

# PACKAGING OF PROCESSED RED CHERRY PEPPER PRODUCTS



**AATMANIRBHAR BHARAT**

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

- Packaging plays an active role in preservation and retention of quality of processed products.
- Due to increased demands on product safety, shelf-life extension, cost efficiency, and consumer convenience, packaging has gained prominent role in recent years.
- The shelf life of processed cherry pepper products viz., red cherry pepper powder, flakes and pickle is dependent up on the type of packaging materials.
- Selection of a suitable packaging material is dependent on the factors that affect the quality of the product.

# **FACTORS AFFECTING QUALITY OF PROCESSED RED CHERRY PEPPER PRODUCTS**

## **1. Moisture content**

- Moisture content is an important factor for deciding the quality of packaged red cherry pepper powder and flakes.
- Improperly packed red cherry pepper powder is hygroscopic in nature and absorbs moisture from the surroundings.
- Upon moisture take up, there is lump/cake formation of powder
- This reduces the flowability as well as the market value of the product.

## **2. Loss of colour**

- The bright red colour of cherry pepper powder and flakes is its unique characteristics.
- This colour is due to its natural pigments.
- Packaging the powder/flakes in transparent packages which transmit light may lead to loss of these colouring pigments leading to discolouration of the powder.
- Loss of colour in cherry pepper pickles is not observed in a properly packed product.

### **3. Loss of aroma and flavour**

- The unique pungency and aroma of red cherry pepper powder/flakes is attributed to the volatile oils present in *Dalley khorsani*.
- Losses in these volatile oil content or oxidation of some aromatic compounds due to higher temperature of storage and improper packing may lead to loss of aroma and flavour.
- In case of *dalley khorsani* pickle, the flavour/aroma is attributed to both the cherry pepper and the spices added into it.
- Proper packaging and normal storage temperatures are essential to prevent loss of aroma and flavour of pickles.

## **4. Insect infestation**

- Red cherry pepper powder/flakes is prone to spoilage due to insect infestation, which can be further accelerated due to high humidity, heat and oxygen.
- In pickles, insect attack is not prevalent.

## **5. Microbial Contamination**

- In humid regions having relative humidity of 65% and above, moisture absorption occurs in cherry pepper powder/flakes.
- The increase in moisture content of the powder also increases its water activity.
- Microbial growth occurs when water activity becomes more than 0.6.
- In cherry pepper pickles, the oil and vinegar protects the quality of the product in terms of microbial spoilage.
- However, fungus growth may be observed if the product is not properly packed and exposed to air.

# **PACKAGING REQUIREMENTS FOR RED CHERRY PEPPER POWDER AND FLAKES**

- Protection of packaged product from spoilage and spillage loss
- High barrier properties against oxygen, and water vapour
- High barrier properties against loss of aroma and colour
- Resistance of packaging material against oil and grease
- It should be printable
- Handling of the packaging material should be easy
- It should be easily available
- Good machinability and sealability
- Disposal of the packaging material should be easy

## 1. Bulk packaging

- Suitable up to capacity of 1 tonnes
- Jumbo bags (Flexible Intermediate Bulk Containers or FIBCs) made from cloth/Polypropelene (PP) fabric with inner plastic lining are used.
- The PP fabric is stabilized against UV degradation.
- The bags are provided with filling and discharge spouts and slings for hanging during loading/ unloading.



**Cloth jumbo bag**



**PP jumbo bag**

# **ADVANTAGES OF FIBCS**

- ❖ Bags are light in weight and, so transportation costs are reduced
- ❖ Bags are flexible, collapsible and durable
- ❖ Can be used for packaging of powder and flakes
- ❖ Product wastage / spillage and tampering is minimum
- ❖ Less labour is required due to minimum handling
- ❖ Saving in time for loading and unloading

## 2. Institutional packaging

- Suitable up to capacity of 2-10 kg.
- **Traditional packaging:** tinplate containers and jute bags
- **Modern packaging:** laminated flexible pouches and plastic woven sacks
- The sacks are usually Biaxially oriented polypropylene (BOPP) multicolor printed laminated PP Woven bags.
- These bags may be gusseted and have window and micro perforation.



