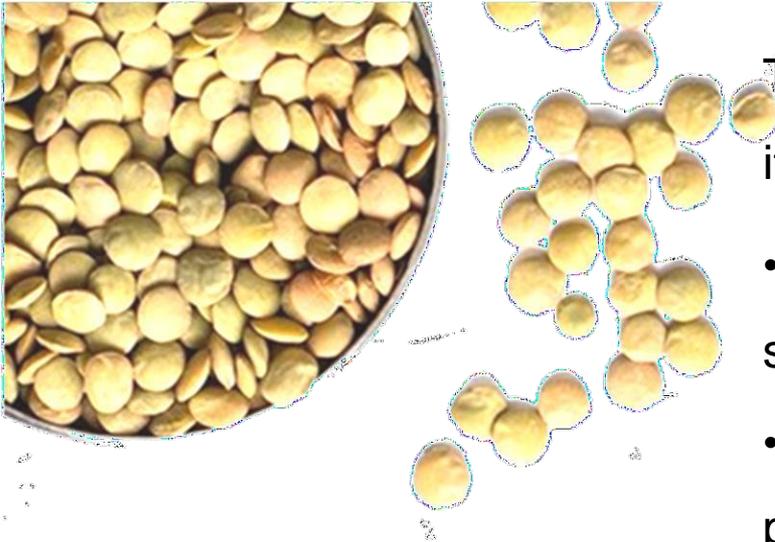
# LENTIL PRODUCTS

5



# OBJECTIVES

6



The objectives of packaging in case of lentils and its products include:

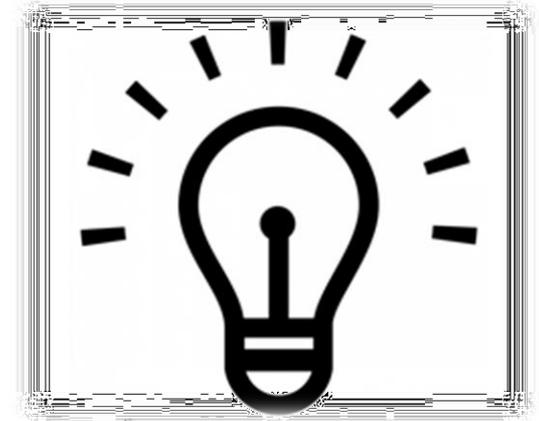
- Prevent physical damage, e.g. from knocking, shaking or crushing;
- Prevent contamination from micro-organisms, pollution or vermin;
- Protect against dehydration/ dampness;
- Protect the product's nutritional and sensory characteristics;
- Help to increase a product's shelf life.



# IMPORTANCE

7

- ❖ Food packaging is vital for protecting lentil products against external microbes and bacteria
- ❖ Enhances shelf-life & attracts buyers
- ❖ Displays and promotes the product
- ❖ Means of marketing the food product
- ❖ Differentiates the product from competitors
- ❖ It highlights freshness, health and traceability of the products



Cont...

8



The importance of food packaging is further strengthened

by the final choice of the consumers because it directly involves appeal, convenience, information and branding



# PRINCIPLES OF PACKAGING

9



- Food packaging preserves food and prolongs its shelf life by protecting it from bacterial damage, moisture and insect attack.
- Shelf visibility,, differentiation, versioning, reassurance, product delivery



# TYPES OF PACKAGING

10



- Primary food packaging is in direct contact with the lentil products– it preserves the products and ensures protection from external bacteria.

- Secondary packaging of lentil products is used for branding and as an extra measure of protection for the food product.



