

# MAIZE FLAKES



## 1.0 INTRODUCTION

Health awareness is increasing day-by-day and people are more watchful about their health. Health clubs are becoming popular along with health food. Maize has got many nutritional values. Maize flakes are a product which is being accepted by many as health food. Flakes can be deep fried and are used extensively while making "chevada" - a popular snack item in Maharashtra. Dry roasted maize flakes along with a small quantity of sugar are mixed in milk and it becomes a health food especially for growing children. The preferred location is Maharashtra.

## 2.0 PRODUCTS

### 2.1 Applications

Maize is an agricultural produce and traditionally used, especially in rural areas, for preparation of roti. This product is good for health. On proper roasting and flaking, maize flakes are obtained. These flakes can be consumed along with sugar and milk or deep fried to make chevda. The project is meant to sale roasted maize flakes.

### 2.2 Availability of technology and compliance

CFTRI, Mysore, has successfully developed the technical know-how. Compliance with PFA Act is mandatory.

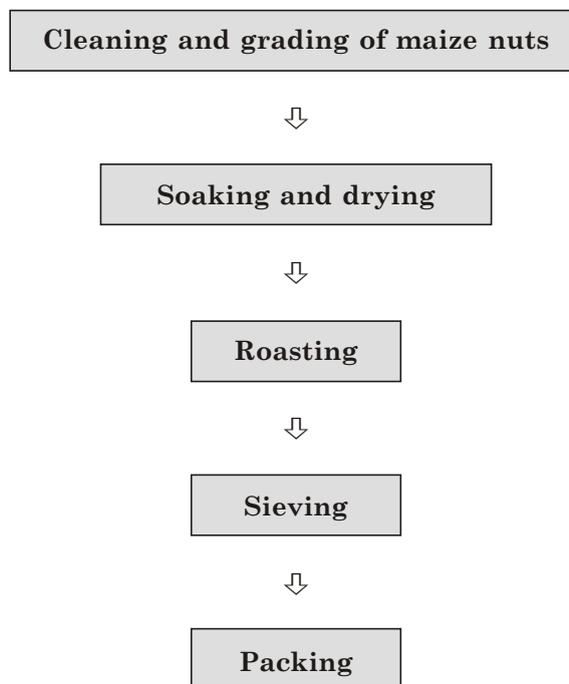
## 3.0 MARKET POTENTIAL

With increasing health awareness, people are becoming health conscious and are choosy about their eating habits. Many health foods are becoming popular. Maize is considered to be good for health. Maize flour is very popular in many regions and maize flakes are being accepted as health food. But people at large are still not familiar with this product and

therefore proper publicity will be crucial. The product shall have to be pushed with the help of retailers. Chevda is a very popular snack throughout Maharashtra and it is prepared from rice flakes or maize flakes. Hence, there has to be bulk as well as consumer packing as restaurants, hostels, canteens, chevda makers may like to buy in bulk.

#### 4.0 MANUFACTURING PROCESS

The process is very simple. Maize nuts are cleaned and graded to remove mud, stones etc. and then soaked in hot water. After drying, they are roasted and then taken to flaker polisher wherein flakes are formed. Flakes are then passed through sieves to remove bran and broken maize and are then suitably packed in polythene bags. During this process of manufacture, the net recovery of flakes is 80%. Of the balance 20%, process loss is 5% and remaining 15% is bran and broken flakes or maize which is sold to cattle-feed manufacturers. The process flow chart is as under:



#### 5.0 CAPITAL INPUTS

##### 5.1 Land and Building

About 150 sq.mtrs. of land is sufficient as built-up area requirement is 70 sq.mtrs consisting of production hall of 45 mtrs and two rooms for packing and storage. Cost of land is taken at Rs. 45,000/- whereas civil work may cost Rs.1.50 lacs including soaking tanks.

##### 5.2 Plant and Machinery

In this case, the major factor deciding the proposed production capacity is market. Hence before taking a final decision, a market survey of nearby major towns/cities must be undertaken. But keeping in mind the financial viability, annual rated capacity of 200 tons on

2 shift working and 300 days is suggested for which, the following machines shall be required:

(Rs. in lacs)

Item	Qty.	Amount
Electrically-operated Roaster	1	0.90
Flaker Polisher	1	0.60
Coal-fired Furnace	1	0.15
Sieves	2	0.10
Sealing Machine, weighing scales etc.	--	0.15
	<b>Total</b>	<b>1.90</b>

### 5.3 Miscellaneous Assets

A provision of Rs. 45,000/- has been made towards furniture and fixtures, storage facilities, working tables, exhaust fans, etc.