**BOPP multicolour printed bag**



**Gusseted laminated PP woven bag**

## 3. Consumer packaging

- Consumer packaging is used for both domestic and international marketing

### Types of consumer packaging

1. Glass bottles
2. Printed tinplate container with/without dispensing systems
3. Composite containers with dispensers
4. Plastic containers with plugs and caps with dispensing and tamper evidence features
5. Printed flexible pouches – pillow pouch, gusseted pouch, stand-up pouch.
6. Lined cartons

## 1. Glass packaging

- Glass bottles of various sizes and shapes with labels
- Soda-lime glasses are used for packaging cherry pepper powder
- Provided with metal or plastic caps
- The plastic caps have advantages of tamper evidence, dispensing, grinding etc.
- Glass containers have excellent barrier properties against oxygen, water vapour, aroma and color loss.
- But these are breakable.



**Glass bottle  
with plastic cap**



**Glass bottle  
with metal cap**

# Capping/enclosures of Glass containers

## 1. Lug caps

- These are also known as twist off caps
- Can be used with jars having non continuous thread and sealing is by twisting.
- Lug capping machine is used

## 2. Continuous thread (CT) caps

- The caps have continuous thread which matches with the threads of the glass jars for proper sealing/capping.



**Lug capping machine**

## 2. Tin plate container

- These are made up of tin and lacquered internally
- Lid can be metal or plastic



**Tin plate container**

## 3. Composite container

- These are known as composite cans
- These are cylindrical in shape and made up of layers of polyethylene, aluminium foil and paper
- The inside of the containers are laminated with a plastic film.



**Composite can**

## **4. Printed flexible pouches**

### **Advantages:**

- Easy availability
- Excellent printability
- Light weight
- Machinability
- Cost-effectiveness
- Customization as per requirement

### **Commonly used laminate compositions for flexible pouches:**

- Polyester/ metallised polyester/LDPE (low density polyethylene)
- BOPP/LDPE
- BOPP/ metallised polyester/LDPE
- Polyester/Al foil/LDPE

## **LAMINATES USED FOR CHILLI POWDER**

- 3 ply laminates such as 12 $\mu$  PET/ Print/ 12 $\mu$  Met. PET/ PE
- **Polyester and BOPP** based laminates are generally more popular for spice packaging
- Polyester used for lamination is generally 10 or 12 $\mu$  thick.
- Polyester film is highly transparent, has excellent clarity, gloss and printability, low moisture and gas permeability and, therefore, ensures prolonged shelf life of the contents with aroma, flavour and taste retention.
- The very high mechanical strength (tear, puncture, burst and flex) minimises damage to the contents during handling and transportation.
- The film has good machinability as well as printability.
- The film is free from additives and, therefore, does not impart any odour or taint to the sensitive spice product that is packed.

## LAMINATES OF BOPP

- BOPP films may be heat sealable or non-heat sealable.
- The film has high yields, is stable under climatic changes and has excellent moisture barrier.
- This film is smooth, glossy, crystal clear and has high mechanical strength
- It has non-contamination property for food contact applications



## **PACKAGING SPECIFICATIONS FOR FLEXIBLE PACKAGES OF GROUND CONSUMER SPICES**

<b>Co-extruded films (up to 500 grams capacity)</b>	<b>Laminates/Co-extruded films (up to 1000 grams capacity)</b>
<b>12<math>\mu</math> PET / 37.5<math>\mu</math> LD-HD (30% HD)</b>	<b>12<math>\mu</math> PET/50<math>\mu</math> LD-HD (30% HD)</b>
<b>12<math>\mu</math> MET PET / 37.5<math>\mu</math> LD-HD (30% HD)</b>	<b>12<math>\mu</math> MET PET / 50<math>\mu</math> LD-HD (30% HD)</b>
<b>12<math>\mu</math> PET / 50<math>\mu</math> PP</b>	<b>12<math>\mu</math> PET / 62.5<math>\mu</math> PP</b>
<b>12<math>\mu</math> MET PET / 50<math>\mu</math> PP</b>	<b>12<math>\mu</math> MET PET / 62.5<math>\mu</math> PP</b>
<b>10<math>\mu</math> PET / 9<math>\mu</math> Al. foil / 37.5<math>\mu</math> LD-HD (30% HD)</b>	<b>10<math>\mu</math> PET / 9<math>\mu</math> Al. foil / 50<math>\mu</math> LD-HD (30% HD)</b>
<b>12<math>\mu</math> Al. foil / 37.5<math>\mu</math> LD-HD (30% HD)</b>	<b>12<math>\mu</math> Al. foil / 50<math>\mu</math> LD-HD (30% HD)</b>
<b>25<math>\mu</math> BOPP / 37.5<math>\mu</math> LD-HD (30% HD)</b>	<b>25<math>\mu</math> BOPP / 50<math>\mu</math> LD-HD (30% HD)</b>