# TYPES OF PACKAGING MATERIAL

11

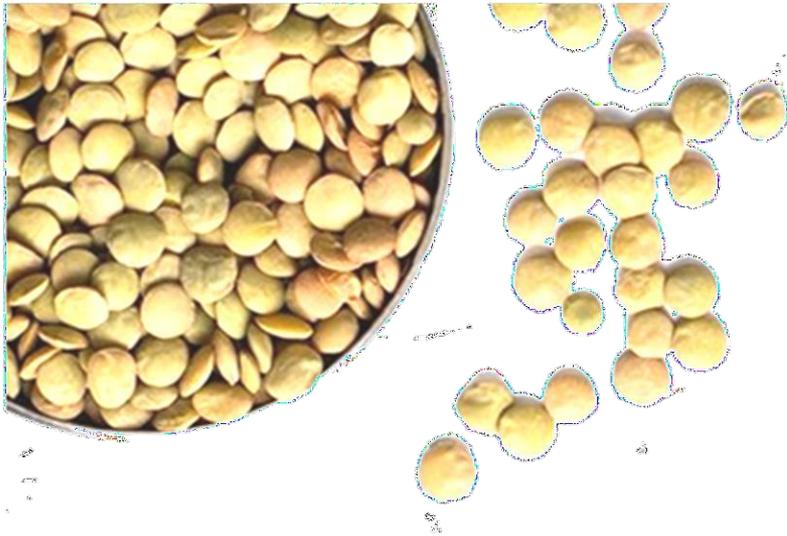
## Flexible Plastic Packaging

### Plastic pouches-

- Made by plastic films
- HDPE used as cereal bags
- LDPE used as Kraft singles wrappers
- Polypropylene for chips, biscuits, 2 minute noodle wrappers etc.
- Flexible Plastic Packaging



Cont..



12

## Flexible Plastic Packaging

### Retortable pouches

- Have a thickness up to 0.375mm
- Made by extrusion
- Alternative to metal cans and glass containers
- Suitable for canning
- Used for thermally processed- fruit, vegetable, meat & fish products



Cont..

13

## Flexible Plastic Packaging

### **Materials-**

- Low density polyethylene (LDPE)
- Polypropylene (PP) Pouches
- BOPP/LDPE
- BOPP/ Polyester
- Metalized Polyester/ LDPE



# PACKAGING MATERIALS FOR LENTILS

14

Following materials are used as packaging for the protection of pulses from moisture and insects-

- Cellophane
- Polyethylene (PE) carton packets,
- Polyethylene bags

In addition to this, these packaging materials are becoming widespread currently-

- Paper
- Foil based packaging material
- PE spectacle packaging material



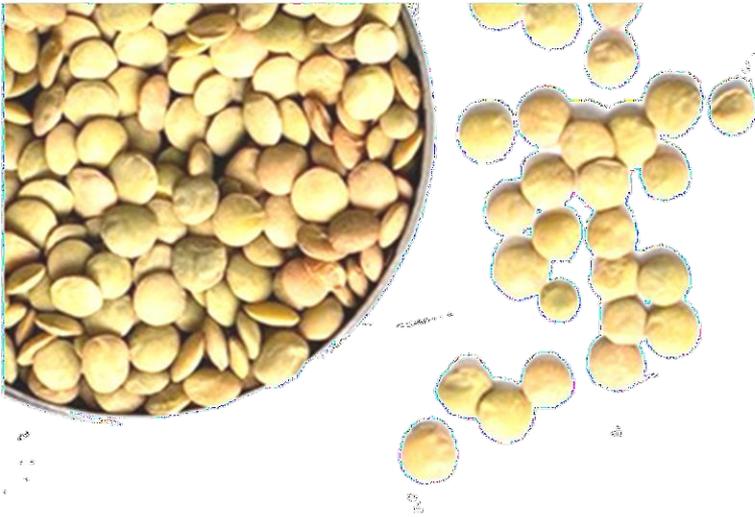
# PACKAGING MATERIALS SUITABLE FOR PACKAGING AS PER FSSAI

15

- IS : 10146 (Specification for Polyethylene in contact with foodstuffs);
- IS : 10142 (Specification for Styrene Polymers in contact with foodstuffs);
- IS : 10151 (Specification for Polyvinyl Chloride (PVC), in contact with foodstuffs);
- IS : 10910 (Specification for Polypropylene in contact with foodstuffs);
- IS : 11434 (Specification for Ionomer Resins in contact with foodstuffs);



Cont..



16

- IS: 11704 Specification for Ethylene Acrylic Acid (EAA) copolymer;
- IS: 12252 - Specification for Poly alkylene terephthalates (PET);
- IS: 12247 - Specification for Nylon 6 Polymer;
- IS: 13601 - Ethylene Vinyl Acetate (EVA);
- IS: 13576 - Ethylene Metha Acrylic Acid (EMAA)

# FEATURES OF PACKAGING

17

Food Packaging of lentils and its products serves several purpose:

