PM Formalisation of

Micro Food Processing Enterprises (PM-FME) Scheme

HANDBOOK OF

PROCESSING OF PANEER

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TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

1.1 Introduction

Paneer is an acid coagulated product obtained when standardized milk coagulated with the permitted acids at specified temperature, resultant coagulum is filtered and pressed to get the solid curd mass. Paneer has firm, close, cohesive and spongy body and smooth texture. Paneer is mainly prepared from buffalo milk and used for large number of culinary dishes. Though originally it was localized in North Western part of India but now it has travelled almost all parts of the country. Paneer is generally sold as blocks or slices, it also refer as Indian fresh cheese. I t was reported that, 5% of the milk produced in India is converted into paneer, around 4500MT was paneer made in 2003-04, and growth rate of paneer production is 13% annually.

1.1.1 FSSR, 2011 Standards

Paneer means the product obtained from the cow or buffalo milk or a combination thereof by precipitation with sour milk, lactic acid, or citric acid. It shall not contain more than 70% moisture and milk fat content shall not be less than 50% of the dry matter. Milk solids may also be used in the preparation of this product. Low fat paneer shall contain not more than 70% moisture and not more than 15% milk fat on dry matter basis.

1.1.2 Chemical and microbiological limit for paneer

Characteristics	BIS (IS:10484-1983, Reaffirmed 1999)
Moisture % Max	60
Milk fat % by mass (dry matter basis) min	50

Titratable acidity (as lactic acid), %	0.5
Total plate count	Not more than 50,000/g
Coliform count per g Max	90
E coli	Absent in 1g
Yeast and mold count per g Max	250
Salmonella	Absent in 25g
Shigella	Absent in 25g
Staphylococcus aureus	Not more than 100/g
Anaerobic spore count	Absent in 1g
Listeria monocytogenes	Absent in 1g

1.2 Terminologies used in paneer manufacturing

1.2.1 Coagulants

The ingredients which are used for coagulationof milk are known as coagulants. In paneermaking citric acid is mainly used.Other coagulants such as acetic acid, lacticacid hydrochloric acid, etc. can also besatisfactorily used for coagulation of milk in paneer making.

1.2.2 Whey

The serum or watery part of milk that is separated from the curd in making Paneer.

1.2.3 Sour Whey

Whey containing high acidity.

1.2.4 Filled milk

This refers to the product obtained from blending skim milk with vegetable fats/ or oils.

1.2.5 Filtration/ clarification

To improve the aesthetic quality of milk by removing visible foreign matter which is insightly and may therefore cause consumercomplaints. While filtration removes suspended foreign particles by strainingprocess, clarification removes the same bycentrifugal sedimentation.

1.3 Types of paneer

1.3.1 Paneer for Health

Nowadays people aremore conscious about their health therefore it isnecessary to develop new varieties of paneer forsuch health conscious people.

1.3.2 Soy Paneer

This is prepared by whole orpartial replacement of milk with soy milk forpaneer making. Benefit of soy paneer is thathigh nutritive value, low cost, solve problem ofmilk availability and best for lactose intolerancepeople and for treatment of protein deficiencyamong undernourished children. Soy paneer canbe prepared by using 70% buffalo Milk and
30% soy Milk, 1% acetic acid as coagulant and85°C coagulation temperature. Resultant paneer is had higher sensory profile and yield and lowermicrobial count. Paneer can also be prepared by using soymilkand skimmed milk in 75:25 proportion and citricacid at a conc. of 1.5% as coagulant.

1.3.3 Egg Paneer

Egg is a good source of low-costhigh-quality protein, fat-soluble vitamins (A, Dand E), essential fatty acids minerals (Fe, Ca andZn) and PDCAAS of it is 1. Three type of paneercan be prepared from egg i.e., egg yolk paneer,egg albumin paneer, whole egg paneer. An egg yolkpaneer (EYP) can be prepared by incorporation of

binders (wheat flour (17.5%), maltodextrin (2.0%),salt (1.4%), natural antioxidants (Garlic powder,1%) citric acid (0.05%) and malic acid (0.05%) andegg yolk. Then drying is done at 85°C. DehydratedEYP packed in metalized polyester pouches canbe stored at ambient temperature (27±2°C) for 6 months. The product is sensorily acceptable andmicrobiologically safe and is similar to traditional milk paneer.

1.3.4 Moringa Paneer

Dry leaves of moringa are highly nutritional. Paneer prepared by adding Moringa leaves extracts is means of increasing nutritional quality of paneer. Fresh Paneer prepared from cow milk (420ml) and moringa leaves extract (80 ml) had higher protein, lactose, fat and ash content.

1.3.5 Low-fat Paneer

Paneer containing milk fat ishigh in saturated fatty acids and consumptionof it causes coronary heart disease, obesity andincrease blood pressure. Therefore it is necessaryto develop low fat paneer. Simply preparationof low fat paneer from low fat milk resultsinto hard body, coarse, rubbery, chewy texture,bland flavour, poor mouth feel, mottled colour &appearance of paneer. This problem can be solvedby incorporation of certain additives like dietaryfibre, Whey protein concentrate, lecithin, soy protein isolate and NaCl.

1.3.6 Low-fat paneer with dietary fibre

Incorporationof dietary fibre in low fat paneer improves textureproperties of paneer and besides that it alsoimprove digestion, give protection against CHD,diabetes, obesity. When low fat paneer is preparedfrom milk with 2.5% fat and 0.56% soy fibre or1.8% fat and 4.5% inulin yield a paneer similar tothat prepare from full cream milk (6% fat) withrespect to sensory quality.

1.3.7 Low-fat paneer with whey protein concentrate & lecithin

Incorporation of WPC and lecithinin low fat paneer improve texture properties ofpaneer as it is having water binding capacity, actas emulsifier, and impart creaminess,

opaqueness.This is also means of protein enrichment in paneerand reduction in cost of paneer is possible. Lowfat paneer containing WPC at 0.2 % and lecithinat 0.025 % (w/w of milk) has ~50 % lower fat,36% lower FDM content, ~17 % higher protein,higher overall acceptability scores and can be priced affordably.

1.3.8 Low-fat paneer with soy protein isolate

Incorporation of SPI in low fat paneer improvestexture properties of paneer as it is having waterbinding capacity, act as emulsifier. This is also means of protein enrichment in paneer**.** SPI canbe used as fat replacer in low fat paneer. Paneerwith 0.2% SPI and CaCl2 (0.2%, w/v as coagulant)has higher protein, lactose, ash content and lowerfat, better textural & sensory quality. More than0.2% SPI incorporation imparts beany flavour to paneer.

1.3.9 Low-fat paneer with NaCl

Incorporationof NaCl in low fat paneer improves textureproperties of paneer as it is having water bindingcapacity. Addition of 0.25% NaCl to buffalo milk(2% fat, 9% SNF) prior to coagulation at 60°Cis recommended for making good quality low fat paneer containing about 30% FDM.

