

PP DISPOSABLE SYRINGES

1. INTRODUCTION

Plastics are finding greater use in medical disposables and replacing conventional materials like metals and glass. One such application which has been established in the country is the use of disposable syringes produced from polypropylene resin by the process of injection moulding. The components include the plunger, main body which is graduated to indicate capacity, gasket, needle holder and the sheath cover for the needle.

The individual syringes are over wrapped in a polyethylene film pouch for subsequent sterilization by ethylene oxide/gamma radiation.

PP injection moulded syringes are available in sizes of 1 ml, 2 ml, 5 ml, and 10 ml, & also higher sizes in a variety of designs.

Due to its availability in sterilized condition, cost economics and ready to use form, disposable syringes are replacing glass syringes due to advantages such as crack resistance and safety from damage in transit.

The PP disposable syringes are having many advantages over conventional glass syringes such as light weight, Crack resistant, Leak proof, Disposable, Eco friendly, Sterilisable, See through clarity etc.

2. MARKET POTENTIAL

The advent of AIDS, serum Hepatitis and other dreaded infectious diseases have added now dimension and this led to rapid increased use of disposable syringes in developing countries. Use of disposable syringes is fast catching in India also and therefore offers good scope. In view of

this, the new units will not face any problems in marketing their product in future.

3. BASIS & PRESUMPTIONS

- (i) The output capacity is taken as 150 Kgs/hr. The unit will work at 20 hrs. per day for 25 working days in a month and 300 days in a year. The output capacity may vary from machinery to machinery and the cost of machinery may also vary from supplier to supplier.
- (ii) The time period for achieving the full envisaged capacity utilisation is six months
- (iii) The labour wages are as per the prevailing rates in the market
- (iv) The rate of interest for fixed and working capital is taken as 12 per cent
- (v) The margin money requirement for this project is 30 per cent
- (vi) The pay back period of this project is 5 years
- (vii) The rate of land is taken @ Rs. 500/-per sq. mtr. and construction charges are taken @ Rs. 3500 per sq. mtr. This may also vary from place to place.
- (viii) The present profile has to be updated taking into prevailing cost of land, building, machinery etc. at the time of implementation of the project

4. IMPLEMENTATION SCHEDULE

The Time requirement for preparation of Project report	:	Two months
Time requirement for selection of Site	:	One month
Time required for registration as Small Scale Unit	:	One Week
Time required for acquiring the loan		

Machinery procurement, erection and commissioning : Three months
Recruitment of labourer etc. : One month
Trial runs : One month

5. **TECHNICAL ASPECT**

MANUFACTURING PROCESS

To manufacture plastic syringes, the machinery required will be injection moulding machines, set of Multicavity moulds and sterilization chamber.

Polypropylene granules are fed into an injection-moulding machine, where they are plasticized and then injected into a Multicavity mould. The mould is held under pressure and material is cooled, the product is then ejected.

PP syringes are made of :

- (a) Barrel
- (b) Plunger
- (c) Gasket
- (d) Protector
- (e) Hub

Barrel and Plunger are made of PP by injection moulding whereas Gasket is made separately.

Syringes produced are packed and then sterilized using Gamma Radiation or Ethylene oxide. This project considers sterilization by Ethylene Oxide.

6. **QUALITY & STANDARD**

For starting unit for the manufacturing disposable syringe, drug licence is essential and are manufactured according to Drug Control Act.

7. PRODUCTION CAPACITY (Per Annum)

- (a) Quantity (Lakh) : 5 ml – 150 lakhs
2 ml - 75 lakhs
- (b) Value (Rs.) : 3,45,00,000.00

8. TOTAL POWER REQUIREMENT

Total connected load (KW) : 215

9. POLLUTION CONTROL MEASURES

The unit does not create any pollution. However, a proper ventilation should be made in the processing area for the better circulation of the fresh air.

10. ENERGY CONSERVATION

Entrepreneurs may select energy efficient machinery and proper planning has also to be made for saving energy in the unit.

11. FINANCIAL ASPECT

A. FIXED CAPITAL

i) LAND & BUILDING: Area sq. mtrs. Rate Rs. per Sq. mtr.
(Rs.)

Land	760	300	2,28,000.00
Building	380	3500	13,30,000.00

15,58,000.00

Total : -----

ii) MACHINERY & EQUIPMENT:

<u>Sr. No.</u> (Rs.)	<u>Description of machines</u>	<u>Qty.(Nos.)</u>
(a) Production Unit		
1)	Injection Moulding M/c. 125 T 20,25,000.00	01
2)	Sterilisation Plant and Assembling Line 1,00,00,000.00	01
3)	Clean Room Air System	01 20,00,000.00
(b) Testing Equipment & Other Accessories 1,25,000.00		
(c) Electrification & Installation @ 10% of cost & machinery 14,15,000.00 (a) & (b)		
(d) Pre-operative expenses 1,00,000.00		
Total cost of machinery & equipment (a to d)		
1,56,65,000.00		
(e) Cost of Moulds & Dies & Misc. items 2,00,000.00		
(f) Cost of Office Equipment/Furniture/Computers etc. 3,00,000.00		
Total:		----- 1,61,65,000.00 -----

Total Fixed Cost = (i) + (ii) = 15,58,000 + 1,61,65,000 =
1,77,23,000.00

B. WORKING CAPITAL

i) Staff and Labour (Per Month)

Designation (Rs.)	Nos.	Salary (Rs.)