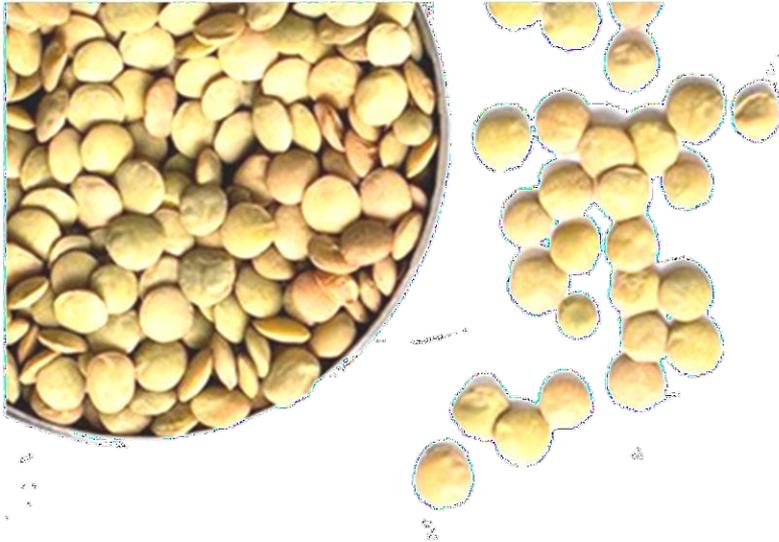
**Protection:** Lentils kept in the package require protection from various things like moisture, compression, temperature, etc.

**Barrier protection:** Packaging is required to provide a barrier from oxygen, dust, water vapour, etc. Keeping the lentils fresh, clean, and safe for the required shelf life is a basic function.



Cont..

18



**Containment:** Small food items are typically grouped together in one package for efficiency. Granular materials and powders need containment.

**Label Information:** All lentil products packages require labels on the nutrition facts, how to use, dispose, date of manufacturing and expiry of the package or product.



Nutrition Facts	
Serving Size 1/2 cup (50g)	
Per 1/2 Cup (50g)	
Calories 170	Calories from Fat 10
<b>% Daily Value*</b>	
Total Fat 1g	2%
Saturated Fat 0g	0%
Total Cholesterol 0mg	0%
Sodium 0mg	0%
Total Protein 12g	24%
Total Carbohydrate 30g	6%
Dietary Fiber 10g	20%
Sugars 0g	0%
<b>% Daily Value**</b>	
Iron 10%	From 20%
*Percent Daily Values are based on a diet of other people's misdeeds.	
**Percent Daily Values are based on a diet of other people's misdeeds.	

ARROWHEAD MILLS® brand was born in the Texas Panhandle back in 1960. We've grown, but we haven't changed how we do things. We're still using our same trusted milling process and building long-term relationships with our organic growers, working with the latest in food day-to-day. Here we work hard to do it right and business with a honorable - that's our process. That's the Arrowhead way. It's how we bring the sweetest goodness of the earth to your table and we're proud of it.

Red Lentils are a delicious source of protein. Make them into a salad using fragrant tomatoes or enjoy as a flavorful porridge with cooked dates. Let us help in India. These recipes from our website suggest:

**RED LENTILS**

**INGREDIENTS:** 100% ORGANIC RED LENTILS

**COOKING INSTRUCTIONS:** Rinse and drain. Proportion water to lentils as directed. Bring to a boil, then simmer for 20-25 minutes. Add salt to taste. [www.arrowheadmills.com](http://www.arrowheadmills.com)

607232-000

743554762

2706-01-001  
NET WT. 1.00 LB (453.6g)

Cont..

19

**Marketing:** Food packaging encourages potential customers to buy the product and food packaging design also plays an equally important role

**Security:** Proper packaging can play an essential role in reducing the security risks of shipment. With tamper evident features, there is no chances of the food packages being destroyed or contaminated during shipment

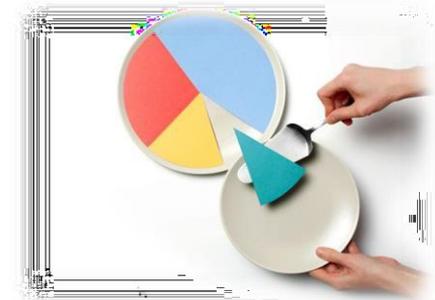


Cont..

