

# **PROJECT PROFILE**

ON

ASEPTIC PACKAGING OF FRUIT  
PULPS AND PUREES

Month & Year  
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**PREPARED BY  
TANSTIA-FNF SERVICE CENTRE  
B-22, INDUSTRIAL ESTATE  
CHENNAI-600032**

**Supported by**

Friedrich Naumann  
STIFTUNG **FÜR DIE FREIHEIT**



## **ASEPTIC PACKAGING OF FRUIT PULPS AND PUREES**

### **1. Introduction**

Fruits and vegetables have a very short shelf life after harvest. In order to prevent post harvest losses, they have to be processed immediately or stored under refrigerated conditions. Aseptic packaging of fruit and vegetable pulp is currently adopted by many processing industries, as the process does not affect the product cost largely. Moreover, there are no chemical preservatives added and this is preferred by foreign buyers. The present profile considers tomatoes for processing as an example.

### **2. Market**

The market for aseptically packed pulps and purees of mango, guava, banana and tomato is both domestic and abroad. Manufacturers of jams, juices, ketchup and ice-creams are the potential buyers.

### **3. Packaging**

Mango and tomato purees are packed in aseptic cartons of varying capacities according to the specification of the buyer.

### **4. Production capacity**

- The plant will be in operation for three shifts a day.
- The production capacity is estimated at 5000 kilograms per hour or 100 metric tonnes per day or 2500 metric tonnes per month or 30000 tonnes per annum
- The yield of mango and tomato purees will be approximately 50%. The total yield per day would be 50 metric tonnes and that per annum would be 15000 metric tonnes.
- The time period required for achieving full capacity utilisation is one year.

### **5. Sales revenue**

- With an ex-factory selling price at Rs. 50.00 per kilogram inclusive of taxes, the net sales revenue will be Rs. 7500 lakhs on full capacity utilisation.

## **6. Production process outline.**

Ripe fruits are taken. Green and unripe ones are avoided as it would discolour the final product and increase the acidity. The fruits are first washed. Mere rinsing of fruits is not enough because mold filaments and other micro-organisms found in their cracks and wrinkle folds and stem cavities are not easily dislodged. For thorough cleaning, they should be washed in running water. In the washing tank, water is circulated and a jet of air bubbled for agitation.

After washing, the tomatoes are conveyed by a belt conveyer for pulping. In the belt conveyer, excess water adhering to the surface of tomatoes is drained off by a jet of cold air. In addition, segregation also takes place on the conveyer to remove unripe and damaged ones. The tomatoes pass through a chopper wherein they are cut into small pieces. The pieces are then softened by the hot break method wherein they are subjected to a temperature of 90 degrees centigrade for a few seconds. The softened mass pass through a superfine pulper and the juice and pulp are separated from the seeds. The extracted juice and pulp are taken to a vacuum concentrator where they are concentrated under jacketed steam and vacuum to nearly 50% of its original volume. From the vacuum concentrator, the puree is pumped to a steriliser where it is pastuerised and then pumped to the head of the aseptic filling machine for packaging. The container is also sterilized simultaneously by dry steam. The puree is then packed aseptically.

## **7. Quality specifications**

- The manufacturer has to obtain an FPO license (Fruit Products Order license) in order to manufacture the product.
- It shall test negative for coliforms, salmonella and streptococci bacteria.

## **8. Pollution control measures**

Not necessary as there are no pollutants or effluents.

## **9. Energy conservation measures**

Common measures will do.

**10. Land and construction cost for the proposed unit**

Land 5.0 acre - Rs.10.0 lakhs.

Processing area is 35000 square feet as detailed below.

