



## **DETAILED PROJECT REPORT**

### **CHEESE MAKING UNIT**

### **UNDER PMFME SCHEME**



National Institute of Food Technology Entrepreneurship and Management

Ministry of Food Processing Industries

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**1. PROJECT SUMMARY**

1. Name of the proposed project	:	Cheese Making Unit
2. Nature of proposed project	:	Proprietorship/Company/Partnership
3. Proposed project capacity	:	108000 Kg/annum (40,45,50,55&60% capacity utilization in 1 <sup>st</sup> to 5 <sup>th</sup> Year respectively)
4. Raw material	:	Milk, Coagulant, Starter culture, Rennet
5. Major product outputs	:	Cheese
6. Total project cost	:	Rs. 33.61 Lakh
• Land development, building & Civil Construction	:	Nil
• Machinery and equipment's	:	Rs. 23.05 Lakh
• Miscellaneous Fixed Assets	:	Rs. 3.00 Lakh
• Working capital	:	Rs. 7.56 Lakh
7. Means of Finance		
• Subsidy (max 10lakhs)	:	Rs. 9.12 Lakh
• Promoter's contribution (min10%)	:	Rs. 3.35 Lakh
• Term loan	:	Rs. 14.33 Lakh
• Working Capital Requirement	:	Rs. 6.81 Lakh
8. Profit after Depreciation, Interest & Tax		
• 1 <sup>st</sup> year	:	Rs. 2.36 Lakh
• 2 <sup>nd</sup> year	:	Rs. 4.99 Lakh
• 3 <sup>rd</sup> year	:	Rs. 7.47 Lakh
• 4 <sup>th</sup> year	:	Rs. 9.34 Lakh
• 5 <sup>th</sup> year	:	Rs. 11.88 Lakh
9. Average DSCR	:	Rs. 2.92
10. Term loan repayment	:	5 Years with 6 months grace period

## **2. ABOUT THE PRODUCT**

### **2.1. PRODUCT INTRODUCTION:**

Cheese is a fresh or matured solid or semi-solid product made by coagulating milk, skim milk or partly skimmed milk, whey, cream, or buttermilk, or any combination of these materials, with the help of rennet or other suitable coagulating agents, and then draining the whey.

### **PRODUCT USES**

Cheeses are used in various Indian cuisines i.e. Pizza, burger, sandwiches etc. Some of the important uses of cheese are:

- As a cheese course for lunch or dinner
- As a featured item on a cold buffet
- As a cooking cheese
- To add to a basic cream sauce to make a cheese sauce
- To include in salads, snacks etc.

### **2.2. MARKET POTENTIAL:**

The market for cheese is being driven by increased awareness of good sources of nutrients like calcium, phosphorus, zinc, vitamin A, and vitamin B12, all of which are important for building strong bones, as well as certain high-quality proteins that provide essential building blocks for strong muscles. Furthermore, the growing influence of western cuisines, rising disposable

incomes, and the introduction of a variety of flavoured cheese products, such as pepper, garlic, red chilli flakes, and oregano pickle, which cater to a variety of tastes and preferences of consumers worldwide. Animal sources cheese has the largest share of the segmentation font by category.

During the period 2015-2020, India's cheese market grew at a rapid pace. Because India is currently the world's largest producer of milk, the cheese market in India has a lot of room for growth. Consumers are shifting away from paneer and toward cheese as the influence of western cuisines grows and disposable incomes rise, increasing cheese demand in the country. In addition, manufacturers are introducing a variety of flavored cheese products, such as pepper, garlic, red chilli flakes, and oregano pickle, to cater to Indian consumers' diverse tastes and preferences. Between 2021 and 2026, the Indian cheese market is expected to grow at a CAGR of 24.80%. Cheese is commonly found in fast food items such as pasta, pizzas, burgers, sandwiches, wraps, tacos, cakes, garlic bread, and other baked goods, but it is also found in traditional Indian dishes such as dosa, uttapam, and parathas. The fast-food industry is experiencing healthy growth as a result of the growing working population and their changing eating habits, which is increasing demand for cheese.

Aside from that, many global players are now investing in the Indian cheese market, thanks to an increase in the number of organized retail outlets. Furthermore, several manufacturers are launching marketing campaigns to raise consumer awareness of the benefits of cheese through various advertising mediums such as newspapers, television, and social media platforms. These factors are expected to increase cheese consumption in the coming years.

### **2.3. RAW MATERIAL DESCRIPTION:**

- Milk
- Coagulant
- Starter culture
- Rennet
- Packaging material

### **3. PROCESS FLOW CHART**

#### **Selection of Milk**

The quality of milk has a significant impact on the cheese produced from it. The composition of the milk, particularly the fat, protein, calcium, and pH, has a significant impact on the composition of cheese.

Chemical taints and free fatty acids that cause off-flavors in cheese, as well as antibiotics that inhibit bacterial cultures should be avoided in the milk. The species of dairy animals from which milk is obtained is a major cause of variation in the characteristics of cheese. Cattle, buffalo, sheep, and goats are the most common dairying species, producing 85 percent, 11 percent, 2 percent, and 2 percent of commercial milk, respectively.

#### **Storage of Milk**

Milk for cheese is normally chilled to 4-5°C immediately after collection in modern commercial practice to prevent the development of an undesirable psychotropic micro flora. Milk's shelf life in cold storage also causes physicochemical changes (e.g. shift in calcium phosphate equilibrium and dissociation of some micellar caseins), which have an adverse effect on its cheese-making properties.