20

**Convenience:** Food packages have certain features which add convenience in handling, stacking, distribution, sale, display, re-closing, opening, use, and reuse

**Portion control:** Lastly, food packaging provides information on the exact portion of contents available in that particular product



# LABELING REQUIREMENTS AS PER FSSAI

21

- The Name of food
- Declaration regarding Veg.
- Name and address of the manufacturer
- Net Quantity
- Lot/Code/Batch Identification
- Date of manufacturing or packing



**INGREDIENTS:** WHOLE CORN, VEGETABLE OIL (CONTAINS ONE OR MORE OF THE FOLLOWING: CORN, SOYBEAN, AND/OR SUNFLOWER OIL), SALT, CHEDDAR CHEESE (MILK, CHEESE CULTURES, SALT, ENZYMES), MALTODEXTRIN, WHEAT FLOUR, WHEY, MONOSODIUM GLUTAMATE, BUTTERMILK SOLIDS, ROMANO CHEESE FROM COW'S MILK (PART-SKIM COW'S MILK, CHEESE CULTURES, SALT, ENZYMES), WHEY PROTEIN CONCENTRATE, ONION POWDER, PARTIALLY HYDROGENATED SOYBEAN AND COTTONSEED OIL, CORN FLOUR, DISODIUM PHOSPHATE, LACTOSE, NATURAL AND ARTIFICIAL FLAVOR, DEXTROSE, TOMATO POWDER, SPICES, LACTIC ACID, ARTIFICIAL COLOR (INCLUDING YELLOW 6, YELLOW 5, RED 40), CITRIC ACID, SUGAR, GARLIC POWDER, RED AND GREEN BELL PEPPER POWDER, SODIUM CASEINATE, DISODIUM INOSINATE, DISODIUM GUANYLATE, NONFAT MILK SOLIDS, WHEY PROTEIN ISOLATE, AND CORN SYRUP SOLIDS.  
**CONTAINS MILK AND WHEAT INGREDIENTS.**

Amount Per Serving		Calories from Fat 70	
Calories 150		% Daily Value*	
<b>Total Fat</b> 8g			<b>12%</b>
Saturated Fat 1.5g			<b>7%</b>
Trans Fat 0g			
<b>Cholesterol</b> 0mg			<b>0%</b>
<b>Sodium</b> 180mg			<b>7%</b>
<b>Total Carbohydrate</b> 17g			<b>6%</b>
Dietary Fiber 1g			<b>6%</b>
Sugars 1g			
<b>Protein</b> 2g			
Vitamin A 0%	•	Vitamin C 0%	
Calcium 2%	•	Iron 0%	
Thiamin 4%	•	Vitamin B6 2%	
<b>Phosphorus</b> 6%			

\*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:  
Fat: 9 • Carbohydrate: 4 • Protein: 4



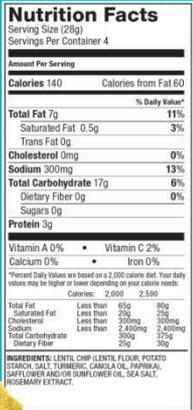


Cont..

23

- Name of Oil used for frying in case of fried lentil snack
- State “Gluten free”
- State “Contains Trehalose” if Trehalose is added
- State the name of any additive if added
- State the name of any preservative if added

sea salt



**Nutrition Facts**  
Serving Size (28g)  
Servings Per Container 4

Amount Per Serving	
<b>Calories 140</b>	Calories from Fat 60
<b>% Daily Value*</b>	
<b>Total Fat 7g</b>	<b>11%</b>
Saturated Fat 0.5g	1%
Trans Fat 0g	0%
<b>Cholesterol 0mg</b>	<b>0%</b>
<b>Sodium 300mg</b>	<b>13%</b>
<b>Total Carbohydrate 17g</b>	<b>6%</b>
Dietary Fiber 0g	0%
Sugars 0g	
<b>Protein 3g</b>	
Vitamin A 0%	Vitamin C 2%
Calcium 0%	Iron 0%

\*Percent Daily Values are based on a diet of other people's secrets. Your daily values may be higher or lower depending on your calorie needs.  
Calories: 2,000 2,500

	Less than	60g	80g
Total Fat	Less than	20g	25g
Saturated Fat	Less than	5g	6g
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate	Less than	50g	25g
Dietary Fiber	Less than	2g	3g

**INGREDIENTS:** Lentil Chip (Lentil Flour, Potato Starch, Salt, Turmeric), Sunflower Oil, Sea Salt, Rosemary Extract.



# MACHINERY INVOLVED

25



## FFS CUP FILLER MACHINE

•A fully automatic vertical form fill & seal machine suitable for packing lentil pulses, lentil flours

## TYPES OF SEALING-

- Centre seal
- Three side seal
- Four side seal



# FFS CUP FILLER MACHINE

26



# FFS AUGER FILLER MACHINE

•A fully automatic vertical form fill & seal machine suitable for packing lentils, its flour and other dry products

