

TEXTURISED SOYA PROTEIN



1.0 INTRODUCTION

Soyabeans are rich in proteins and are becoming popular day-by-day. States like MP, UP, Maharashtra, Gujarat etc. are producing substantial quantities with MP being the largest producer. Bulk of the soyabeans are processed by solvent extraction plants for oil leaving large quantities of defatted soya flakes. These flakes or deoiled soya cake can be converted into nuggets or chunks by extrusion. Hence the project should be preferably located close to the soyabean extraction plants.

2.0 PRODUCT

2.1 Applications

Texturised soya products have become popular. They are used alongwith other vegetables for making curries etc. They are low cost but protein rich substitutes of cheese, paneer, meat and fish.

2.2 Compliance and Quality Standards

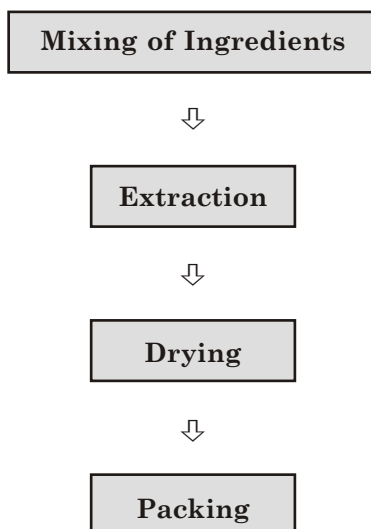
Provisions of the PFA Act must be strictly adhered to.

3.0 MARKET POTENTIAL

Soya products have become very popular not only amongst the health conscious people but also with others as they are easy to digest and rich in proteins. Products like edible oil, paneer, flour, milk, nuggets or chunks etc. made from soyabeans are gaining popularity. Texturised soya products like nuggets or chunks are used in large quantities alongwith other vegetables while making curries. Thus restaurants, caterers, clubs and canteens and ready-to-eat vegetable manufacturers are the bulk consumers. There are good export possibilities as well but that market can be explored once the quality of the product is well-established.

4.0 MANUFACTURING PROCESS

It is imperative to have good quality solvent extracted flour for processing with the Nitrogen solubility index in the range of 45% to 50%. Other parameters are 7.5 to 8.5% moisture, 53 to 54% proteins, less than 10% fat, 2 to 3% fiber and yellow to light brown colour. Extracted flour with these characteristics is suitable for extrusion. Extrusion technology is based on high temperature short time processing. Rice and baking powder in a small quantity are mixed with the deoiled soya flour or cake. The chunks are dried after extrusion. The chunks can also be converted into flakes or granules. The typical process flow chart is as under.



5.0 CAPITAL INPUTS

5.1 Land & Building

A plot of around 300 sq.mtrs. with constructed area of 150 sq.mtrs. can accommodate production area, godown and a small factory office. Land may cost Rs. 90,000/- whereas cost of construction is estimated to be Rs. 3.75 lacs.

5.2 Machinery

Rated annual production capacity of 600 tonnes with double shift working and 300 working days would need following equipments:

(Rs. in lacs)		
Particulars	Qty	Amount
Mixing-cum-grinding machine with 5 HP motor and other accessories	1	1.50
Soya Nugget Extrusion Plant with 30 HP motor and complete set of screws, barrel and suitable dies	1	12.00
Vibrating sieve with 3 HP motor	1	0.40
200 kg. Capacity platform type weighing scale	1	0.15
Bag sewing machine	1	0.10
	Total	14.15

5.3 Miscellaneous Assets

Other assets like furniture & fixtures, storage facilities, plastic tubs, office equipments etc. would need Rs. 1.25 lac.

5.4 Utilities

Total power requirement shall be 60 HP whereas daily water requirement shall be 2000 ltrs.

5.5 Raw and Packing Materials

The most critical material will be good quality deoiled soya flour and the annual requirement shall be 600 tonnes for which adequate prior arrangements are advisable. Rice and baking powder shall be required in small quantity. HDPE bags and barrels shall be the packing materials.

6.0 MANPOWER REQUIREMENTS

Particulars	No	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Machine Operator	1	3,000	3,000
Skilled Workers	2	2,500	5,000
Helpers	8	1,250	10,000
Salesman	1	2,500	2,500
		Total	20,500

7.0 PROJECT IMPLEMENTATION

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

(Rs. in lacs)

Particulars	Area (Sq.Mtrs)	Cost
Land	300	0.90
Building	150	3.75

8.2 Machinery

Total cost of machinery for rated capacity of 600 tonnes per year is estimated to be Rs. 14.15 lacs as explained earlier.

8.3 Miscellaneous Assets

Other support assets are likely to cost Rs. 1.25 lacs as stated before.

8.4 Preliminary and Pre-Operative Expenses

Expenses like registration and establishment charges, travelling, interest during implementation, trial runs etc. are estimated to be Rs. 1.75 lacs.

8.5 Working Capital Requirement

At 60% capacity utilisation in the first year, the working capital needs shall be as under:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Raw and Packing Materials)	½ Month	30%	1.55	1.10	0.45
Stock of Finished Goods	½ Month	25%	1.85	1.40	0.45
Receivables	1 Month	25%	5.40	4.05	1.35
Working Expenses	1 Month	100%	0.50	--	0.50
		Total	9.30	6.55	2.75

8.6 Cost of the Project and Means of Financing

(Rs. in lacs)

Items	Amount
Land and Buildings	4.65
Machinery	14.15
Miscellaneous Assets	1.25
Preliminary and Pre-operative Expenses	1.75
Contingencies @ 10% on land, building and machinery	1.90
Working Capital Margin	2.75
Total	26.45
Means of Finance	
Promoter's Contribution	7.45
Term Loan from Bank/FI	19.00
Total	26.45
Debt Equity Ratio	2.55 : 1
Promoters' Contribution	28%

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

As against the rated production capacity of 600 tonnes, utilisation in the first year is assumed to be 60% and thereafter, it is restricted to 75%

9.2 Sales Revenue at 100%

Assuming selling price of Rs. 18,000/- per ton, the annual sales at 100% shall be Rs. 108.00 lacs.