#### **Pasteurization**

Pasteurization of cheese milk became common around 1940, primarily for public health reasons, but also to ensure a more consistent bacteriological quality in the milk supply. Pasteurized milk is commonly used, particularly in large manufacturing facilities. Pasteurization changes the micro flora in the cheese and makes it easier to make cheese with more consistent quality. In some countries, Pasteurization cheese milk upon arrival in the factory (72°C/15 s) is common or standard practice.

#### **Standardization**

The moisture and fat in dry matter content of cheese is specified in Standards of Identity, which effectively defines the protein: fat ratio. Fat and casein, along with moisture left in the curd,

control cheese yield, but fat also has a significant impact on the curd's appearance and texture. When the casein to fat ratio is high, the curd becomes more leathery, and the finished cheese lacks the mellow, velvety texture of whole milk cheese. Green cheeses made from skim milk are commonly consumed. For good quality cheese, the casein: fat ratio (C/F ratio) in milk should be around 0.7. It can be changed depending on the required ratio by:

- By using natural creaming or centrifugation to remove some fat.
- Adding skim milk, cream, milk powder, evaporated milk, or ultrafiltration retentate are all options.
- These additions also raise the milk's total solids content, increasing the yield of cheese curd per unit volume.

### **Homogenization**

Homogenization is a mechanical treatment of milk fat globules that involves passing milk under high pressure through a small orifice, resulting in a reduction in average diameter and an increase in number and surface area of the fat globules.

The net result, from a practical view, is a much reduced tendency for creaming of fat globules.

### **Acidification**

Ripening is the process of increasing the acidity of milk before it is used to make cheese. It is usually caused by the starter culture. Acidity is produced, which inhibits the growth of undesirable organisms and influences the coagulation rate. Most varieties of cheese require the addition of rennet to the ripened milk once the desired acidity (0.01 percent increase) is achieved in order to obtain a curd with the desired characteristics.

To achieve a uniform and predictable rate of acid production, it is now almost universal practice to add a culture (starter) of selected lactic acid bacteria to pasteurized milk.

To achieve a uniform and predictable rate of acid production, a culture (starter) of selected lactic acid bacteria is now almost universally added to pasteurised cheese milk. For cheese varieties that are cooked to not more than 40°C, a starter consisting of *Lactococcus lactis* subsp. *lactis* and/or *Lc. lactis* subsp. *cremoris* is normally used while a mixed culture *Streptococcus salivarius*

*var.thermophilus*, *Lactobacillus* spp. (*L. bulgaricus*, *L. helveticus*, *L. casei*) or lactobacillus culture alone is used for varieties that are cooked to higher temperature, e.g. Swiss, hard Italian varieties.

### **Coagulation**

The coagulation of milk casein to form a gel, which entraps any fat presently, is an essential step in the production of all cheese varieties. Coagulation can be achieved in a variety of ways, including:

- Limited proteolysis by selected proteinases (Rennets)
- Acidification to pH 4.6
- Acidification to pH 5.2 and heating to 90°C.

Rennin is a milk-curdling enzyme that is usually obtained from a suckling calf's fourth stomach (abomasum). Pepsin, a photolytic enzyme, replaces rennin in other animals. Rennet or rennet extract is a type of extract that contains the enzyme.

For hard cheeses like Cheddar, about 2.5 g of commercial rennet powder per 100 l of milk is usually used. It is 1.65 g/100 l milk in the case of Meito rennet.

Before being added to the cheese milk, rennet extract is diluted up to 20-30 times with clean potable water. The milk is stirred for about two minutes after the rennet is added to ensure that the rennet is evenly distributed, and then currents in the milk are stopped with a paddle or rake. During the setting process, the vat must not vibrate. After that, the milk is left undisturbed for the curd to form, which takes about 15 minutes. The milk has set with a firm curd after about 30 minutes.

### **Cutting the Coagulum**

When the gel (coagulum) is firm enough, mechanical knives are used to cut it into curd particles in both the horizontal and vertical directions. Cutting time varies between 20 and 50 minutes in cheese making.

After a period of 25 minutes to 2 hours, the coagulum is ready to cut, according to the recipe. The precise time of cutting is crucial to the quality of the cheese. The cheese makers' attempts to



judge the precise point of cutting, on the other hand, are fraught with difficulties. The coagulum's surface layer is usually a few degrees cooler than the coagulum beneath it, making it softer. As a result, judging the firmness of curd on the surface has little meaning.

### **Cooking**

When the curd is cooked or scalded, the protein matrix shrinks, allowing more whey to expel. The increase in temperature also accelerates the metabolism of bacteria in the curd. Lactic acid production rises, pH falls, and acidity aids in particle shrinkage, allowing more whey to be expressed.

There are two ways to reduce the lactose content of cheese curds:

1. Curd shrinkage caused by heat, as well as a drop in pH due to the development of lactic acid in the curd.
2. Adding water to the whey increases the osmotic effect across the curd membranes, allowing the lactose from the curd moisture to be extracted into the diluted whey.

### **Curd Treatment**

The way the curd is handled varies depending on the type of cheese being made to some extent. The acidity of the curd continues to rise as the whey content decreases, and its body becomes firmer. The heating of the curd aids these reactions.

When making soft, high-moisture cheese, the curd is quickly removed from the vat and the whey is drained. The curd is cut and stirred in the whey while it is being heated for some types of cheese. The curd is heated in the whey and allowed to form a continuous mass, which is then cut and milled into small pieces before further processing for Cheddar type cheese.