### 5.4 Utilities

Power requirement shall be 25 HP and hard coke of 18 tonnes will be required during the year. Water requirement per day will be 1200-1300 ltrs. Expected annual expenditure at 100% will be Rs. 1, 00,000/-.

### 5.5 Raw Material

The only raw material will be good quality maize nuts. Maize is grown in many parts of Maharashtra. A proper assessment of total crop and quality has to be made while finalising location of the factory. Annual requirement of maize nuts even at 100% utilisation will be 250 tonnes considering 80% yield.

## 6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Worker	4	2,000	8,000
Unskilled Workers	2	1,350	2,700
Helpers	2	1,000	2,000
Salesman	1	2,500	2,500
		<b>Total</b>	<b>15,200</b>

## 7.0 TENTATIVE IMPLEMENTATION SCHEDULE

Activity	Period (in months)
Application and sanction of loan	2
Site selection and commencement of civil work	1
Completion of civil work and placement of orders for machinery	4
Erection, installation and trial runs	1

## 8.0 DETAILS OF THE PROPOSED PROJECT

### 8.1 Land and Building

Particulars	Area (Sq.Mtrs)	Cost (Rs.)
Land	150	45,000
Building	70	1,50,000

### 8.2 Plant and Machinery

For a project of 200 tonnes annual capacity, expenditure on machinery is expected to be Rs. 1.90 lacs as discussed earlier.

### 8.3 Miscellaneous Assets

A provision of Rs. 45,000/- is made towards other assets as explained before.

### 8.4 Preliminary & Pre-operative Expenses

Expenses incurred prior to commencement of commercial production are covered under this head. A provision of Rs.60,000/- would take care of registration, establishment and other administrative charges, market survey expenses, interest during implementation and trial run expenses.

### 8.5 Working Capital Requirement

Capacity utilisation in the first year is considered to be 60%. At this level of activity, the requirement of working capital will be as under:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Raw Materials	½ Month	30%	1.65	1.15	0.50
Stock of Finished Goods	½ Month	25%	2.10	1.55	0.55
Receivables	½ Month	25%	2.55	1.90	0.65
Working Expenses	1 Month	100%	0.50	--	0.50
		<b>Total</b>	<b>6.80</b>	<b>4.60</b>	<b>2.20</b>

**8.6 Cost of the Project and Means of Financing** (Rs. in lacs)

Item	Amount
Land and Building	1.95
Machinery	1.90
Miscellaneous Assets	0.45
P&P Expenses	0.60
Contingencies @ 10% on Land and Building and Plant & Machinery	0.39
Working Capital Margin	2.20
<b>Total</b>	<b>7.49</b>
<b>Means of Finance</b>	
Promoters' Contribution	2.32
Term Loan from Bank/FI	5.17
<b>Total</b>	<b>7.49</b>
Debt Equity Ratio	2.23 : 1
Promoters' Contribution	31%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

**9.0 PROFITABILITY CALCULATIONS****9.1 Production Capacity and Build-up**

Installed capacity is 200 tonnes but actual utilisation in the first year is taken at 60% whereas second year onwards, it is restricted to 75%.

**9.2 Sales Revenue at 100%** (Rs. in lacs)

Product	Qty (Tonnes)	Selling Price (Rs./Ton)	Sales
Maize Flakes	200	50,000/-	100.00
Bran & Broken Flakes	38	6,000/-	2.28
		<b>Total</b>	<b>102.28</b>

**9.3 Raw Materials Required at 100%** (Rs. in lacs)

Product	Qty. (Tonnes)	Rate (Rs. per Ton)	Value
Maize Nuts	250	25,000	62.50
Packing Materials	--	--	3.00
		<b>Total</b>	<b>65.50</b>

#### 9.4 Utilities

Total cost of utilities at 100% activity level is expected to be Rs.1 lac:

#### 9.5 Selling Expenses

A provision of 20% of sales income every year is made which would be required to pay commission to dealers/retailers, transportation and low key publicity.