SI	Description	Sq. feet
1	Pre cooling area for fruits	5000
2	Preparatory section	5000
3	Processing section	10000
4	Cold store area for finished products	2000
5	Laboratory	500
6	Administrative section	1000
7	Boiler area	1000
8	Refrigeration compressor room	1000
9	Raw material store room	5000
10	Toilet space	1000
11	First aid and canteen	3000
12	Security office	500
<b>13</b>	<b>Total</b>	<b>35000</b>

Construction cost – Rs. 800 per square foot

Total cost of civil works – Rs. 280.00 lakhs

Total cost of land and civil works = Rs. 290.00 lakhs

**11. Costing of machinery and equipment**

• **Preparatory section**

- a) Primary washing tank wherein the fruits are unloaded. The system consists of a centrifugal circulation pump which sucks the water from the tank, filters and recycles the filtered water to the tank.
- b) Elevator for conveying the fruits to the secondary washing tank.
- c) Washing machine with nozzles for water spray.
- d) Belt conveyer for sorting and inspection of the fruit and removing surface moisture
- e) Feed and discharge hoppers.
- f) Chopper for chopping of tomato and other fruits together with stainless steel chamber, rotor blades, feed and discharge hopper.

- **Processing section**

- g) The hot break system for softening the fruit by thermal treatment for conversion to pulp / juices. Unit consists of receiving tank, high speed centrifugal pump for recirculation, heat exchangers with thermostat control for heating the fruit mass.
- h) Super pulper for extraction of pulp.
- i) Juice and pulp collection tank.
- j) Screw type waste conveyer for removal of waste such as seed and skin from the pulper.
- k) Vacuum concentrator
- l) Steriliser
- m) Sterilizing and aseptic packaging line for complete sterilization of puree and tetrabrik packing bags with heat exchangers and chillers complete with all accessories and controls; aseptic filler etc.

- **Additional equipment**

- n) Additional preparatory section equipment for processing, papaya, guava, mango and banana.
- o) Accessories such as pipelines, flanges, motors, valves, etc.

- **Total cost of processing equipment inclusive of duties and taxes - Rs. 1180.407 lakhs.**

- **Accessory machinery**

- p) Boiler - 5 Tons / hour capacity - Rs.36.00 lakhs
- q) Air compressor - Rs. 1.60 lakhs
- r) Tube wells for continuous water supply - Rs. 20.00 lakhs
- s) Cooling tower - Rs. 3.50 lakhs
- t) Weigh bridge - Rs. 12.00 lakhs
- u) Generator - 500 KVA along with accessories - Rs.26.00 lakhs
- v) Effluent treatment plant - Rs.30.00 lakhs
- w) Air conditioning plant - Rs.30.00 lakhs
- x) Water softening plant - Rs. 3.00 lakhs
- y) Laboratory equipment - Rs. 2.00 lakhs

- **Total cost of machinery and equipment - Rs. 1344.51 lakhs**

**12. Project cost**

<b>SI</b>	<b>Description</b>	<b>Rs. lakhs</b>
1	Land	10.000
2	Civil works	280.000
3	Plant machinery	1342.510
4	Laboratory equipment	2.000
5	Transport vehicle ( 2 LCV)	15.000
6	Pollution control equipment	Included
7	Energy conservation equipment	Included
8	Cost of power connection	1.500
9	Cost of electrification	5.000
10	Erection and commissioning	67.000
11	Cost of machinery spares	10.000
12	Cost of office equipment	2.000
13	Deposits if any	0.000
14	Company formation expenses	0.500
15	Gestation period expenses	10.000
16	Sales tax registration expenses	0.200
17	Initial advertisement and publicity	50.000
18	Contingencies	5.000
19	Working capital margin money	220.624
<b>20</b>	<b>Total</b>	<b>2021.334</b>

**13. Working capital requirements per month**

**a. Salaries and wages**

SI	Description	No of persons	Total salary / month (Rs. lakhs)
1	Managing Director	1	1.000
2	General Manager (Technical)	1	0.800
3	General Manager (Finance)	1	0.800
4	General Manager (Marketing)	1	0.800
5	Production Manager	1	0.500
6	Production Supervisors	3	0.900
7	Maintenance Engineers	3	0.900
8	Maintenance Supervisors	3	0.750
9	Quality Control Chemists	3	0.750
10	Boiler Operators	3	0.900
11	Refrigeration Mechanics	3	0.900
12	Sales Staff	5	0.750
13	Skilled Workers	10	0.600
14	Unskilled workers	40	1.600
15	Administrative staff	5	1.000
16	Security staff	10	0.600
17	<b>Total</b>	<b>93</b>	<b>13.550</b>