### **Salting**

Salting perishable foods is one of the oldest and most widely used methods of food preservation. Salt has gained universal acceptance as a vital mineral in trade and industry, and because of its preservative properties, it has become a particularly fitting symbol of fidelity in many cultures.

It's no surprise, then, that salting is an important component of the technique for preserving milk solids in the form of cheese that has evolved.

**Cheese can be salted using one of three methods:**

- Prior to the moulding/pressing stage of production, dry salt crystals are mixed with subdivided cheese curds.
- The moulded cheese is immersed in a brine solution.
- Dry salt or salt slurry is applied to the surface of the formed cheese.

**Pressing**

The final portion of the whey is pressed out of the curd. This process is also used to shape some cheese varieties into their traditional shapes. The amount of pressure used varies depending on the type of cheese.

Because the cheese curd holds a volume of air before pressing, cheeses that require much closed curds (such as Cheddar) have been pressed under an 85-95 kN/m<sup>2</sup> vacuum (25-28 in Hg). The vacuum, which is only applied for a few hours (2-3 hours), also helps to cool the curd.

**Storage, Maturation and Ripening**

Cheese blocks are placed in plastic pack bags, vacuum sealed, and placed in boxes after passing through a rapid cool room (24 hours) Metal detection, coding, and palletisation are all steps in the process.

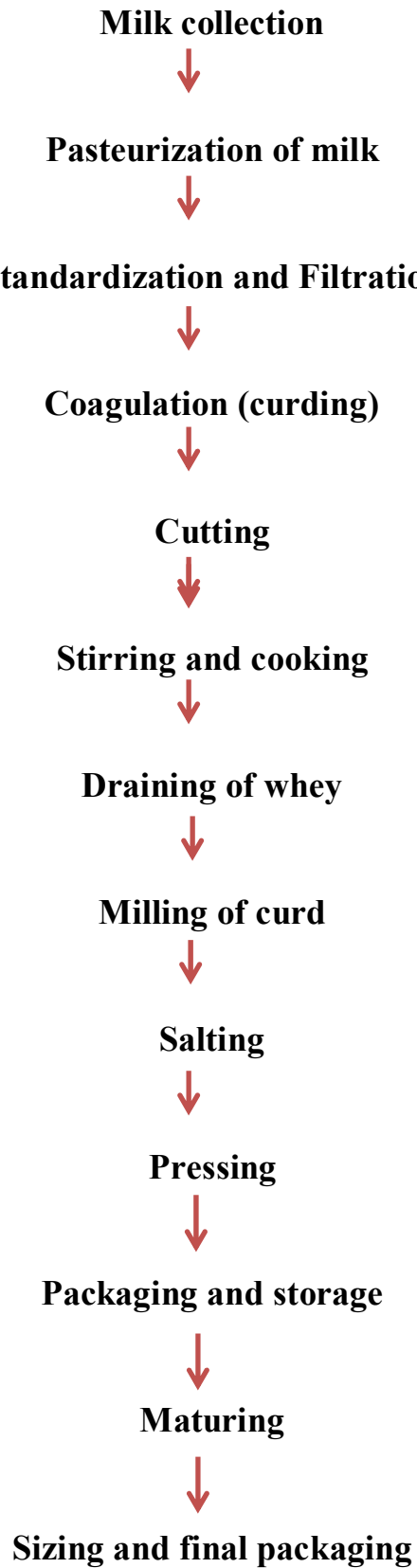
Temperature and time will depend on the type of cheese (e.g. cheddar 10°C until mature)

Cheese ripening is basically about the breakdown of protein, lipids, and carbohydrates which released flavour compound and modified cheese texture. Ripening varies from nil for fresh cheese to 5 year of some hard ripened cheese. Like a good wine good cheese get better and better with age.

**Sizing and final packaging**

The cheese is ready to eat after the maturation period. The cheese blocks are cut into the required pieces, tested for quality, and packaged in appropriate packaging as per market requirement.

## Flow chart of Cheese Processing



## **4. ECONOMICS OF THE PROJECT**

### **4.1. BASIS & PRESUMPTIONS**

1. Production Capacity of Cheese is 400 Kg. per day. First year, Capacity has been taken @ 40%.
2. Working shift of 8 hours per day has been considered.
3. Raw Material stock is for 1 day and Finished goods Closing Stock has been taken for 5 days.
4. Credit period to Sundry Debtors has been given for 10 days.
5. Credit period by the Sundry Creditors has been provided for 5 days.
6. Depreciation and Income tax has been taken as per the Income tax Act, 1961.
7. Interest on working Capital Loan and Term loan has been taken at 11%.
8. Salary and wages rates are taken as per the Current Market Scenario.
9. Power Consumption has been taken at 36 KW.
10. Increase in sales and raw material costing has been taken @ 5% on a yearly basis.