#### 9.6 Interest

Interest on term loan of Rs. 5.17 lacs is calculated @ 12% per annum assuming that it will be totally repaid in 4 years including a moratorium period of 1 year. Interest on bank loan for working capital is taken at 14% per annum.

#### 9.7 Depreciation

Method adopted is WDV and rates taken are 10% on building and 20% on machinery and miscellaneous assets.

### 10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No.	Particulars	1st Year	2nd Year
<b>A</b>	<b>Installed Capacity</b>	---200 Tonnes ---	
	Capacity Utilisation	60%	75%
	Sales Realisation	61.37	76.71
<b>B</b>	<b>Cost of Production</b>		
	Raw & Packing Materials	39.30	49.10
	Utilities	0.60	0.75
	Salaries	1.82	2.15
	Stores & Spares	0.24	0.36
	Repairs & Maintenance	0.36	0.48
	Selling Expenses @ 20%	12.27	15.34
	Administrative Expenses	0.42	0.55
	<b>Total</b>	<b>55.01</b>	<b>68.73</b>
<b>C</b>	<b>Profit before Interest &amp; Depreciation</b>	<b>6.36</b>	<b>7.98</b>
	Interest on Term Loan	0.60	0.40
	Interest on Working Capital	0.64	0.80
	Depreciation	0.59	0.47
	Net Profit	4.53	6.31
	Income-tax @ 20%	0.90	1.26
	Profit after Tax	3.63	5.05
	Cash Accruals	4.22	5.52
	Repayment of Term Loan	--	1.60

## 11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars	Amount	
[A]	Sales	61.37	
[B]	Variable Costs		
	Raw & Packing Materials	39.30	
	Utilities (70%)	0.42	
	Salaries (35%)	1.27	
	Stores & Spares	0.24	
	Selling Expenses (70%)	8.59	
	Admn Expenses (50%)	0.21	
	Interest on WC	0.64	50.67
[C]	Contribution [A] - [B]		10.70
[D]	Fixed Costs		6.17
[E]	Break-Even Point (D ÷ C)		58%

## 12.0 [A] LEVERAGES

### Financial Leverage

$$\begin{aligned} &= \text{EBIT/EBT} \\ &= 5.77 \div 4.53 \\ &= 1.27 \end{aligned}$$

### Operating Leverage

$$\begin{aligned} &= \text{Contribution/EBT} \\ &= 10.70 \div 4.53 \\ &= 2.36 \end{aligned}$$

### Degree of Total Leverage

$$\begin{aligned} &= \text{FL/OL} \\ &= 1.27 \div 2.36 \\ &= 0.54 \end{aligned}$$

**[B] Debt Service Coverage Ratio (DSCR)**

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr
Cash Accruals	4.22	5.52	5.70	5.95
Interest on TL	0.60	0.40	0.25	0.11
<b>Total [A]</b>	<b>4.82</b>	<b>5.92</b>	<b>5.95</b>	<b>6.06</b>
Interest on TL	0.60	0.40	0.25	0.11
Repayment of TL	--	1.75	1.75	1.67
<b>Total [B]</b>	<b>0.60</b>	<b>2.15</b>	<b>2.00</b>	<b>1.78</b>
<b>DSCR [A] ÷ [B]</b>	<b>8.03</b>	<b>2.75</b>	<b>2.98</b>	<b>3.40</b>
<b>Average DSCR</b>	----- <b>4.29</b> -----			

**[C] Internal Rate of Return (IRR)**

Cost of the project is Rs. 7.49 lacs.

(Rs. in lacs)

Year	Cash Accruals	24%	28%	32%
1	4.22	1.79	1.57	1.39
2	5.52	4.45	4.31	4.18
3	5.70	3.71	3.48	3.27
	<b>21.39</b>	<b>9.95</b>	<b>9.36</b>	<b>8.84</b>

The IRR is around 36%.

The machines will be available locally from fabricators and engineering machinery manufacturers.

They are also manufactured by

1. Sujata Enterprises, Laxmi Road, Pine
2. Techno Equipments, 31 Parekh Street, Girgaum, Mumbai- 400004
3. Flourtech Engg Pvt. Ltd. 16/5, Mathura Rd. Faridabad-121002.

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