

# EXTRUDED PUFFED SNACKS



## 1.0 INTRODUCTION

Extruded puffed snacks are made from degermed corn or corn grits, wheat, rice or other cereals. There has been a remarkable growth in the varieties and popularity of such products because they are easily affordable, tasty, easy to make and nutritive. These products are flavoured with cheese, spices, onion, garlic or chilly and broadly fall in the fast food category.

## 2.0 PRODUCTS

### 2.1 Applications

Many varieties with different flavours and sizes can be made. With some imagination, variants of these products can be introduced at regular intervals once the pulse of consumer taste and preference is understood. At times, even some cosmetic changes can lure the consumers. Familiarity with local tastes and likings is very essential. This is a universal project with no preferred location as such. This note considers Assam as the proposed location.

### 2.2 Availability of know-how and compliances

DFRL, Mysore, has developed the know-how. Compliance with PFA Act is compulsory.

## 3.0 MARKET POTENTIAL

With urbanisation, disposable incomes in urban, semi-urban and even in some rural areas are going up. This aspect coupled with changing life styles has opened up many new markets in many sectors including the food processing sector. Last few years have witnessed a remarkable change in preferences and spending habits especially of the younger generation and youth. Extruded puffed snacks are primarily targeted at this segment of the population. These products find various applications like tea time snacks, as munching during ceremonies

or parties, during picnics or outings or simply as fun products. Hence with proper publicity, adequate placement to ensure easy availability and attractive packaging the market can be captured, provided quality is upto the mark.

#### 4.0 MANUFACTURING PROCESS

Good quality corn grits or rice or wheat flour or a combination of these ingredients is mixed with water and then this mixture is fed to the hopper of the extruder. During the process, extruder machine converts natural starches in these cereals into cold solution, which on cooking in the extruder, is converted into an expanded form. These longish pieces are then cut into the desired length. The product at this stage has moisture content of about 6% and it is immediately dried in the dryer to bring down moisture level to about 2%. Raw dried pieces are then fed to blender for coating with oil and spices. Oil is sprayed through a spray gun activated by dried and filtered air from a compressor. These coated products are directly fed to the hopper of automatic form, fill and seal machine where they are packed.

#### 5.0 CAPITAL INPUTS

##### 5.1 Land and Building

The built-up area requirement is about 100 sq.mtrs. and therefore a plot of land of around 200 sq.mtrs. is recommended. Price of land may vary according to the location but it is taken at Rs. 300/- per sq.mtr. Thus, an amount of Rs. 0.60 lacs is likely to be spent. As regards, the constructed area, main production hall of 50 sq.mtrs. would be enough. Storage and packing rooms would be of 30 sq.mtrs. and balance 20 sq.mtrs. for a small office and toilet blocks. The total construction cost is estimated to be Rs. 2.50 lacs.

##### 5.2 Plant and Machinery

Keeping in mind the financial viability of the project, it is advisable to have installed production capacity of 6 tonnes per month or 72 tonnes per year with 300 working days and working of 2 shifts per day. In view of this, following machines are suggested:

Item	Qty.	Price (Rs.)
Extruder with screws, barrel and electric motor and other attachments	1	3,00,000
Tray dryer with 48 trays	1	80,000
Blender with spray gun, heater and compressor	1	70,000
Automatic Form, fill and sealing machines	2	1,50,000
Weighing scale, hot air oven, laboratory equipments, etc.	--	50,000
	<b>Total</b>	<b>6,50,000</b>

##### 5.3 Miscellaneous Assets

Many other support assets like furniture and fixtures, electrical, storage racks and bins, stainless steel utensils etc. shall be required for which a provision of Rs. 75,000/- is made.

#### 5.4 Utilities

Total power requirement is estimated to be 60 HP whereas about 1000 ltrs. of water shall be required every day. The total cost under this head at 100% activity level is assumed to be Rs. 1, 00,000/-.

#### 5.5 Raw Material

The main raw materials are corn grits and rice or wheat flour. Other materials are edible oils, spices, salt, chillies, etc. All of them are available locally. Corns are not grown in much quantities in North-East but since the quantity required is not much, no difficulty is envisaged. However, it is advisable to line up the supplies well in advance. Packing would play a critical role and hence it is suggested to engage a professional designer. Suppliers who can supply printed rolls of pouches need to be contacted in advance.