9.3 Raw and Packing Materials Required at 100%

(Rs. in lacs)

Item	Qty. (Tonnes)	Rate (Rs/Ton)	Value
Deoiled Soya Flour	600	8,000	48.00
Rice	5	12,000	0.60
Baking Powder	1	1,10,000	1.10
Packing Material @ Rs.2000/Ton	600	-	12.00
		Total	62.10

9.4 Utilities

Annual expenditure on utilities at 100% activity level is estimated to be Rs. 3.50 lacs.

9.5 Selling Expenses

A provision of 15% of sales every year would take care of transportation, selling commission and other expenses.

9.6 Interest

Interest on term loan of Rs. 19.00 lacs is calculated @ 12% per annum assuming complete repayment in 5 years including a moratorium period of 1 year whereas on working capital from bank, it is computed @ 14% per annum.

9.7 Depreciation

It is computed on WDV basis and rates assumed are 10% on building and 15% on machinery and miscellaneous assets.

10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No	Particulars	1st Year	2nd Year
A	Installed Capacity	--- 600 tonnes ---	
	Capacity Utilisation	60%	75%
	Sales Income	64.80	81.00
B.	Cost of Production		
	Raw and Packing Materials	37.26	46.58
	Utilities	2.10	2.63
	Salaries	2.46	3.00
	Stores and Spares	0.48	0.60
	Repairs and Maintenance	0.60	0.75
	Adm. Expenses	1.20	1.80
	Selling Expenses @ 15%	9.72	12.15
	Total	53.82	67.51
C.	Profit Before Interest & Depreciation	10.98	13.49
	Interest on Term Loan	2.28	1.85
	Interest on Working Capital	0.92	1.15
	Depreciation	2.69	2.30
	Profit before Tax	5.09	8.19
	Income Tax @ 20%	1.02	1.64
	Profit after Tax	4.07	6.55
	Cash Accrual	6.76	8.85
	Repayment of Term Loan	--	4.75

11.0 BREAK-EVEN POINT ANALYSIS

(Rs. in lacs)

No.	Particulars	Amount	
A	Sales		81.00
B	Variable Cost		
	Raw and Packing Materials	46.58	
	Utilities (70%)	1.84	
	Salaries (70%)	2.10	
	Repairs and Maintenance	0.75	
	Selling Expenses (70%)	8.50	
	Administrative Expenses (50%)	0.90	
	Interest on working capital	1.15	61.82
C	Contribution (A - B)		19.18
D.	Fixed Cost		10.99
E.	Break-Even Point (D ÷ C)		57%

12.0 [A] LEVERAGES

Financial leverage

$$= \text{EBIT/EBT}$$

$$= 11.19 \div 8.19$$

$$= 1.37$$

Operating Leverage

$$= \text{Contribution/EBT}$$

$$= 19.18 \div 8.19$$

$$= 2.34$$

Degree of Total Leverage

$$= \text{FL/OL}$$

$$= 1.37 \div 2.34$$

$$= 0.59$$

[B] Debt Service Coverage Ratio

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr	5th Yr
Cash Accruals	6.76	8.85	9.24	9.77	10.28
Interest on Term Loan	2.28	1.85	1.28	0.71	0.39
Total (A)	9.04	10.70	10.52	10.48	10.67
Interest on Term Loan	2.28	1.85	1.28	0.71	0.39
Repayment of Term Loan	--	4.75	4.75	4.75	4.75
Total (B)	2.28	6.60	6.03	5.46	5.14
DSCR (A) ÷ (B)	3.96	1.62	1.74	1.91	2.07
Average	----- 2.26 -----				

[C] Internal Rate of Return (IRR)

Cost of the project is Rs. 26.45 lacs

(Rs. in lacs)

Year	Cash Accruals	20%	24%	28%	32%
1	6.76	5.63	5.45	5.28	5.12
2	8.85	6.14	5.75	5.40	5.08
3	9.24	5.35	4.84	4.41	4.02
4	9.77	4.71	4.13	3.64	3.21
5	10.28	4.13	3.51	2.99	2.57
6	10.81	3.62	2.97	2.45	2.04
	55.71	29.58	26.65	24.17	22.04

The IRR is around 24%.

Some of the machinery suppliers are

1. Brimco Engg. Works, M-24/1, Street No 9, Anand Parbat Inds Area, New Delhi 110 005.
Tel. No. : 25726347- 25761786, Fax: 22145040
2. Flavourite Foods & Services Pvt Ltd, 208 Manas Bhavan, 11 RNT Marg, Indore 452 008
Tel. No. : 2527644, 5046509, Fax: 5040953
3. Osaw Agro Inds Pvt Ltd, PO Bag No 5, Osaw Complex, Jagadhri Road, Ambala Cant 133 001
Tel. No. : 2699167-354-547, Fax: 2699018
4. PRS Technologies Pvt Ltd, D-26, NDSE Part-II, New Delhi 110 049
Tel. No.: 26252176-77, Fax: 26252178
5. Sifter International, Plot No 83, Sector 6, Faridabad 121 006
Tel. No. : 2231154-4540, Fax: 2230039
6. Wintech Taparia Ltd, 25/1, Yeshwant Niwas Road, Indore 452 003
Tel. No. : 2433950, 2534586, Fax: 5040696