1.3.10 Filled Milk Paneer

This can be prepared byreplacement wholly or partially milk fat withvegetable fat during manufacturing of paneer.Purpose of development of filled milk paneeris that milk fat are high in saturated fat andexcessive intake of saturated fat is a majorcausative factor in obesity, high blood pressure,coronary heart disease and linked to a number ofother disorders. On other hand vegetable fat arehigh in polyunsaturated fatty acids.Paneer prepare from milk having a milk fat andvegetable fat (Saffola) in a ratio of 2:3 and 60°Ccoagulation temperature has the highest score ofbody and texture and flavour after frying.

1.3.11 Filled Milk Dietetic Paneer

The substitutionof 3:2 (cow milk fat: vegetable fat) and 20%soy milk is found to be the most appropriate formanufacture of filled milk dietetic paneer.

1.3.12 Paneer from Milk Powder

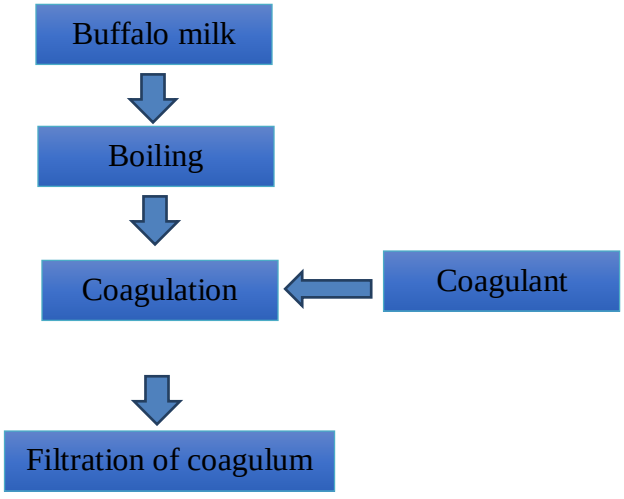
During lean season,production of milk reduces hence production ofpaneer also reduces. This leads to increase in costof paneer. In order to overcome this problem itis necessary to prepare paneer from milk powder.Reconstitution levels of 1:5 and 1:6 (Milkpowder: water) can be used for the manufactureof good quality paneer without any need for themodifications in the processing conditions.

CHAPTER 2

PROCESSING OF PANEER

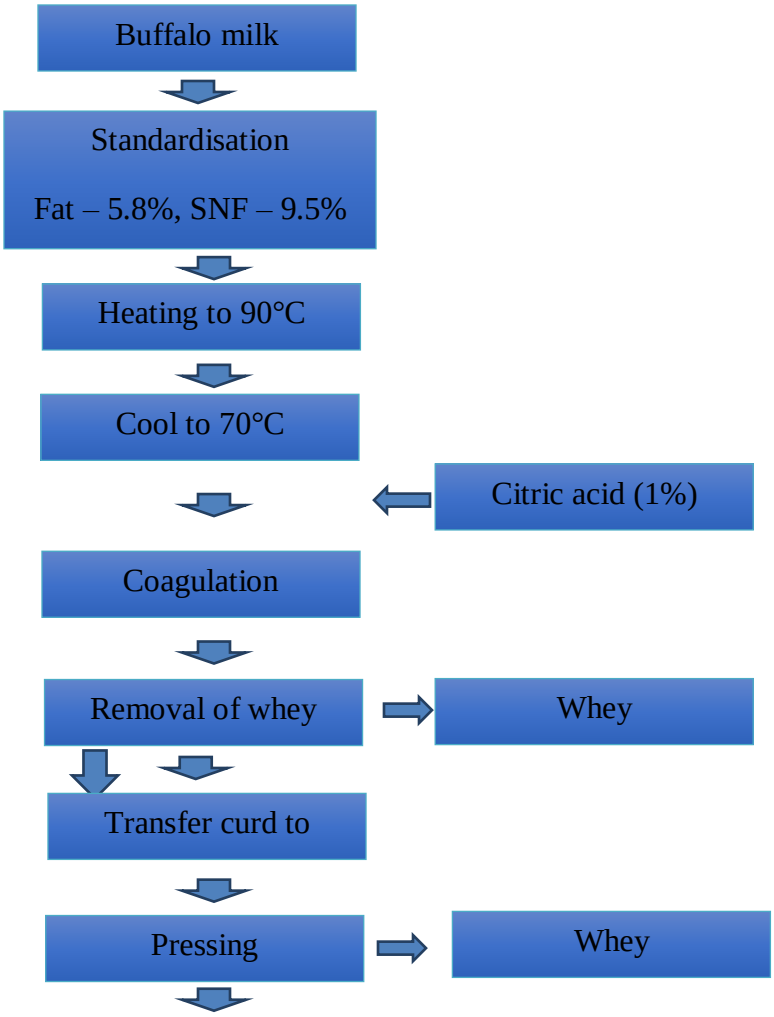
2.1 Method of manufacture

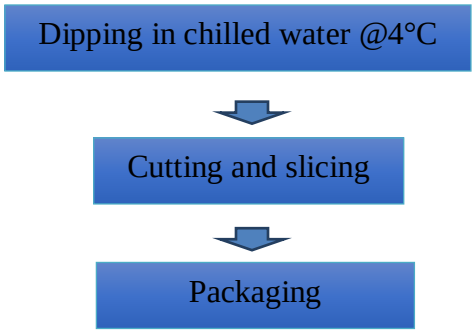
Buffalo milk is boiled in a suitable iron vessel and a small portion of this is then transferred to a smaller vessel. The coagulant (usually sour whey) is added to the hot milk and stirred with a ladle till coagulation is completed. The contents of the vessel are emptied over a piece of coarse cloth to drain off whey. The whole process is repeated till all the milk is converted into paneer. The curd is collected after draining the whey and pressed to remove more whey. Finally, product is then washed with cold tap water.



For commercial manufacture of paneer Buffalo milk is standardized to 5.8% fat having 9.5% SNF (standardize the buffalo milk to a fat: SN F ratio of 1:1.65) (Fig. 1.6). Milk is heated to 90°C without holding (or 82°Cn with 5 minutes holding) in a jacketed vat and cooled down to 70°C. Coagulation is done at about 70°C by slowly adding 1% hot (70°C) citric acid solution with constant stirring till a clean whey is separated at (pH 5.30 to 5.35) and coagulum is allowed to settle for 5 minutes then whey is drained off. The curd so obtained is filled into hoops lined with cloth. Pressure is applied on top of the hoop at a rate of 0.5 to 1kg/cm2.

2.1.1 Method followed in commercial dairy plant





The pressed blocks of paneer are removed from the hoops and immersed in chilled water for 2-3 hrs. The chilled paneer is then removed from water to drain out. Finally paneer blocks are wrapped in parchment paper / polyethylene bags and placed in cold room at about 5 to 10°C.