## 4.2. CAPACITY, UTILIZATION, PRODUCTION & OUTPUT

<b>COMPUTATION OF PRODUCTION OF CHEESE</b>		
<b>Items to be Manufactured</b>		
Cheese		
Machine capacity Per hour	50	Kg
Total working Hours	8	
Machine capacity Per Day	400	Kg
Working days in a month	25	Days
Working days per annum	300	
Wastage Considered	10%	
Raw material requirement	120000	Kg
Final Output per annum after wastage	108000	Kg
Final Product to be packed in 1 Kg packet		
Number of Packets per annum	108000	1 Kg packet

<b>Production of Cheese</b>		
<b>Production</b>	<b>Capacity</b>	<b>Packets</b>
1st year	40%	43,200
2nd year	45%	48,600
3rd year	50%	54,000
4th year	55%	59,400
5th year	60%	64,800

<b>Raw Material Cost</b>			
<b>Year</b>	<b>Capacity Utilisation</b>	<b>Rate (per kg)</b>	<b>Amount (Rs. in lacs)</b>
1st year	40%	250.00	120.00
2nd year	45%	263.00	142.02
3rd year	50%	276.00	165.60
4th year	55%	290.00	191.40
5th year	60%	305.00	219.60

<b>COMPUTATION OF SALE</b>					
<b>Particulars</b>	<b>1st year</b>	<b>2nd year</b>	<b>3rd year</b>	<b>4th year</b>	<b>5th year</b>
Op Stock	-	720	810	900	990
Production	43,200	48,600	54,000	59,400	64,800
Less : Closing Stock	720	810	900	990	1,080
<b>Net Sale</b>	<b>42,480</b>	<b>48,510</b>	<b>53,910</b>	<b>59,310</b>	<b>64,710</b>
Sale price per packet	450.00	473.00	497.00	522.00	548.00
<b>Sales (in Lacs)</b>	<b>191.16</b>	<b>229.45</b>	<b>267.93</b>	<b>309.60</b>	<b>354.61</b>

### 4.3. PREMISES/INFRASTRUCTURE

The approximate total area required for complete factory setup is 3000-4000 Sq. ft. for smooth production including storage area. It is expected that the premises will be on rental.

#### 4.4. MACHINERY & EQUIPMENTS

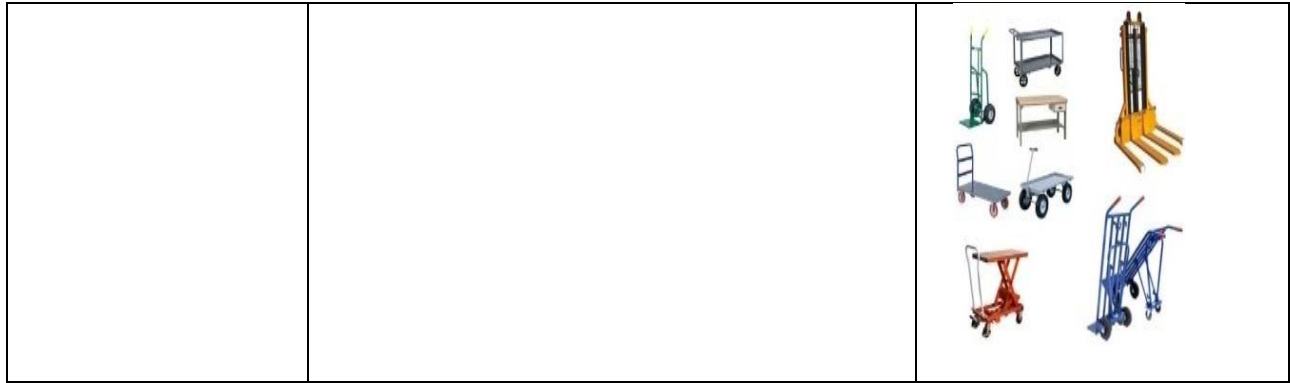
Machine Name	Description	Machine Image.
Milk reception system	This system is used for collection milk in order to maintain freshness of milk.	
Bulk chiller	The Bulk Milk Chiller is used to keep milk cool and fresh by cooling it to 4°C. For Dairy/Milk Collection Centers, the Bulk Milk Chiller is the solution for bacteria-free milk storage.	
Milk Pasteurizer	Pasteurizer is used for killing pathogenic microorganisms by heating milk or milk products to a specific temperature for a set period of time without allowing recontamination.	
Milk Standardization Machine	The fat content of raw milk varies in different factors. This is why milk goes through a standardisation process in these machines standardizing raw milk.	
Milk Homogenizer	Homogenizers are used to break up large fat globules and produce stable emulsion milk.	

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<p>Milk Coagulation tank</p>	<p>This tank is used for coagulation of milk and other treatment</p>	
<p>Cooking kettle</p>	<p>This machine is used for cooking the curd and drain the whey from it.</p>	
<p>Batter Mixer</p>	<p>It is used for mixing batter and thick paste.</p>	
<p>Cheese press machine</p>	<p>it is used for pressing the cheeses after draining whey and making cheese blocks.</p>	
<p>Cheese slicer</p>	<p>A cheese slicer is used usually to cut semi-hard and hard cheeses.</p>	
<p>Cheese packaging machine</p>	<p>This machine is used for packaging of cheese in cubic for appropriate packaging.</p>	
<p>Material handling and other Equipment's</p>	<p>These Equipment's are used for material handling. Other equipment's like lactometer, boiler, milk analyser, industrial pump, etc. are also used.</p>	



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Machine	Unit	Rate	Price
Milk reception system (Capacity 1000 Ltr.)	1	160000	160000
Bulk chiller (Capacity 1000 Ltr.)	1	250000	250000
Milk Pasteurizer	1	275000	275000
Milk Standardization Machine	1	175000	175000
Milk Homogenizer (Capacity 300 Ltr/hr.)	1	195000	195000
Milk Coagulation tank	1	140000	140000
Cooking kettle	1	90000	90000
Batter Mixer	1	110000	110000
Cheese press machine	1	150000	150000

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Cheese slicer	1	80000	80000
Cheese packaging machine	1	280000	280000
Material handling and other Equipment's	-	400000	400000