# PACKAGING MACHINERY



**Form-Fill-Seal (FFS) packaging machine**

# **PACKAGING REQUIREMENTS FOR RED CHERRY PEPPER PICKLE**

- Protection of packaged product from leakage and spoilage
- High barrier properties against oxygen, and water vapour
- High barrier properties against loss of aroma and colour
- It should be printable
- Handling of the packaging material should be easy
- It should be easily available
- Good machinability and sealability
- Should be hygienic and safe
- Disposal of the packaging material should be easy

Type of packaging material	Details
Glass jars/bottles	<ul style="list-style-type: none"> <li>• Both consumer and bulk packaging</li> <li>• Good oxygen, water vapour, &amp; gas barrier properties</li> <li>• High mechanical strength</li> <li>• Breakable, Costly, Bulky handling</li> </ul>
HDPE (High density polyethylene) and PET (Polyethylene terephthalate) jars	<ul style="list-style-type: none"> <li>• Capacity: 1 kg or more</li> <li>• HDPE jars are opaque, convenient and break proof.</li> <li>• They do not provide visibility.</li> <li>• PET jars are transparent, good eye appeal and safe</li> </ul>
Laminated flexible pouches	<ul style="list-style-type: none"> <li>• Capacity: 200g -1 kg</li> <li>• Provide visibility, light weight, cheap and flexible</li> <li>• Good oxygen, water vapour, &amp; gas barrier properties</li> </ul>

# **LAMINATE FLEXIBLE FILM COMPOSITIONS USED FOR CHERRY PEPPER PICKLES**

- 100  $\mu$  HD – LD – HDPE
- 140  $\mu$  LD – HDPE
- 110  $\mu$  LLDPE – BA – Nylon – BA – LLDPE
- 20  $\mu$  BOPP / 50  $\mu$  LD – HD (or Cast PP or EAA)
- 12  $\mu$  Polyester / 75  $\mu$  LD – HD
- 12  $\mu$  Metallised Polyester / 100  $\mu$  LD – HD



**Glass jar**



**PET jar**



**Laminated pouches**

# PICKLE FILLING MACHINERY



**Automatic filling machine**



**Semi-automatic pickle filling machine**



**Automatic pouch filling machine**

- Labelling is a compulsory requirement for sale of all food products sold in India.
- The labelling of pre-packaged food products must comply with the Food Safety and Standards (Packaging and labelling) Regulations, 2011.

## **General labelling requirements**

- The label must be in English or Hindi or Devnagri language. In addition to the above, the label can contain information in any other language, as required.
- The label must not contain information about the food that could be deemed to be false, misleading, deceptive or otherwise create an erroneous impression regarding the product.
- The label must be affixed to the container in such a manner that it would not easily be separated from the container.
- The contents or information presented in the label should be clear, prominent, indelible and readily legible by the consumer.

# GENERAL LABELLING REQUIREMENTS CONTD...

- If the container is covered by a wrapper, then the wrapper must contain necessary information or make the label of the product inside readily legible by not obscuring.
- The name of the food must be mentioned along with the trade name and description of the food contained.
- In case the food contains more than one ingredient, then a list of ingredients must be presented in descending order of their composition by weight or volume, as the case may be, at the time of its manufacture.

# FSSAI GUIDELINES ON LABELLING OF FOOD PRODUCTS

A	Currently required points in Primary Labelling (Non Rectifiable)
1	Generic Name of Product
2	Net Weight in Grams
3	Ingredients
4	Nutritional Information
5	Best Before Date
6	Country of Origin
7	Production Date
8	Traceable Batch No. (this cannot be same as best before date. It must be stated on the pack separately)
9	Manufacturer's Name, address and contact details
10	Additive caution declaration

B	Rectifiable Defects (on sticker)
1	Indian Importing Company Name and Contact Details
2	Veg/Non-Veg Symbol
3	Maximum Retail Price (MRP)
4	FSSAI Logo and Importer License No. - This is only till June '14 after which it has to be on primary packaging label