2.1.2 Paneer form Cow Milk

Cow milk yields an inferior product in terms of body and texture. It is criticized to be too soft, weak and fragile and unsuitable for frying and cooling. Buffalo milk contains considerably higher level of casein and minerals particularly calcium and phosphorous, which tends to produce hard and rubbery body while cow milk produces soft and mellow characteristics. By replacing one third of buffalo milk with cow milk a good quality paneer can be made. Buffalo milk paneer retains higher fat, protein and ash content and lactose as compared to cow milk paneer.

To make paneer exclusively from cow milk certain modifications in the conventional procedure have to be made. Addition of calcium chloride at the rate of 0.08 to 0.1% to milk helps in getting a compact sliceable, firm and cohesive body and closely knit texture. A higher temperature of coagulation (85°-90°C) with optimum pH of coagulation of 5.20 to 5.25 keeps in producing good quality paneer from cow milk. However, at this pH of coagulation, moisture, yield and solids recovery are less.

2.1.2.1 Yield

The yield of paneer is dependent on the fat and solid not fat content of the starting milk, as well as the moisture, fat and protein retained in the paneer. Co precipitation of casein and whey proteins is the simplest way of recovering whey proteins and thus increasing the yield of paneer. Heat treatment of milk to 90°C is

necessary to achieve good yield. Generally a yield of 20-22 kgs of paneer from buffalo milk and 16-18 kg from cow milk.

2.2 Recent Developments in Paneer Manufacturing

2.2.1 Ohmic Heating:

Ohmic heating is an advanced thermal process and alternate method ofpasteurization. Ohmic heating is technique thatinvolves the passage of an alternating electricalcurrent through a food product, allowing thegeneration of heat inside it. Because of generationof heat, reduction in microbial counts in productis possible. Ohmic heating of buffalo milk at 75°Cfor 15 seconds results in lower microbial countsthan that of conventional heating of buffalo milk for paneer making. Salmonella is completelykilled by ohmic heating. This results in extension of shelf life of paneer. Ohmic heated paneer haslower hardness and higher sensory profile than paneer prepared using standard method.

2.2.2 Membrane Processing

Membrane technologylike Reverse Osmosis (RO), Ultrafiltration (UF),Microfiltration (MF) & Nanofiltration can beapplied for paneer manufacturing. Its advantagesare high recovery of solids, low energyrequirements, reduced bulk and minimal thermaldegradation of milk constituents. Paneer can bemade by employing UF. The process involves useof standardized buffalo milk (2% fat, 9.2% SNF)and concentrating to 27% TS by UF followedaddition of Glucono-δ-lactone at 0.9 % and fillingthe concentrated milk in retortable pouches andsubjecting to texturization process at 118°C for 5min.

TS recovery (95%) is more in in-packagedpaneer than the conventional product. It ledto increase in the yield of paneer by 25%. Theshelf life of in-packaged paneer is 3 months at35°C. Paneer also has superior sensory quality.Concentration of skim milk up to four times (4X)by UF along with the addition of 2.5% starterculture and 0.5% salt can reduce the hardness ofpaneer made from skim milk. For paneer making,pasteurization of milk is necessary in order tomake it safe from microbiological point of viewbut due to

that thermal degradation of nutrientstake place. This problem can be solved by useof alternate method known as microfiltrationas it is non thermal process. The MF retentatefrom standardized cow milk can be utilized forthe manufacture of paneer and CaCl2 is addedto the retentate @ 0.15%. Such additive helps inimproving the organoleptic and textural propertiesof resultant paneer.

Paneer can also be preparedby concentrating milk by RO to 1.5X (25% TS)and 2X (33% TS). This results in higher yieldby 2–3% on original milk quantity basis ascompare to control without affecting its sensoryproperties. When paneer is prepared from normalcow milk, then it is having hard, compact and drycharacteristics because of high salt content. NF of cow milk helps in overcoming these defects andproduce better quality paneer. Concentration ofcow milk to ~ 1.5 and 2.0X using NF membranesystem at 50°C result in reduction in salt contentof cow milk up to 74% in 1.5X concentrationwithout affecting other major constituents.

2.2.3 Use of Ultra Filtration in Paneer Manufacturing

Ultrafiltration (UF) can be used for the manufacture of paneer which offer advantages like access to mechanization, uniform quality, improved shelf life increase yield and nutritionally better product. I n this process milk after standardization and heating is passed through UF membrane where lactose, water and some minerals are removed as permeate. The concentrated mass which has about 40% total solids is cold acidified to get the desired pH. Up to this point the product is flowable and can be easily dispersed into containers with automatic dispersing machines.

The filled containers can then be subjected to texturization by passing through microwave tunnels. The resulting product has typical characteristics of normal paneer. The yields increases by about 25% which is due to the retention of good quality whey proteins and slightly increase in moisture content (moisture about 70%) yield is about 25%.

2.2.4 Dehydration

Moisture is responsible for growthof microorganisms in any product. So by reducingmoisture, reduction in microorganism is possible.Thus spoilage can be prevented and extension ofshelf life of product is possible. Dehydration ofpaneer cubes (2 cm3) to 15% moisture by keepingthem in hot air drier at 75°C for 4 h give shelf lifeof 2 months. The intermediate moisture paneerhas a shelf life of 4 months at room temperatureand can be reconstituted within 5 minutes.

2.2.5 Blast Freezing

Use of simple freezing of paneerfor its preservation purpose at –13°C and–32°C for 120 days, then its flavour and appearance are not affected but its body and texture become crumblyand fluffy on thawing due to large ice crystalsformation. This problem can be solved by use ofalternate method i.e., blast freezing which formssmall ice crystals in product. Blast freezing ofpaneer blocks (1.5 cm3) at -20°C enhance shelflife of paneer to more than one year at a storagetemperature of below -19°C.

2.2.6 Individual Quick Freezing (IQF)

IQF iscontinuous process in which the product is movingon the belt and is exposed to a blast of extremelycold air. This freezes it in a matter of seconds.This serves two purposes like there is no time forthe product to deteriorate and because it is frozeninstantly, the pieces do not stick to each other.The technology can be useful for preservation ofPaneer

2.3 Factors Affecting Quality and Yield of Paneer

2.3.1 Type of Milk

Paneer prepared from buffalo milk will have desirable frying properties, body and texture as compared to cow milk. The cow milk paneer is too soft, weak and fragile and during cooking it tend to disintegrate. However cow milk and buffalo milk at 50:50 yields better productthan cow milk. Paneer made from skim milk has chewy, rubbery and hard body.