### 6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Worker	4	1,800	7,200
Unskilled Workers	4	1,250	5,000
Semi-skilled Workers	2	1,500	3,000
Machine Operators	2	2,500	5,000
Clerk	1	2,000	2,000
Salesmen	2	2,500	5,000
		<b>Total</b>	<b>27,200</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

Item	Area (Sq.Mtrs)	Cost (Rs.)
Land	300	60,000
Building	100	2,50,000
	<b>Total</b>	<b>3,10,000</b>

## 8.2 Plant and Machinery

A detailed list is already furnished earlier. Total landed cost and installation charges are estimated to be Rs. 6.50 lacs.

## 8.3 Miscellaneous Assets

A provision of Rs. 75,000 would take care of needs under this category as narrated before.

## 8.4 Preliminary & Pre-operative Expenses

Expenses like registration charges, establishment and quick market assessment fees, interest during implementation, trial runs, etc. are taken at Rs. 65,000/-.

## 8.5 Working Capital Requirement

The proposed installed capacity of the plant shall be 72 tonnes per year. But the capacity utilisation in the first year is assumed to be 65%. At this activity level, the working capital needs shall be as under:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Shock of RMs	1 Month	30%	0.95	0.65	0.30
Stock of Packing Materials	1 Month	30%	0.50	0.35	0.15
Stock of Finished Goods	¼ Month	25%	0.60	0.45	0.15
Receivables	½ Month	25%	1.35	1.00	0.35
Working Expenses	1 Month	100%	0.40	--	0.40
		<b>Total</b>	<b>3.80</b>	<b>2.45</b>	<b>1.35</b>

## 8.6 Cost of the Project and Means of Financing

(Rs. in lacs)

Item	Amount
Land and Building	3.10
Plant and Machinery	6.50
Miscellaneous Assets	0.75
P&P Expenses	0.65
Contingencies @ 10% on Land, Building and Plant & Machinery	0.90
Working Capital Margin	1.35
<b>Total</b>	<b>13.25</b>
<b>Means of Finance</b>	
Promoters' Contribution	3.85
Loan from Bank/FI	9.40
<b>Total</b>	<b>13.25</b>
Debt Equity Ratio	2.44 : 1
Promoters' Contribution	29%

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

The proposed production capacity of the plant at 100% is 72 tonnes per year. Capacity utilisation in the first year is envisaged to be 65% whereas second year onwards it is restricted to 75%.

### 9.2 Sales Revenue at 100%

(Rs. in lacs)

Product	Qty (Tonnes)	Selling Price/Ton	Sales Value
Extruded Puffed Snacks	72	70,000	50.40

### 9.3 Raw Materials Required at 100%

(Rs. in lacs)

Product	Qty (Tonnes)	Price/Ton (Rs)	Value
Corn Grits	50	13,000	6.50
Wheat/Rice Flour	15	14,000	2.10
Edible Oil	2	50,000	1.00
Spices 3	70,000	2.10	
Salt 2	4,000	0.08	
Printed Rolls of Food Grade Plastic Film (15 lacs pouches of 50 gms. capacity)	--	--	6.32
Corrugated Boxes (Assorted sizes)	--	--	7.04
		<b>Total</b>	<b>25.14</b>

### 9.4 Utilities

The total expenditure under this head at 100% capacity utilisation is expected to be Rs.1, 00,000/- as explained earlier.

### 9.5 Selling Expenses

Extruded puffed snacks can be sold through number of outlets spread across a large area which would entail considerable transportation cost. Commission of 7% to 8% shall have to be paid to the retailers and product sampling is also required.

### 9.6 Interest

Interest on term loan assistance of Rs. 9.40 lacs is calculated @ 12% per year considering repayment in 5 years including a moratorium period of 1 year. Interest on working capital loan from bank is computed @ 14% per annum.

### 9.7 Depreciation

It is calculated on WDV basis and rates considered are 10% on building and 20% on plant and machinery and miscellaneous assets.