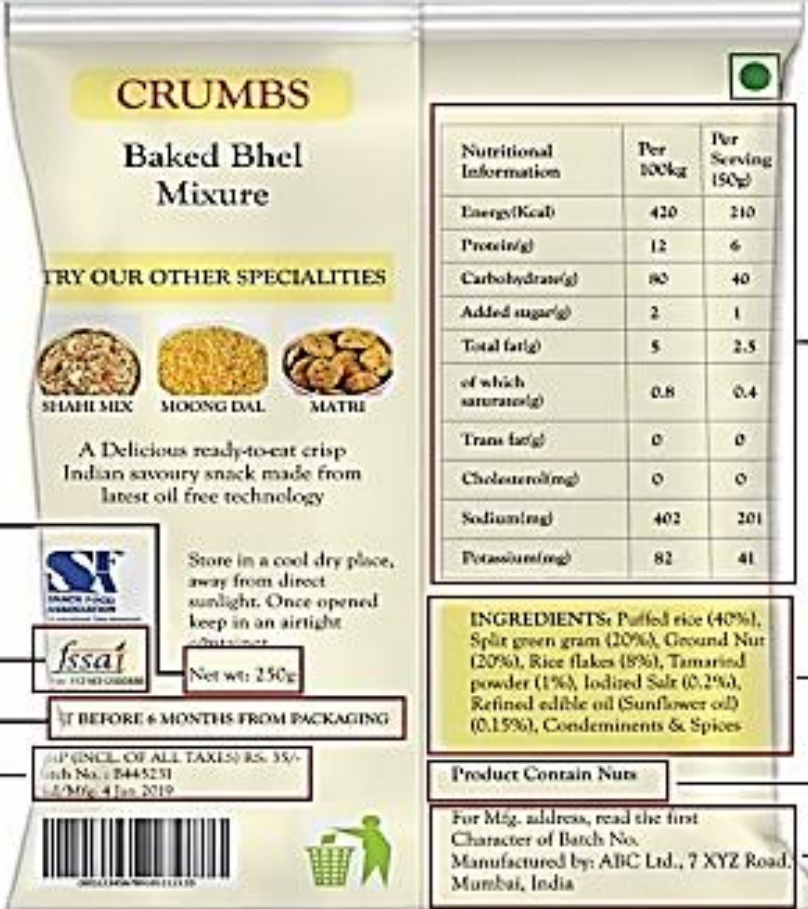


**veg products  
logo**



**Non-veg  
products  
logo**

# LABELLING OF FOOD PRODUCTS AS PER FSSAI



**CRUMBS**  
**Baked Bhel Mixure**

TRY OUR OTHER SPECIALITIES

SHAAHI MIX    MOONG DAL    MATRI

A Delicious ready-to-eat crisp Indian savoury snack made from latest oil free technology

Store in a cool dry place, away from direct sunlight. Once opened keep in an airtight container.

Net wt: 250g

Best Before Date: **BEFORE 6 MONTHS FROM PACKAGING**

MRP (INCL. OF ALL TAXES) RS. 35/-  
Batch No.: B445231  
Mfg. Date: 4 Jan 2019

**Nutrition Facts Panel**

Nutritional Information	Per 100kg	Per Serving (50g)
Energy(Kcal)	420	210
Protein(g)	12	6
Carbohydrate(g)	80	40
Added sugar(g)	2	1
Total fat(g)	5	2.5
of which saturated(g)	0.8	0.4
Trans fat(g)	0	0
Cholesterol(mg)	0	0
Sodium(mg)	402	201
Potassium(mg)	82	41

**Ingredients List**

INGREDIENTS: Puffed rice (40%), Split green gram (20%), Ground Nut (20%), Rice flakes (8%), Tamarind powder (1%), Iodined Salt (0.2%), Refined edible oil (Sunflower oil) (0.15%), Condiments & Spices

**Allergen Declaration**

Product Contains Nuts

**Name and complete address of the**

For Mfg. address, read the first Character of Batch No.  
Manufactured by: ABC Ltd., 7 XYZ Road, Mumbai, India

**Net Quantity**

**FSSAI mark and License Number**

**Best Before Date**

**MRP, Batch Number and Date of Manufacture**



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