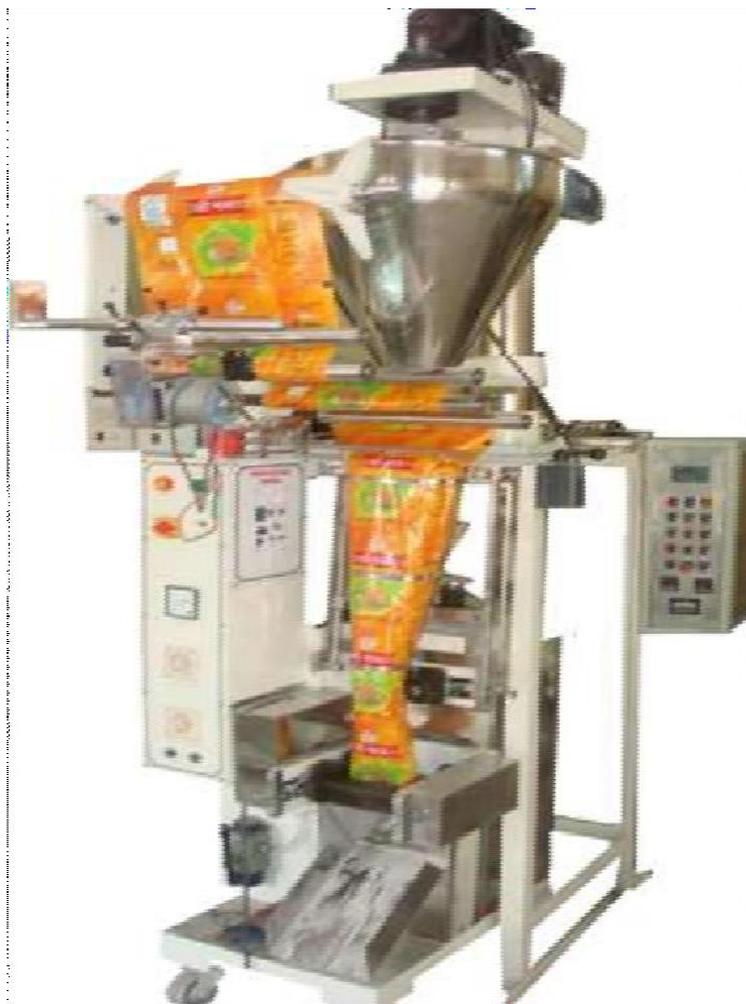
## **TYPES OF SEALING-**

- Centre seal
- Three side seal
- Four side seal



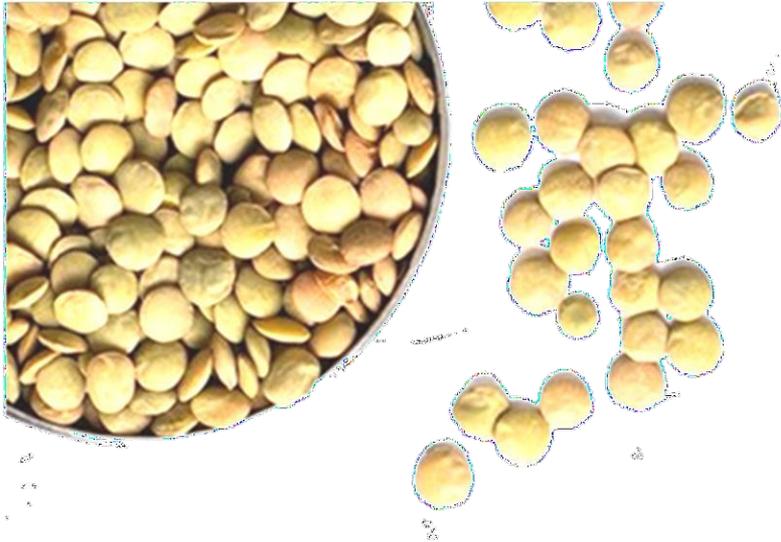
Cont..

28



# COLLAR TYPE CUP FILLER MACHINE

29



- It is used for packing of powder and free flowing products.
- With this machine, products can be packed in a wide range of consumer packs with desired filling system.

Products that can be packed: -

Lentil pulse, Lentil flour, Lentil chips, Fried/Baked crispy lentil, Fried/ Baked lentil crackers, Lentil finger fries, Lentil crispy energy bites and many more other snacks of lentils



Cont..

30



# COLLAR TYPE AUGER FILLER MACHINE

31

- It is used for packing of powder and free flowing products.
- With this machine, products can be packed in a wide range of consumer packs with desired filling system.
- They are efficient for packaging seal pouch for 1 kilogram.
- These machines are controlled auger control panel and with this we can fill all kinds of sticky powders and flours.