**Note:** Total Machinery cost shall be Rs 23.05 lakh including equipment's but excluding GST and Transportation Cost.

#### 4.5. MISCELLANEOUS FIXED ASSETS

- Water Supply Arrangements
- Furniture & Fixtures
- Computers & Printers

#### 4.6. TOTAL COST OF PROJECT

<b>COST OF PROJECT</b>	
	(in Lacs)
<b>PARTICULARS</b>	<b>Amount</b>
Land & Building	Owned/Rented
Plant & Machinery	23.05
Miscellaneous Assets	3.00
Working capital	7.56
<b>Total</b>	<b>33.61</b>

**4.7. MEANS OF FINANCE**

<b>MEANS OF FINANCE</b>	
<b>PARTICULARS</b>	<b>AMOUNT</b>
Own Contribution (min 10%)	3.35
Subsidy @35%(Max. Rs 10 Lac)	9.12
Term Loan @ 55%	14.33
Working Capital (Bank Finance)	6.81
<b>Total</b>	<b>33.61</b>

**4.8. TERM LOAN:** Term loan of Rs. 14.33 Lakh is required for project cost of Rs. 33.61 Lakh

**4.9. TERM LOAN REPAYMENT & INTEREST SCHEDULE**

<b>REPAYMENT SCHEDULE OF TERM LOAN</b>								
							Interest	11.00%
<b>Year</b>	<b>Particulars</b>	<b>Amount</b>	<b>Addition</b>	<b>Total</b>	<b>Interest</b>	<b>Repayment</b>	<b>Closing Balance</b>	
<b>1st</b>	Opening Balance							
	1st month	-	14.33	14.33	-	-	14.33	
	2nd month	14.33	-	14.33	0.13	-	14.33	
	3rd month	14.33	-	14.33	0.13	-	14.33	
	4th month	14.33	-	14.33	0.13	-	14.33	
	5th month	14.33	-	14.33	0.13	-	14.33	
	6th month	14.33	-		0.13		14.33	

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			14.33				
7th month	14.33	-	14.33	0.13	0.27	14.06	
8th month	14.06	-	14.06	0.13	0.27	13.80	
9th month	13.80	-	13.80	0.13	0.27	13.53	
10th month	13.53	-	13.53	0.12	0.27	13.27	
11th month	13.27	-	13.27	0.12	0.27	13.00	
12th month	13.00	-	13.00	0.12	0.27	12.74	
				1.41	1.59		
<b>2nd</b>	Opening Balance						
1st month	12.74	-	12.74	0.12	0.27	12.47	
2nd month	12.47	-	12.47	0.11	0.27	12.20	
3rd month	12.20	-	12.20	0.11	0.27	11.94	
4th month	11.94	-	11.94	0.11	0.27	11.67	
5th month	11.67	-	11.67	0.11	0.27	11.41	
6th month	11.41	-	11.41	0.10	0.27	11.14	
7th month	11.14	-	11.14	0.10	0.27	10.88	
8th month	10.88	-	10.88	0.10	0.27	10.61	
9th month	10.61	-	10.61	0.10	0.27	10.35	
10th month	10.35	-	10.35	0.09	0.27	10.08	
11th month	10.08	-	10.08	0.09	0.27	9.82	
12th month	9.82	-	9.82	0.09	0.27	9.55	
				<b>1.24</b>	<b>3.18</b>		
<b>3rd</b>	Opening Balance						
1st month	9.55	-	9.55	0.09	0.27	9.29	
2nd month	9.29	-	9.29	0.09	0.27	9.02	

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	3rd month	9.02	-	9.02	0.08	0.27	8.76
	4th month	8.76	-	8.76	0.08	0.27	8.49
	5th month	8.49	-	8.49	0.08	0.27	8.23
	6th month	8.23	-	8.23	0.08	0.27	7.96
	7th month	7.96	-	7.96	0.07	0.27	7.69
	8th month	7.69	-	7.69	0.07	0.27	7.43
	9th month	7.43	-	7.43	0.07	0.27	7.16
	10th month	7.16	-	7.16	0.07	0.27	6.90
	11th month	6.90	-	6.90	0.06	0.27	6.63
	12th month	6.63	-	6.63	0.06	0.27	6.37
					<b>0.89</b>	<b>3.18</b>	
<b>4th</b>	Opening Balance						
	1st month	6.37	-	6.37	0.06	0.27	6.10
	2nd month	6.10	-	6.10	0.06	0.27	5.84
	3rd month	5.84	-	5.84	0.05	0.27	5.57
	4th month	5.57	-	5.57	0.05	0.27	5.31
	5th month	5.31	-	5.31	0.05	0.27	5.04
	6th month	5.04	-	5.04	0.05	0.27	4.78
	7th month	4.78	-	4.78	0.04	0.27	4.51
	8th month	4.51	-	4.51	0.04	0.27	4.25
	9th month	4.25	-	4.25	0.04	0.27	3.98
	10th month	3.98	-	3.98	0.04	0.27	3.71
	11th month	3.71	-	3.71	0.03	0.27	3.45
	12th month	3.45	-	3.45	0.03	0.27	3.18