**b. Raw material requirement per month**

SI	Description	Qty (kgs)	Rate / kg (Rs)	Value (Rs. lakhs)
1	Tomatoes	2750,000	10.00	275.00
2	<b>Total raw material</b>	<b>2750,000</b>		<b>275.00</b>

**c. Packaging material requirement per month**

SI	Description	Qty	Rate / unit (Rs)	Value (Rs. lakhs)
1	Primary packaging material – polyethylene pouches or film			100.000
2	Cartons and straps	125000 nos	40	50.00
3	<b>Total</b>			<b>150.00</b>

**Total raw + packaging material = Rs. 425.00 lakhs**



**d. Utilities per month**

SI	Description	Rs. lakhs
1	Power 200000 kwh @ Rs. 6.00 per unit	12.000
2	Water	2.250
3	Boiler fuel	1.000
4	Refrigeration gas	0.250
5	<b>Total utilities</b>	<b>15.500</b>

**e. Contingent expenses per month**

SI	Description	Rs. lakhs
1	Rent for processing shed	0.000
2	Postage and stationery	0.050
3	Telephones, fax etc.	0.100
4	Consumable stores	0.250
5	Repairs and maintenance	1.110
6	Local transports, loading and unloading	6.000
7	Advertisement and publicity @ 4% of sales	25.000
8	Insurance	2.500
9	Sales expenses @ 2% of sales	12.500
10	Miscellaneous expenses @ 2% of sales	12.500
11	Trade incentives @ 2% of sales	12.500
12	Taxes @ 4%	25.000
13	<b>Total contingent expenses</b>	<b>97.510</b>

**f. Total working capital requirement per month**

SI	Description	Rs. lakhs
1	Salaries and wages	13.550
2	Raw material and packaging material	425.000
3	Utilities	15.500
4	Contingent expenses	97.510
5	<b>Total</b>	<b>551.560</b>

**14. Means of finance**

SI	Description	Rs. lakhs
1	Total Project Cost	2021.334
2	Equity	667.040
3	Debt	1354.294
4	Working capital margin money	220.624

**15. Financial analysis**

SI	Description	Rs. lakhs
1	Total recurring cost per year	6618.720
2	Depreciation on land and building	30.000
3	Depreciation on machinery	135.900
4	Depreciation on furnaces	3.600
5	Depreciation on moulds and fixtures	0.050
6	Depreciation on office equipment	0.200
7	Interest on long term loan @ 13.5%	182.830
8	Interest on short term borrowings@ 13.5%	44.676
9	<b>Total cost of production</b>	<b>7015.976</b>

**16. Turnover per year**

SI	Item	Qty	Rate/unit (Rs)	Total Rs. lakhs
1	<b>Fruit Purees Aseptically Packed</b>	<b>15000 MT</b>	<b>50,000</b>	<b>7500.00</b>

**17. Viability analysis**

SI	Description	Value
1	Net profit before income tax (Rs. lakhs)	484.024
2	Net profit ratio	6.5%
3	Internal rate of return	23.8%
4	Break even percentage	46%
5	Debt service coverage ratio	2.248

*List of machinery suppliers for Aseptic packaging of fruit purees*

1. Pennwalt Bertuzzi Limited, 507, Kakad Chambers, 132, Dr. Annie Besant Road, Worli. Mumbai. 400018; Tel: 022 - 24932702; Fax: 022 - 24936255.
2. Abhay and Abhay Private Limited, B - 84 - 1; Okhla Industrial Estate - II; New Delhi.110020.; Tel: 011 - 26831215; Fax: 011 - 26830190