2.3.2 Quality of Milk

To obtain paneer of good quality, the milk must be fresh and free from off flavour. Growth of psychotrophic organisms should be minimized to restrict the off-flavour development.Acidic milk having a titratable acidity of more than 0.20% lactic acid yields a product ofinferior quality. The milk with CO B positive and low acidity (sweet curdling) is not suitable forpaneer making. Paneer made from such milk has weak body and texture, more moisture,acidic smell and not safe for human consumption.

2.3.3 Type, Strength and Temperature of Coagulant

Product yield and moisture retention are directly influenced by the type and concentrationof the acid and the mode of delivery and blending into the hot milk. Citric acid is generallyused as a coagulant. Lemon or lime juice or vinegar imparts a typical flavour to theproduct. 1% solution of citric acid yields good quality of paneer. Sufficient acid is added gently but quickly blended with the milk (within 1 minute) to reach ideal pH of coagulation.Normally 1.8 to 2.0 kg citric acid is required for 1000L of milk coagulation High acidconcentration imparts acid flavour, hardness and causes greater solids loss. Whey culturedwith Lactobacillus acidophilus at a level of 2% and incubated overnight at 37°C can beused as a substitute for citric acid.

2.3.4 Heat Treatment of Milk

This is one of the technological requirements of the process which affect the sensory and microbiological quality of paneer. The objective of heating the milk is to prepare the milkfor rapid iso-electric precipitation, control the moisture content, develop typical body andtexture, create conditions conducive to the destruction of pathogenic and other microflorapresent in milk and ensure safety as well as keeping quality of the final product. Themilk is heated to 90°C without holding or 82°C for 5 minutes in order to maximize thetotal solids recovery. Whey proteins especially ß-lactoglobulin and a-lactalbumin form acomplex with Ķ-casein and retain with the curd thus increase the yield of the product. Thehigh heat treatment imparts desirable cooked flavour by controlled liberation of sulphydrylcompounds.

2.3.5 Coagulation Temperature

It influences the moisture content of the paneer, an increase in temperature from 600C to 860C decreases the moisture in paneer from 59 to 49%. At 700C, paneer has the bestorganoleptic and frying quality in terms of shape retention, softness and integrity.

2.3.6 pH of Coagulation

The optimum pH of coagulation of milk at 70°C is 5.30-5.35 for better product qualityand maximum recovery of solids when made from buffalo milk. The moisture retention in paneer decreases with the fall in pH and consequently the yield also decreases. At pHmore than 5.35 the paneer is very soft with fragile and crumbly body. Optimum pH when cow milk is used for paneer preparation is 5.2.

PANEER PRESS MACHINE

CHAPTER 3

PACKAGING OF PANEER

3.1 Packaging of paneer

The package of paneer should be neat and attractive. The paneer should have uniform, pleasing white colour with greenish tinge for buffalo milk paneer and light yellow for cow milk paneer.The flavour of paneer is a characteristics blend of the flavour of heated milk curd and acid. The flavour of the high-grade paneer, should be pleasing mild acid, slight sweet and nutty. A desirable body of the paneer is the one that is neither too firm nor too soft. It should be sufficiently firm to hold its shape during cutting/slicing yet tender enough not to resist crushing during mastication. The texture of the high-grade paneer should be compact (close knit),smooth and velvety.

Packaging of paneer should provide protection from the following

- Heat
- Light
- O2
- Microbial contamination
- Moisture loss
- Odour absorption
- Acid resistance
- Oil and grease resistance.

3.2 Hurdle Technology & Modified Atmosphere packaging for paneer

Shelf life of paneer canbe extended by employing hurdle technology andmodified atmosphere packaging. Paneer cubes aredipped in solution containing NaCl, citric acid andpotassium sorbate (0.1%) which act as hurdles.The a_w is reduced by using NaCl and citric acid at 3 and 0.1% from 0.994 to 0.970 and pH from5.5 to 5.1, respectively. MAP of paneer is done by using a mixture of CO2 and N2 in proportion of 50:50 and packed in the package (PET/PE).

The HT adopted paneer with MAP extend theshelf-life from 1 to 12 days at room temperature (30±1°C) and 6 to 20 days at refrigeration (7±1°C) temperature.

3.2.1 Heat Sterilization

Shelf life of paneer can alsobe extended by heat sterilization. In this paneeris packed in tin along with water/brine andsterilised in an autoclave at 1 kg/cm2 for 15 min.Such paneer lasts for 4 months. But perceptionof oxidized flavour renders product unacceptableafterwards. A slight amount of cooked flavour isaccompanied by Maillard browning, the intensityof which increases slightly during storage.

3.2.2 Preservatives

Paneer can be stored for only 6days at 10°C without much deterioration in itsquality, though the freshness of the product is lostafter 3 days. Paneer cannot be stored for more than
1 day at room temperature in tropical countries.Therefore it is necessary to add preservatives inorder to extend shelf life of paneer

3.2.3 Coconut milk

Coconut milk is rich in severalminerals like Ca, P, Fe, Se, Zn, K, and Mg and itis rich source of lauric acid which is only foundin mother milk. Addition of 10% of coconut milk(25% fat) to skim milk results in highly acceptablequality paneer.

3.2.4 Buttermilk

Buttermilk is a by-product of butter means of utilization of by-product. When paneer isprepared from sour buttermilk then two steps arenecessary i.e., neutralization of sour butter milkto 0.15% titratable acidity by sodium bicarbonateand washing of curd with hot water (72°C) beforepressing. This mitigates the problems of self-coagulation of milk during heating, developmentof acidic smell, sour taste and grainy texture in paneer industry.

3.2.5 Stabilizers

Various stabilizers can be addedfor making paneer. These improve functionalcharacteristics of paneer like water bindingcapacity, consistency, yield, total solids recovery
(fat, FDM) etc. This helps in reduction in the cost of paneer manufacture.

3.2.6 Fruit juices

Amla juice can be used as coagulantfor manufacturing of paneer. This is means offortification of paneer with Vitamin C and iron.Amla juice diluted with water to 1:1.21 can be
used as coagulant for paneer making with increased overall acceptability.

3.2.7 Herbs

Incorporation of coriander and mint @10% by weight in paneer improved the overallacceptability score and yield of paneer.

3.2.8 Ready to Serve spiced paneer

For making easy conveniences in use of paneer by consumer, it is necessary to develop ready to serve spiced paneer.This can be prepared by marinating cubes of paneer with 10 % ginger, 5 % garlic, 1.25 % red pepper and 0.25 % black pepper. It is packed and heat treatment is given at 15 psi for 10 minutes. Maturation time of 60 min & heat treatment for10 min is found most suitable for making RTS spiced paneer.