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				<b>0.54</b>	<b>3.18</b>		
<b>5th</b>	Opening Balance						
	1st month	3.18	-	3.18	0.03	0.27	2.92
	2nd month	2.92	-	2.92	0.03	0.27	2.65
	3rd month	2.65	-	2.65	0.02	0.27	2.39
	4th month	2.39	-	2.39	0.02	0.27	2.12
	5th month	2.12	-	2.12	0.02	0.27	1.86
	6th month	1.86	-	1.86	0.02	0.27	1.59
	7th month	1.59	-	1.59	0.01	0.27	1.33
	8th month	1.33	-	1.33	0.01	0.27	1.06
	9th month	1.06	-	1.06	0.01	0.27	0.80
	10th month	0.80	-	0.80	0.01	0.27	0.53
	11th month	0.53	-	0.53	0.00	0.27	0.27
	12th month	0.27	-	0.27	0.00	0.27	-
				<b>0.19</b>	<b>3.18</b>		
	DOOR TO DOOR MORATORIUM PERIOD	60	MONTHS				
	REPAYMENT PERIOD	6	MONTHS				
		54	MONTHS				

#### 4.10. WORKING CAPITAL CALCULATIONS

<b>COMPUTATION OF CLOSING STOCK &amp; WORKING CAPITAL</b>					(in Lacs)
<b>PARTICULARS</b>	<b>1st year</b>	<b>2nd year</b>	<b>3rd year</b>	<b>4th year</b>	<b>5th year</b>
<b><u>Finished Goods</u></b>					
	2.79	3.26	3.76	4.30	4.88
<b><u>Raw Material</u></b>					
	0.40	0.47	0.55	0.64	0.73
<b>Closing Stock</b>	<b>3.19</b>	<b>3.73</b>	<b>4.31</b>	<b>4.94</b>	<b>5.61</b>

<b>COMPUTATION OF WORKING CAPITAL REQUIREMENT</b>					
<b>TRADITIONAL METHOD</b>					(in Lacs)
<b>Particulars</b>	<b>Amount</b>	<b>Own Margin</b>		<b>Bank Finance</b>	
Finished Goods & Raw Material	3.19				
Less : Creditors	2.00				
<b>Paid stock</b>	<b>1.19</b>	<b>10%</b>	<b>0.12</b>	<b>90%</b>	<b>1.07</b>
<b>Sundry Debtors</b>	<b>6.37</b>	<b>10%</b>	<b>0.64</b>	<b>90%</b>	<b>5.73</b>
	<b>7.56</b>		<b>0.76</b>		<b>6.81</b>
<b>MPBF</b>					<b>6.81</b>
<b>WORKING CAPITAL LIMIT DEMAND ( from Bank)</b>					<b>6.81</b>
<b>Working Capital Margin</b>					<b>0.76</b>

**4.11. SALARY & WAGES**

<b><u>BREAK UP OF LABOUR CHARGES</u></b>			
<b>Particulars</b>	<b>Wages</b>	<b>No of</b>	<b>Total</b>
	<b>Rs. per Month</b>	<b>Employees</b>	<b>Salary</b>
Plant Operator	16,000	4	64,000
Supervisor	20,000	1	20,000
Skilled (in thousand rupees)	15,000	3	45,000
Unskilled (in thousand rupees)	8,000	6	48,000
<b>Total salary per month</b>			<b>1,77,000</b>
<b>Total annual labour charges</b>	<b>(in lacs)</b>		<b>21.24</b>

<b><u>BREAK UP OF STAFF SALARY CHARGES</u></b>			
<b>Particulars</b>	<b>Salary</b>	<b>No of</b>	<b>Total</b>
	<b>Rs. per Month</b>	<b>Employees</b>	<b>Salary</b>
Administrative Staff	8,500	4	34,000
Manager	25,000	1	25,000
Accountant	20,000	2	40,000
<b>Total salary per month</b>			<b>99,000</b>
<b>Total annual Staff charges</b>	<b>(in lacs)</b>		<b>11.88</b>



## 4.12 POWER REQUIREMENT

<b>Utility Charges (per month)</b>		
<b>Particulars</b>	<b>value</b>	<b>Description</b>
Power connection required	36	KWH
consumption per day	288	units
Consumption per month	7,200	units
Rate per Unit	10	Rs.
power Bill per month	72,000	Rs.

## 4.13. DEPRECIATION CALCULATION

<b>COMPUTATION OF DEPRECIATION</b>			(in Lacs)
<b>Description</b>	<b>Plant &amp; Machinery</b>	<b>Miss. Assets</b>	<b>TOTAL</b>
Rate of Depreciation	<b>15.00%</b>	<b>10.00%</b>	
<b>Opening Balance</b>	-	-	-
Addition	23.05	3.00	26.05
Total	23.05	3.00	26.05
Less : Depreciation	3.46	0.30	3.76
<b>WDV at end of Year</b>	<b>19.59</b>	<b>2.70</b>	<b>22.29</b>
Additions During The Year	-	-	-
Total	19.59	2.70	22.29
Less : Depreciation	2.94	0.27	3.21
<b>WDV at end of Year</b>	<b>16.65</b>	<b>2.43</b>	<b>19.08</b>
Additions During The Year	-	-	-
Total	16.65	2.43	19.08
Less : Depreciation	2.50	0.24	2.74
<b>WDV at end of Year</b>	<b>14.16</b>	<b>2.19</b>	<b>16.34</b>
Additions During The Year	-	-	-
Total	14.16	2.19	16.34
Less : Depreciation	2.12	0.22	2.34
<b>WDV at end of Year</b>	<b>12.03</b>	<b>1.97</b>	<b>14.00</b>
Additions During The Year	-	-	-
Total	12.03	1.97	14.00
Less : Depreciation	1.80	0.20	2.00
<b>WDV at end of Year</b>	<b>10.23</b>	<b>1.77</b>	<b>12.00</b>