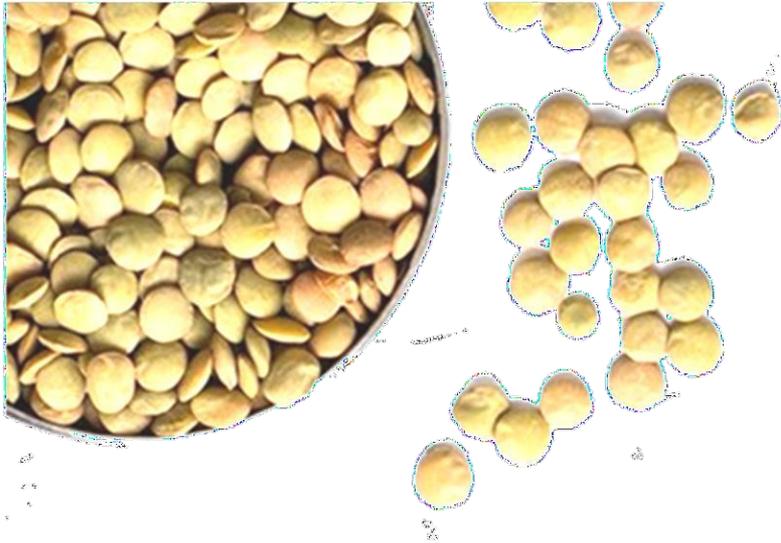
Cont..

32



# COLLAR TYPE MULTI HEAD MACHINE

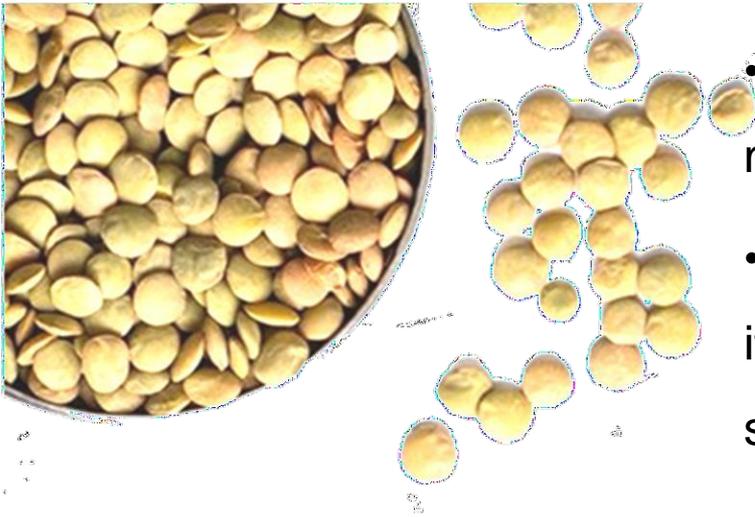
33



- Collar type Automatic Pouch Packing Machines fitted with Multi Head Weigher can be used to pack lentil chips, Namkeen, crackers, other snack food items.

Cont..

34



- It is vertical electro-pneumatic packaging machine.
- This machine automatically forms a pouch, fills it with a product and then seals and then separates the "filled and sealed Pouch".
- This machine can be synchronized with any multi food weighing system
- It uses a single roll of packing film and require supply of compressed air

Cont..

35



# PNEUMATIC FFS CUP FILLER MACHINE

36

- It is used for packing of lentil flour and free flowing products.
- With this machine, products can be packed in a wide range of consumer packs with desired filling system.
- These are efficient for packaging seal pouch for 1 kilogram.



Cont..

37

Products to be packed:

- Lentil pulse, Lentil flour, Lentil chips, Fried/Baked crispy lentil, Fried/ Baked lentil crackers, Lentil finger fries, Lentil crispy energy bites, RTE food products and many more other snacks of lentils



Cont..

38



# SEMI AUTOMATIC AUGER FILLING MACHINE

39



- It can pack almost all types of powders.
- The machine is very much suitable to pack hygroscopic flours and powders.



Cont..

40





## **National Institute of Food Technology and Entrepreneurship and Management**

Ministry of Food Processing Industries

Plot No. 97, Sector-56, HSIIDC, Industrial Estate, Kundli, Sonipat, Haryana-  
131028

 Website: <http://www.niftem.ac.in>

 Email: [pmfmecell@niftem.ac.in](mailto:pmfmecell@niftem.ac.in)

 Call: 0130-2281089