List of preservatives used in paneer manufacturing

Stabilizers	Added rate	Function
Sago powder	0.3 %	Desirable quality Paneer
Bhendi gum	0.45 %	Reduce cost
Lesser yam burk powder	0.30 %	
Sodium alginate	0.10%	Increase yield
Carrageenan	0.15%	
Pre-gelatinized starch	0.15%	
Pre-gelatinized starch along with high coagulation temp (90°C)	0.1%	Improve body, texture & yield of filled paneer
CMC	0.1%	Reduce oil uptake in deep fat fried paneer during frying

List of stabilisers used for paneer making

Preservatives	Added rate	Control	Extended shelf life
Lactoferrin	Dip in 20 ppm solution	2 d at 30°C, 7 d at 4°C	7 d at 30°C, 15 d at 4°C
Nisin	Dip in 12 ppm solution	7 d at 7±1°C	12 d at 7±1°C
Brining	Dip in 5% brine solution	6 d at 8-10°C	20 d at 8-10°C
Black pepper	0.6%	14 d at 7°C	21 d
Cardamom	0.6%		21 d
Clove	0.6%		<28 d
Cinnamon	0.4 %	7 d at 7°C±1°C	>28 d
Turmeric	0.6 %	14 d at 7°C	12 d on at 7°C±1°C
Essential oil of cardamom	0.01%	-	By 10 d
Sorbic acid adding to milk & wrapping in sorbic acid coated paper	0.15%	-	36 d at room temp.

3.3 Packaging materials used for packing paneer

- Vegetable parchment: paneer can keep well 3-4 days at 21-27°C, 10 days at refrigerated storage.
- Vegetable paper parchment treated with Na-propionate increases the keeping quality of paneer.
- Wax/plastic coated paper: 55-60 gsm **/** 0.02 mm ---0.009-0.02 mm
- Poster paper/Al-foil/LDPE - 150 gauze
- MST Cellulose (300)/LDPE – 150 gauze
- Poster paper/Al-foil (0.02 mm)/LDPE
- Al-foil 0.009 mm, 4-5°C 100% RH Poster paper laminate (0.02 mm)
- Al-foil 0.009 mm is found superior to MST-300/LDPE which has minimum keeping quality.

Vegetable parchment paper and PE bags are generally used.PE gives greater keeping quality (7 days at 5°C) than that given by vegetable parchment Paper. The Cryovac system using shrink film is being successfully used.Retortable tins are also used. Long life can be given by Metallized polyester or Nylon –PET / METPET/ PE or Aluminium foil or Nylon or LDPE/LLD.

Paneer is packed in tins along with the brine. These tins are sterilized and it may behaving a slight cooked flavour and maillard browning which will increase with storageperiod. Paneer is also vacuum packed in laminated pouches to have an extended shelf life. Paneer is also packed in EVA/EVA/PVDC/EVA film under vacuum which mayhave a shelf life of 3 months under refrigeration.

3.3.1 Shrink wrapping machines

Shrink wrapping cannotes packing of one orseveral articles with a thermoplastic film which when subjected to heat shrinks andform a tight wrap around the object. Shrink wrap, also shrink-wrap or shrink film, is amaterial made up of polymer plastic film. When heat is applied to this material itshrinks tightly over whatever it is covering. Heat can be applied with a hand held heatgun (electric or gas) or the package can pass through a heat tunnel on a conveyor.Shrink wrap is commonly used as an overwrap on many types of packaging, includingcartons, boxes, beverage cans and pallet loads. A variety of products may be enclosed in shrink wrap to stabilize the products, unitize them, keep them clean, add a degreeof tamper resistance, etc. It can be the primary covering for some foods such as cheeseand Paneer.

The most commonly used shrink wrap is polyolefin. It is available in a variety ofthicknesses, clarities, strengths and shrink ratios. The two primary films are eithercrosslinked, or non crosslinked. Other shrink films include PVC and several othercompositions like LDPE, LLDPE, PP, EVA etc. Coextrusions and laminations areavailable for specific mechanical and barrier properties for shrink wrapping food.In shrink-wrap machine a loose plastic film pouch is made on a wrapping machine.The product is placed in this pack which passes through a heated tunnel in which thefilm shrinks and adheres closely to the product. The film is generally heated by hotair, infrared rays or hot water. Shrink wrapping is also used to hold together severalsingly wrapped products/ packages in a multiple unit package.

3.3.2 Advantages of shrink wrap packaging:

1. All types of items of regular / irregular shapes and sizes can be shrink wrapped.

2. Small items can be utilized and stacked one on top of the other
3. Requires minimum packaging material and operation.
4. Simple operation
5. Easy stacking
6. Enable unit packaging or packaging in groups.

3.3.3 Vacuum Packaging

Vacuum packaging is done for products like cheeseblocks, paneer etc, where there is problem of microorganisms growing on thesurface. The product is placed in a plastic pouch and placed in the vacuumpackaging machine for the creation of vacuum in the pack and subsequent sealingtakes place in the machine itself.

3.3.4 Physico-Chemical Changes during Manufacturing

The phenomenon of coagulation involves formation of large structural aggregates and network of protein in which milk fat get embedded. Acid and heat treatment causes the physical and chemical changes in casein. Heating causes the interaction of ß-lactoglobulin with 8-casein and complex formed between ß-lactoglobulin and a-lactalbumin interact with 8-casein. Acidification initiates the progressive removal of tri-calcium phosphate from the surface of the casein and it gets converted into mono-calcium phosphate. Further calcium is progressively removed from calcium hydrogen caseinate to form soluble calcium salt and casein. Colloidal dispersion of discrete casein micelles changes into large structural aggregates of casein. Under such circumstance dispersion is no longer stable, casein gets precipitated and forms coagulum. Fat will be embedded in the casein network.

3.4 Undesirable Sensory Characteristics of Paneer

Flavour defects and their characteristics

1. Acid/Sour: This flavour defect results from use of either excessive acidic milk for paneer making or use of excessive amount of coagulating acid/sour whey. This flavour is usually very pronounced and may be detected by passing the freshly cut piece of

paneer under the nose. When a portion is tasted, a "quick" flavour sensation is noted, which soon disappears, leaving the mouth free of any off-flavour sensations.

2. Putrid/Cheesy: If paneer is held too long at warm temperature protein-splitting organisms may breakdown the protein resulting in a cheesy, putrid flavour. The presence of this flavour is easily detected from the very first, due both to its intensity and to its cheesy characteristics. From the placing of the sample and its later expectoration to the last taste, this flavour is noticeable. The flavour is persistent and the mouth fails to clean up.

3. Rancid: Rancid flavour is the result of fat hydrolysis due to lipase action in paneer during storage at room temperature or above. The rancid flavour resembles somewhat to the strong, bitter, disagreeable flavour of darkened, decayed nutmeats. The presence of this flavour is easily detected both by the sense of smell and by the sense of taste. The rancid sample gives characteristics aftertaste and mouth fails to clean up.

4. Stale: When paneer is held too long at low temperature (5°C) it often becomes stale.The stale flavour is easily detected both by the taste and smell. The flavour is very prominent and has characteristics after taste.