## 10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No.	Particulars	1st Year	2nd Year
<b>A</b>	<b>Installed Capacity</b>	---- 72 Tonnes ----	
	Capacity Utilisation	65%	75%
	Sales Realisation	32.76	37.67
<b>B</b>	<b>Cost of Production</b>		
	Raw Materials	10.45	12.00
	Packing Materials	5.90	6.80
	Utilities	0.65	0.75
	Salaries	3.26	3.71
	Stores & Spares	0.60	0.70
	Repairs & Maintenance	0.75	0.90
	Selling Expenses @ 12.5%	4.10	4.70
	Administrative Expenses	1.20	1.40
	<b>Total</b>	<b>26.91</b>	<b>30.96</b>
<b>C</b>	<b>Profit before Interest &amp; Depreciation</b>	<b>5.85</b>	<b>6.71</b>
	Interest on Term Loan	1.05	0.79
	Interest on Working Capital	0.36	0.40
	Depreciation	1.64	1.31
	Net Profit	2.80	4.21
	Income-tax @ 20%	0.55	0.85
	Profit after Tax	2.25	3.36
	Cash Accruals	3.89	4.67
	Repayment of Term Loan	--	2.15

## 11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars	Amount	
<b>[A]</b>	<b>Sales</b>	<b>32.76</b>	
<b>[B]</b>	<b>Variable Costs</b>		
	Raw Materials	10.45	
	Packing Materials	5.90	
	Utilities (70%)	0.39	
	Salaries (35%)	1.95	
	Stores & Spares	0.60	
	Selling Expenses (70%)	2.87	
	Admn. Expenses (50%)	0.60	
	Interest on Working Capital	0.36	<b>23.12</b>
<b>[C]</b>	<b>Contribution [A] - [B]</b>		<b>9.64</b>
<b>[D]</b>	<b>Fixed Cost</b>		<b>5.84</b>
<b>[E]</b>	<b>Break-Even Point (D ÷ C)</b>		<b>61%</b>

## 12.0 [A] LEVERAGES

### Financial Leverage

$$\begin{aligned} &= \text{EBIT/EBT} \\ &= 4.21 \div 2.80 \\ &= 1.50 \end{aligned}$$

### Operating Leverage

$$\begin{aligned} &= \text{Contribution/EBT} \\ &= 9.64 \div 2.80 \\ &= 3.44 \end{aligned}$$

### Degree of Total Leverage

$$\begin{aligned} &= \text{FL/OL} \\ &= 1.50 \div 3.44 \\ &= 0.44 \end{aligned}$$

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

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr	5th Yr
Cash Accruals	3.89	4.67	5.21	5.80	6.39
Interest on TL	1.05	0.79	0.59	0.33	0.16
<b>Total [A]</b>	<b>4.94</b>	<b>5.46</b>	<b>5.80</b>	<b>6.13</b>	<b>6.55</b>
Interest on TL	1.05	0.79	0.59	0.33	0.16
Repayment of TL	--	2.35	2.35	2.35	2.35
<b>Total [B]</b>	<b>1.05</b>	<b>3.14</b>	<b>2.94</b>	<b>2.68</b>	<b>2.51</b>
<b>DSCR [A] ÷ [B]</b>	<b>4.70</b>	<b>1.73</b>	<b>1.97</b>	<b>2.28</b>	<b>2.60</b>
<b>Average DSCR</b>	----- <b>2.65</b> -----				

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

Cost of the project is Rs. 13.25 lacs.

(Rs. in lacs)

Year	Cash Accruals	18%	20%	24%
1	3.89	3.29	3.24	3.14
2	4.67	3.35	3.24	3.04
3	5.21	3.17	3.02	2.73
4	5.80	2.99	2.80	2.45
5	6.39	2.79	2.57	2.18
	<b>25.96</b>	<b>15.59</b>	<b>14.87</b>	<b>13.54</b>

The IRR is around 23%.

**The machinery shall be available from:**

1. M/s. Archana Machinery Stores, Guwahati
2. M/s. Narang Corporation, Shillong
3. Gurunanak Engg and foundry works, 166 Focal Point, Mehta Rd, Amritsar-143039.  
Tel No. 2583542/2587943, Fax: 2587944
4. Sadanand Approtech Pvt. Ltd. B-34, Mini Nagar, Dahisar (E), Mumbai-400068.  
Tel No. 28114536/28104143