**4.14. REPAIR & MAINTENANCE:** Repair & Maintenance is 3.0% of Gross Sale.

**4.15. PROJECTIONS OF PROFITABILITY ANALYSIS:**

<b>PROJECTED PROFITABILITY STATEMENT</b>					<b>(in Lacs)</b>
<b>PARTICULARS</b>	<b>1st year</b>	<b>2nd year</b>	<b>3rd year</b>	<b>4th year</b>	<b>5th year</b>
Capacity Utilisation %	<b>40%</b>	<b>45%</b>	<b>50%</b>	<b>55%</b>	<b>60%</b>
<b><u>SALES</u></b>					
<b>Gross Sale</b>					
Cheese	191.16	229.45	267.93	309.60	354.61
<b>Total</b>	<b>191.16</b>	<b>229.45</b>	<b>267.93</b>	<b>309.60</b>	<b>354.61</b>
<b>COST OF SALES</b>					
Raw Material Consumed	120.00	142.02	165.60	191.40	219.60
Electricity Expenses	8.64	9.50	10.45	11.50	12.65
Depreciation	3.76	3.21	2.74	2.34	2.00
Wages & labour	21.24	24.43	27.36	30.64	33.70
Repair & maintenance	5.73	6.88	8.04	9.29	10.64
Packaging	8.03	9.64	11.25	13.00	14.18
<b>Cost of Production</b>	<b>167.40</b>	<b>195.68</b>	<b>225.44</b>	<b>258.17</b>	<b>292.78</b>
<b>Add: Opening Stock /WIP</b>	<b>-</b>	<b>2.79</b>	<b>3.26</b>	<b>3.76</b>	<b>4.30</b>
<b>Less: Closing Stock /WIP</b>	<b>2.79</b>	<b>3.26</b>	<b>3.76</b>	<b>4.30</b>	<b>4.88</b>
Cost of Sales	164.61	195.21	224.95	257.63	292.20
<b>GROSS PROFIT</b>	<b>26.55</b>	<b>34.24</b>	<b>42.99</b>	<b>51.97</b>	<b>62.41</b>
	<b>13.89%</b>	<b>14.92%</b>	<b>16.04%</b>	<b>16.79%</b>	<b>17.60%</b>
Salary to Staff	11.88	14.85	18.12	21.74	26.09
Interest on Term Loan	1.41	1.24	0.89	0.54	0.19
Interest on working Capital	0.75	0.75	0.75	0.75	0.75
Rent	4.80	5.76	6.91	8.29	9.95
selling & adm exp	5.35	6.65	8.04	9.91	10.99
<b>TOTAL</b>	<b>24.19</b>	<b>29.25</b>	<b>34.71</b>	<b>41.23</b>	<b>47.97</b>
<b>NET PROFIT</b>	<b>2.36</b>	<b>4.99</b>	<b>8.28</b>	<b>10.74</b>	<b>14.44</b>
	<b>1.23%</b>	<b>2.18%</b>	<b>3.09%</b>	<b>3.47%</b>	<b>4.07%</b>
Taxation	-	-	0.81	1.40	2.55
<b>PROFIT (After Tax)</b>	<b>2.36</b>	<b>4.99</b>	<b>7.47</b>	<b>9.34</b>	<b>11.88</b>

#### 4.16. BREAK EVEN POINT ANALYSIS

<b>BREAK EVEN POINT ANALYSIS</b>					
<b>Year</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b>Net Sales &amp; Other Income</b>	191.16	229.45	267.93	309.60	354.61
Less : Op. WIP Goods	-	2.79	3.26	3.76	4.30
Add : Cl. WIP Goods	2.79	3.26	3.76	4.30	4.88
<b>Total Sales</b>	<b>193.95</b>	<b>229.92</b>	<b>268.43</b>	<b>310.14</b>	<b>355.19</b>
<b>Variable &amp; Semi Variable Exp.</b>					
Raw Material Consumed	120.00	142.02	165.60	191.40	219.60
Electricity Exp/Coal Consumption at 85%	7.34	8.08	8.89	9.77	10.75
Wages & Salary at 60%	19.87	23.57	27.28	31.43	35.88
Selling & administrative Expenses 80%	4.28	5.32	6.43	7.93	8.79
Interest on working Capital	0.74864	0.74864	0.74864	0.74864	0.74864
Repair & maintenance	5.73	6.88	8.04	9.29	10.64
Packaging	8.03	9.64	11.25	13.00	14.18
<b>Total Variable &amp; Semi Variable Exp</b>	<b>166.01</b>	<b>196.26</b>	<b>228.24</b>	<b>263.57</b>	<b>300.59</b>
<b>Contribution</b>	<b>27.94</b>	<b>33.67</b>	<b>40.19</b>	<b>46.58</b>	<b>54.59</b>
<b>Fixed &amp; Semi Fixed Expenses</b>					
Electricity Exp/Coal Consumption at 15%	1.30	1.43	1.57	1.72	1.90
Wages & Salary at 40%	13.25	15.71	18.19	20.95	23.92
Interest on Term Loan	1.41	1.24	0.89	0.54	0.19
Depreciation	3.76	3.21	2.74	2.34	2.00
Selling & administrative Expenses 20%	1.07	1.33	1.61	1.98	2.20
Rent	4.80	5.76	6.91	8.29	9.95
<b>Total Fixed Expenses</b>	<b>25.58</b>	<b>28.68</b>	<b>31.91</b>	<b>35.83</b>	<b>40.16</b>
<b>Capacity Utilization</b>	<b>40%</b>	<b>45%</b>	<b>50%</b>	<b>55%</b>	<b>60%</b>
<b>OPERATING PROFIT</b>	<b>2.36</b>	<b>4.99</b>	<b>8.28</b>	<b>10.74</b>	<b>14.44</b>
<b>BREAK EVEN POINT</b>	<b>37%</b>	<b>38%</b>	<b>40%</b>	<b>42%</b>	<b>44%</b>
<b>BREAK EVEN SALES</b>	<b>177.57</b>	<b>195.84</b>	<b>213.13</b>	<b>238.62</b>	<b>261.27</b>