5. Bitter: The bitter flavour is normally associated with the rancidity It may also be dueto the impurities in the coagulating acid used. The bitter flavour can easilybe detected by sense of taste. It persists even after sample has been expelled from the mouth.

6. Musty: Musty flavour may be caused by storing paneer in damp, musty smelling room; or due to mold growth The flavour is prominent and is noticeable even when the sample has been expectorated.

7. Yeasty: The yeast contamination during cold water immersion of paneer or during packaging and excessive long storage at low temperature gives yeasty flavour to paneer. This flavour is easily detected by its typical fruity, yeasty and slightly fragrant aroma, which is apparent when the sample is first taken into the mouth.

8. Flat: Then paneer that lacks characteristics, pleasing mild-acid, slightly sweet nutty flavour is criticized as flat.

9. Foreign: The exposure of paneer to the fumes from the combustion or burning of kerosene, diesel or petrol or contamination of paneer with fly repellants, disinfectants,etc. may cause foreign flavour in the paneer.

10. Smoky: Smoky off-flavour in paneer is often encountered when smoky fire is used for boiling and simmering of milk.

11. Feed/ Weed: This off-flavour can be carried over to paneer ifit is present in milk, feeding of aromatic feeds or obnoxious weeds shortly before milking often taints the milk. These flavours can easily be detected by smelling.

12. Unclean/Utensil: The unclean or utensil flavour is suggestive ofuncleanli'1ess or lack of freshness. It is caused by storing milk / paneer in improperly washed cans or utensils. The off flavour is apparent as soon as the sample reaches the palate. It also lingers a short time after the paneer is expectorated.

3.4.1 Body and texture defects

1. Hard: The too firm or hard body is caused due to the use of lo\y fat milk or due to low moisture content of paneer as a result of faulty production techniques. The hard body is the one, which resists crushing during mastication.

2. Soft: The soft bodied paneer is due to high moisture content resulting from delayed straining, or use of low coagulation temperature.

3. Pasty: The excessive retention of moisture in the product often gives pasty texture. The low coagulation temperature and lower coagulation pH often give fine curd particles which clog the pores of drain cloth and result in a product that has pasty texture. The presence colostrums in milk also tend to give pasty texture.

4. Crumbly: A crumbly-bodied paneer is the one, which tends to fall apart when sliced or pressed between the fingers. The defect is closely associated with the mealiness. The frozen storage of paneer often results in crumbly-bodied paneer.

5. Rubbery/Chewy: The rubbery bodied paneer is the one which resists pressure if squeezed between the thumb and forefingers and shows a slight tendency to spring

back when the pressure is released. It also shows considerable resistance to crushing during mastication.

6. Mealy/Coarse: Mealy or coarse texture may be caused due to use of low fat, high acid milk, or use of too high coagulation temperature or too low coagulation pH. Frozen storage of paneer may also give a coarse texture. Mealy textured paneer gives com meal like sensation during chewing of paneer.

7. Open: Open or loose texture is manifest by mechanical holes which are characterized by their irregular, annular shape and size. These holes result from improper matting of curd due to insufficient pressing.

3.4.2 Defect of colour and appearance

1. Dull: This defect is easily recognized by its dead, unattractive appearance. Such a defect suggests uncleanliness in manufacture.

2. Dry Surface: Use of milk containing excessive amount of fat gives paneer with dry surface such a product has unattractive appearance.

3. Surface skin: A long time exposure of paneer to atmosphere air results into drying of surface and formation of surface skin.

4. Visible dirt / foreign matter: The defect occurs due to several reasons such as incorrect or no straining of milk, dirty utensils, dirty/windy surroundings during manufacture or handling of paneer and transportation aunpacked / poorly packed product.

5. Mouldy surface: Long storage of paneer in humid atmosphere coupled with higher moisture content flavours mold growth on the surface. The product with such a defect is inedible and should be rejected.

3.4.3 Defect of packaging

The paneer produced in unorganized sector is normally sold, at present, in an unpacked condition. The paneer produced by organized sector is packed in modern

packages such as polyethylene pouches, laminated pouches, etc. Some defects in packaging encountered are soiled / greasy packages or damaged packages. These defects are obvious.

With increasing demand for paneer,advancement in its manufacture is needed. Thiswill result in increased yield of paneer, reductionin production cost, and increase in shelf life ofpaneer as well as production of new varieties ofpaneer for health conscious people will be possible.Various advanced techniques can be applied inthis venture but main problem with application ofsuch techniques is consumer awareness regardingchanges in textural & sensory quality of paneer.In this way, increase in paneer market as well asits availability to consumer at low cost throughout the year may also be possible.

CHAPTER 4

FSSAI STANDARDS AND SAFETY

4.1 FSSAI STANDARDS, REGULATIONS, LICENSING & FOOD SAFETY OF PANEER

1.6.1 Unripened cheese

Unripened cheese, including fresh cheese, is ready for consumption soon after manufacture. Such as cottage cheese (a soft, unripened, coagulated curd cheese), creamed cottage cheese (cottage cheese covered with a creaming mixture), cream cheese (rahmfrischkase, an uncured, soft spreadable cheese) mozzarella and scamorza cheeses and paneer (milk protein coagulated by the addition of citric acid from lemon or lime juice or of lactic acid from whey, that is strained into a solid mass, and is used in vegetarian versions of, e.g. hamburgers). Includes the whole unripened cheese and unripened cheese rind (for those unripened cheeses with a “skin” such as mozzarella)**.** Most products are plain, however, some such as cottage cheese and cream cheese, may be flavoured or contain ingredients such as fruit, vegetablesor meat. Excludes ripened cream cheese, where cream is a qualifier for a high fat content.

2.1.16 Standard for *Chhana* and *Paneer*

This Standard applies to *Chhana* and *Paneer* as defined in the item 1 of this sub regulation.

1. Definition. -

Chhana or *Paneer* means the product obtained from any variant of milk**, with or without added milk solids, by precipitation with permitted acidulants and heating.

2. Essential Composition and Quality Factors.-

(a) Raw materials.-

(i) Milk
(ii) Milk solids

(b) Permitted ingredients.-

(i) Acidulants such as lactic acid, citric acid, malic acid, vinegar, glucono delta lactone, sour whey;

(ii) spices and condiments (for flavoured *paneer* only);
(iii) salt (for flavoured *paneer* only).

(c) Composition. –

The product shall conform to the compositional specifications provided in the table below:–

[62][Parameter	*Chhana or Paneer*	*Medium fat Chhana or Paneer*	*Low fat Chhana or Paneer*
Moisture, maximum, %, (m/m)	65.0 (for *Chhana)* 60.0 (for *Panner)*	65.0 (for *Chhana)* 60.0 (for *Panner)*	70.0 (for *Chhana)* 70.0 (for *Panner)*
Milk fat, %, (m/m), dry matter basis	50.0 (minimum)	More than 20.0 and less than 50.0	20.0(maximum)]

3. Food Additives. –

For products covered under this standard, specific food additives specified in Appendix 'A' of these regulations may be used and only within the limits specified.

4. Contaminants, Toxins and Residues. –

The products shall comply with the limits stipulated in the Food Safety and Standards (Contaminants, toxins and Residues) Regulations, 2011.

5. Hygiene. –

(a) The products shall be prepared and handled in accordance with the requirements specified in Schedule 4, as applicable, of the Food Safety and Standards (Licensing and Registration of Food Businesses) Regulations, 2011 and such guidelines as specified from time to time under the provisions of the Food Safety and Standard Act, 2006.

(b) The products shall conform to the microbiological requirements specified in Appendix 'B' of these regulations.

6. Labelling. –

(a) The name of the product shall be '*Chhana*', '*Paneer'*, 'Low Fat *Chhana*' or Low Fat *Paneer*', 'Medium Fat *Chhana*' or 'Medium Fat *Paneer*' depending upon the composition as per the sub-item (c) of item 2.

(b) 'Low Fat *Chhana*'/'Medium Fat *Chhana*' and 'Low Fat *Paneer*'/'Medium Fat *Paneer*' shall be sold in sealed package only and shall bear the following label declarations depending upon the respective product composition:

"LOW FAT *PANEER* or LOW FAT *CHHANA*" Or "MEDIUM FAT *PANEER* or MEDIUM FAT *CHHANA*"';

(c) Every package of Medium Fat *Channa* and Medium Fat *Paneer* shall bear the following label, namely:–

"Contains …….. % Milk Fat"

(d) In addition to the above-mentioned labelling requirements, the provisions of the Food Safety and Standards (Packaging and Labelling) Regulations, 2011, shall apply to prepackaged product.]

7. Method of Sampling and Analysis.-

The methods of sampling and analysis mentioned in the manuals as specified by the Food Safety and Standards Authority of India from time to time shall be applicable.

Food Category System	Food Category Name	Food Additive	INS No	Recommended maximum level	Note
1.6.1	**Unripened cheese**				
		SORBATES		2,000 mg/kg	42, 223 (for channa and paneer only)

		Nisin	234	12.5 mg/kg	(for channa and paneer only)
		Propionic acid, sodium propionate, calcium propionate,	280, 281, 282, 283	3,000 mg/kg	(for channa and paneer only)(singly or in combination, expressed as propionic acid)
		Glucono delta lactone	575	GMP	(for channa and paneer only)

Microbiological Standards for Milk and Milk Products –Process Hygiene Criteria

Sr. No.	Product Description[1]	Aerobic Plate Count				Coliform Count[4]				*Staphylococcus aureus* (Coagulase positive)				Yeast and Mold Count				*Escherichia coli*			
		Sampling Plan		Limit (cfu)		Sampling plan		Limit (cfu)		Sampling plan		Limit (cfu)		Sampling plan		Limit (cfu)		Sampling plan		Limit (cfu)	
		n	c	m	M	n	c	m	M	n	c	m	M	n	c	m	M	n	c	m	M
10	Processed Cheese/ Cheese Spread	5	2	$2.5x10^4$ /g	$5x10^4$/ g	5	0	<10/g	NA	5	0	<10/g	NA	NA	NA	NA	NA	NA	NA	NA	NA
11	All other cheeses categories including fresh cheeses / Cheddar / Cottage /Soft /Semi Soft	NA	NA	NA	NA	5	3	$1x10^2$/g	$5x10^2$ /g	5	3	10/g	$1x10^2$/g	5	3	$1x10^2$/g	$5x10^2$ /g	5	0	<10 /g	NA
12	Fermented Milk Products	NA	NA	NA	NA	5	2	10/g	$1x10^2$ /g	5	2	10/g	$1x10^2$/g	5	3	50/g	$1x10^2$ /g	5	0	Absent/ g	NA
13	Paneer/ Chhana/ chhana based sweets	5	3	$1.5x10^5$ /g	$3.5x10^5$/g	5	3	10/g	$1x10^2$ /g	5	3	10/g	$1x10^2$/g	5	3	50/g	$1.5x10^2$/g	5	0	<10/g	NA
14	Khoa/ Khoa based sweets	5	3	$2.5x10^4$ /g	$7.5x10^4$/g	5	2	50/g	$1x10^2$ /g	5	3	10/g	$1x10^2$/g	5	3	10/g	50/g	5	0	<10/g	NA
	Test Methods[7]	**IS 5402/ ISO: 4833**				**5401 Part 1/ISO : 4832**				**IS 5887 : Part 2 or IS 5887 Part 8 (Sec 1)/ ISO : 6888-1 or IS 5887 Part 8 (Sec 2)/ ISO 6888-2**				**IS:5403 or ISO : 6611**				**IS 5887 : Part 1 or ISO : 16649-2**			

Sr. No	Product Description1	Salmonella sp.				*Listeria monocytogenes*				*Bacillus cereus*				Sulphite Reducing Clostridia				*Enterobacter sakazakii*			
		Sampling plan		Limit (cfu)		Sampling plan		Limit (cfu)		Sampling plan		Limit (cfu)		Sampling plan		Limit (cfu)		Sampling plan		Limit (cfu)	
		n	c	m	M	n	c	m	M	n	c	m	M	n	c	m	M	n	c	m	M
11	All other cheeses categories including fresh cheeses / Cheddar / Cottage /Soft /Semi Soft etc	5	0	Absent/25g	NA	5	0	Absent/25 g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12	Fermented Mlk Products-	5	0	Absent/25g	NA	5	0	Absent/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	/Paneer/ Chhana/ chhana based sweets	5	0	Absent//25g	NA	5	0	Absent/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14	Khoa/ Khoa based sweets	5	0	Absent/25g	NA	5	0	Absent/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Test Methods[7]	**IS 5887 : Part 3/ ISO : 6579**				**IS 14988 : Part 1/ ISO:**				**IS 5887 (Part 6) /ISO:7932**				**ISO : 15213**				**ISO/TS 22964**			

4.2 **Food Safety**

Part I - General Hygienic and Sanitary practices to be followed by Petty Food Business Operators applying for Registration (See Regulation 2.1.1(2))

SANITARY AND HYGIENIC REQUIREMENTS FOR FOOD MANUFACTURER/ PROCESSOR/HANDLER

The place where food is manufactured, processed or handled shall comply with the following requirements:

1. The premises shall be located in a sanitary place and free from filthy surroundings and shall maintain overall hygienic environment. All new units shall set up away from environmentally polluted areas.

2. The premises to conduct food business for manufacturing should have adequate space for manufacturing and storage to maintain overall hygienic environment.