**4.17. PROJECTED BALANCE SHEET**

<b>PROJECTED BALANCE SHEET</b>					<b>(in Lacs)</b>
<b>PARTICULARS</b>	<b>1st year</b>	<b>2nd year</b>	<b>3rd year</b>	<b>4th year</b>	<b>5th year</b>
<b><u>Liabilities</u></b>					
Capital					
opening balance		10.83	11.32	13.29	15.63
<i>Add:- Own Capital</i>	3.35				
Add:- Retained Profit	2.36	4.99	7.47	9.34	11.88
Less:- Drawings	4.00	4.50	5.50	7.00	9.00
Subsidy/grant	9.12				
Closing Balance	10.83	11.32	13.29	15.63	18.51
Term Loan	12.74	9.55	6.37	3.18	-
Working Capital Limit	6.81	6.81	6.81	6.81	6.81
Sundry Creditors	2.00	2.37	2.76	3.19	3.66
Provisions & Other Liab	0.40	0.50	0.60	0.72	0.86
<b>TOTAL :</b>	<b>32.77</b>	<b>30.54</b>	<b>29.82</b>	<b>29.53</b>	<b>29.84</b>
<b><u>Assets</u></b>					
<b>Fixed Assets ( Gross)</b>	26.05	26.05	26.05	26.05	26.05
Gross Dep.	3.76	6.97	9.71	12.05	14.05
<b>Net Fixed Assets</b>	<b>22.29</b>	<b>19.08</b>	<b>16.34</b>	<b>14.00</b>	<b>12.00</b>
<b>Current Assets</b>					
Sundry Debtors	6.37	7.65	8.93	10.32	11.82
Stock in Hand	3.19	3.73	4.31	4.94	5.61
Cash and Bank	0.92	0.08	0.24	0.26	0.41
<b>TOTAL :</b>	<b>32.77</b>	<b>30.54</b>	<b>29.82</b>	<b>29.53</b>	<b>29.84</b>

**4.18. CASH FLOW STATEMENT**

<b>PROJECTED CASH FLOW STATEMENT</b>					<b>(in Lacs)</b>
<b>PARTICULARS</b>	<b>1st year</b>	<b>2nd year</b>	<b>3rd year</b>	<b>4th year</b>	<b>5th year</b>
<b><u>SOURCES OF FUND</u></b>					
Own Margin	3.35				
Net Profit	2.36	4.99	8.28	10.74	14.44
Depriciation & Exp. W/off	3.76	3.21	2.74	2.34	2.00
Increase in Cash Credit	6.81	-	-	-	-
Increase In Term Loan	14.33	-	-	-	-
Increase in Creditors	2.00	0.37	0.39	0.43	0.47
Increase in Provisions & Oth lib	0.40	0.10	0.10	0.12	0.14
Sunsidy/grant	9.12				
<b>TOTAL :</b>	<b>42.12</b>	<b>8.67</b>	<b>11.51</b>	<b>13.63</b>	<b>17.05</b>
<b><u>APPLICATION OF FUND</u></b>					
Increase in Fixed Assets	26.05				
Increase in Stock	3.19	0.54	0.57	0.63	0.67
Increase in Debtors	6.37	1.28	1.28	1.39	1.50
Repayment of Term Loan	1.59	3.18	3.18	3.18	3.18
Drawings	4.00	4.50	5.50	7.00	9.00
Taxation	-	-	0.81	1.40	2.55
<b>TOTAL :</b>	<b>41.20</b>	<b>9.51</b>	<b>11.35</b>	<b>13.61</b>	<b>16.91</b>
Opening Cash & Bank Balance	-	0.92	0.08	0.24	0.26
Add : Surplus	0.92	-0.84	0.16	0.03	0.14
Closing Cash & Bank Balance	<b>0.92</b>	<b>0.08</b>	<b>0.24</b>	<b>0.26</b>	<b>0.41</b>

#### 4.19. DEBT SERVICE COVERAGE RATIO

<b><u>CALCULATION OF D.S.C.R</u></b>					
<b>PARTICULARS</b>	<b>1st year</b>	<b>2nd year</b>	<b>3rd year</b>	<b>4th year</b>	<b>5th year</b>
CASH ACCRUALS	6.12	8.20	10.21	11.68	13.88
Interest on Term Loan	1.41	1.24	0.89	0.54	0.19
<b>Total</b>	<b>7.53</b>	<b>9.44</b>	<b>11.10</b>	<b>12.22</b>	<b>14.07</b>
<b><u>REPAYMENT</u></b>					
Instalment of Term Loan	1.59	3.18	3.18	3.18	3.18
Interest on Term Loan	1.41	1.24	0.89	0.54	0.19
Total	3.00	4.42	4.07	3.72	3.37
<b>DEBT SERVICE COVERAGE RATIO</b>	<b>2.51</b>	<b>2.13</b>	<b>2.72</b>	<b>3.28</b>	<b>4.17</b>
<b>AVERAGE D.S.C.R.</b>	<b>2.92</b>				