3. The premises shall be clean, adequately lighted and ventilated and sufficient free space for movement.

4. Floors, Ceilings and walls must be maintained in a sound condition. They should be smooth and easy to clean with no flaking paint or plaster.

5. The floor and skirted walls shall be washed as per requirement with an effective disinfectant the premises shall be kept free from all insects. No spraying shall be done during the conduct of business, but instead fly swats/ flaps should be used to kill spray flies getting into the premises. Windows, doors and other openings shall be fitted with net or screen, as appropriate to make the premise insect free The water used in the manufacturing shall be potable and if required chemical and bacteriological examination of the water shall be done at regular intervals at any recognized laboratory.

6. Continuous supply of potable water shall be ensured in the premises. In case of intermittent water supply, adequate storage arrangement for water used in food or washing shall be made.

7. Equipment and machinery when employed shall be of such design which will permit easy cleaning. Arrangements for cleaning of containers, tables, working parts of machinery, etc. shall be provided.

8. No vessel, container or other equipment, the use of which is likely to cause metallic contamination injurious to health shall be employed in the preparation, packing or storage of food. (Copper or brass vessels shall have proper lining).

9. All equipments shall be kept clean, washed, dried and stacked at the close of business to ensure freedom from growth of mould/ fungi and infestation.

10. All equipments shall be placed well away from the walls to allow proper inspection.

11. There should be efficient drainage system and there shall be adequate provisions for disposal of refuse.

12. The workers working in processing and preparation shall use clean aprons, hand gloves, and head wears.

13. Persons suffering from infectious diseases shall not be permitted to work. Any cuts or wounds shall remain covered at all time and the person should not be allowed to come in direct contact with food.

14. All food handlers shall keep their finger nails trimmed, clean and wash their hands with soap, or detergent and water before commencing work and every time after using toilet. Scratching of body parts, hair shall be avoided during food handling processes.

15. All food handlers should avoid wearing, false nails or other items or loose jewellery that might fall into food and also avoid touching their face or hair.

16. Eating, chewing, smoking, spitting and nose blowing shall be prohibited within the premises especially while handling food.

17. All articles that are stored or are intended for sale shall be fit for consumption and have proper cover to avoid contamination.

18. The vehicles used to transport foods must be maintained in good repair and kept clean.

19. Foods while in transport in packaged form or in containers shall maintain the required temperature.

20. Insecticides / disinfectants shall be kept and stored separately and `away from food manufacturing / storing/ handling areas.

4.3 LABELLING

Labeling Requirements

All food products sold in India that are prepackaged are required to comply with the Food Safety and Standards (Packaging and labelling) Regulations, 2011. The Food Safety and Standards Regulation, 2011 is a notification issued by the Food Safety and

Standards Authority of India under the Ministry of Health and Family Welfare. In this article, we look at the regulations pertaining to food labelling in India.

Applicability of Food Labelling Regulations

The food labelling regulations require all “Prepackaged” or “Pre-packed food” to comply with the labelling regulations in India. As per the rules, prepackaged food means food, which is placed in a package of any nature, in such a manner that the contents cannot be changed without tampering it and which is ready for sale to the consumer.

General Labelling Requirements

The following labelling requirements must be complied with by all prepackaged food sold in India:

- 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.
- 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;

Nutritional Information

Nutritional Information or nutritional facts per 100 gm or 100ml or per serving of the product must be given on the label along with the following information:

- energy value in kcal;

- the amounts of protein, carbohydrate (specify the quantity of sugar) and fat in gram (g) or ml;
- the amount of any other nutrient for which a nutrition or health claim is made:
- It is important to note that any “health claim” or “nutrition claim” or “risk reduction” claim made in the label will be thoroughly scrutinized by the FSSAI authorities. Hence, any such claim must be validated by test data. As per the rules, the following is the definition for “health claim”, “nutrition claim” and “risk reduction” claim:
- “Health claims” means any representation that states, suggests or implies that a relationship exists between a food or a constituent of that food and health and include nutrition claims which describe the physiological role of the nutrient in growth, development and normal functions of the body, other functional claims concerning specific beneficial effect of the consumption of food or its constituents, in the context of the total diet, on normal functions or biological activities of the body and such claims relate to a positive contribution to health or to the improvement of function or to modifying or preserving health, or disease, risk reduction claim relating to the consumption of a food or food constituents, in the context of the total diet, to the reduced risk of developing a disease or health-related condition;
- “Nutrition claim” means any representation which states, suggests or implies that a food has particular nutritional properties which are not limited to the energy value but include protein, fat carbohydrates, vitamins and minerals;
- “Risk reduction” in the context of health claims means significantly altering a major risk factor for a disease or health-related condition;

Veg or Non-Veg Symbol

All packaged food that is “Non-Vegetarian” must have a symbol that is a brown colour filled circle inside a square with a brown outline. If a food contains only egg as a non-vegetarian ingredient, then the manufacturer may provide a declaration that the product contains only egg and add the non-vegetarian symbol.

Non-Veg Symbol

Packaged vegetarian food should have a symbol that consist of green colour filled circle inside a square with green.

Veg Symbol

Information Relating to Food Additives, Colours and Flavours

Food additives contained in the food product must be mentioned along with class titles along with the specific names or recognized international numerical identifications. Addition of colouring matter should be mentioned on the label along with certain statements like “CONTAINS PERMITTED NATURAL COLOUR(S)”, just beneath the list of the ingredients on the label. In case of addition of extraneous flavouring agent, then it should be mentioned in a statement like “CONTAINS ADDED FLAVOUR” just beneath the list of ingredients on the label.

Name and Complete Address of the Manufacturer

The name and complete address of the manufacturer must be mentioned on every package of food. In the case of imported food, the package must contain the name and complete address of the importer in India.

Net Quantity

All packaged food must carry the bet quantity by weight or volume or number, as the case may be. The net quantity of the commodity contained in the package must exclude the weight of the wrappers and packaging materials.

Lot Number of Batch Identification

A lot number or batch number or code number must be mentioned on all packaged food so that it can be traced while manufacturing and distribution. Only bread and milk including sterilised milk are not required to comply with this regulation.

Date of Manufacture or Packing

The date, month and year in which the commodity is manufactured, packed or pre-packed must be mentioned on the label. In the case of food products having a shelf life of more than three months, then the month and the year of manufacture can be given with the “Best Before Date”. In case of products having a shelf life of fewer than three

months, the date, month and year in which the commodity is manufactured or prepared or pre-packed must be mentioned on the label with best before date.

Country of Origin for Imported Food

For imported food, the country of origin of the food should be declared on the label of the food. In case a food product undergoes processing in a second country which changes its nature, the country in which the processing is performed should be considered to be the country of origin for the purposes of labelling.

Instructions for Use

Instructions for use, including reconstitution, should be included on the label, if necessary, to ensure correct utilization of the food.

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