Production Engineer/Manager	01	20,000.00	20,000.00
Sales Executive	02	10,000.00	20,000.00
	99		
Accountant	01	10,000.00	10,000.00
Store Keeper-cum-Clerk	01	8,000.00	
		8,000.00	
Watchman	03	4,000.00	12,000.00
Supervisor	03	6,000.00	18,000.00
Skilled Workers	18	5,000.00	90,000.00
Unskilled Workers	25	4,000.00	
		1,00,000.00	

			2,78,000.00
Add perquisite @ 10% of the Salary			
			27,800.00

Total:			3,05,000.00

Or Say Rs.			3,05,000.00

ii)	<u>Raw Material</u> (Per Month)	Qty. (M.T.)	Rate Rs./MT	
(Rs.)				
	Polypropylene	15	75,000.00	
				11,25,000.00
	Ethylene Oxide Gas, Needles & Packaging Material			2,75,000.00

Total:				14,00,000.00

iii)	<u>Utilities</u> (per month):	(Rs.)
a)	Power	3,22,500.00
	(60% efficiency x 215 KW x 500 hrs. x Rs. 5 per unit)	

2,500.00	b) Water	

	Total:	3,25,000.00

iv) Other Contingent Expenses (Per month)
(Rs.)

bbb) Repairs and Maintenance	
10,000.00	
ccc) Transportation Charges	5,000.00
ddd) Postage and stationery	2,000.00
eee) Telephone/Fax/Computer	
3,000.00	
fff) Consumable Stores	
5,000.00	
ggg) Advertisement & Publicity	
5,000.00	
hhh) Insurance	10,000.00
iii) Miscellaneous Expenses	
3,000.00	

Total:	43,000.00

100

12. TOTAL WORKING CAPITAL (Per Month)

i) Staff and Labour	3,05,000.00
ii) Raw Material	
14,00,000.00	
iii) Utilities	3,25,000.00
iv) Other Contingent Exp.	43,000.00

Total:	20,73,000.00

Working Capital for 3 months

62,19,000.00

13. TOTAL CAPITAL INVESTMENT

(Rs.)

A. Fixed Capital

1,77,23,000.00

B. Working Capital for 3 months

62,19,000.00

Total:

2,39,42,000.00

14. FIANCIAL ANALYSIS

(Rs.)

A. Cost of Production (per year) (300 days)

(a) Total Recurring Cost

2,48,76,000.00

(b) Depreciation on building @ 5%

66,500.00

(c) Depreciation on machinery & equipment @ 10%

15,66,500.00

(d) Depreciation on Dies & Moulds @ 20%

40,000.00

(e) Depreciation on office equipment @ 20%

60,000.00

(f) Interest on total Capital Investment @ 12%

28,73,040.00

Total:

2,94,82,040.00

Or say Rs.

2,94,82,000.00

B. Sales/Turn over (per year)

<u>Item</u>	<u>Qty.(Lakhs)</u>	<u>Rate (Rs.)</u>	<u>Value (Rs.)</u>
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Disposable Syringes	5 ml	150	1.80
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2,70,00,000.00

	Disposable Syringes 2 ml	75	1.00

		Total:	3,45,00,000.00
C.	Net Profit (Per year)		
	Sales(Rs)	-	Cost of Production (Rs.)
	(Rs.)		= Profit
	345,00,000 -		2,94,82,000
	50,18,000.00		=

D. Net Profit Ratio = $\frac{\text{Net Profit} \times 100}{\text{Sales}}$

= $\frac{50,18,000 \times 100}{3,75,00,000}$ = 13.18

E. Rate of Return = $\frac{50,18,000 \times 100}{\text{Total Capital Investment}}$

= $\frac{50,18,000 \times 100}{2,39,42,000}$ = 20.95

%

F. Break-even Point

Fixed Cost (Per Year) Rs.

a) Depreciation on Building @ 5%

66,500.00

b) Depreciation on Machinery & Equipment @ 10%

15,66,500.00

c) Depreciation on Moulds/Dies & Office Equipment

1,00,000.00

@ 20%

d) Insurance 1,20,000.00

e) Interest on total capital investment

28,73,040.00

f) 40% of salary and wages

14,64,000.00

g) 40% of other contingent expenses
1,85,400.00

Total: 63,48,440.00

Or Say Rs. 63,48,000.00

$$\begin{aligned} \text{B.E.P. \%} &= \frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Net Profit}} \\ &= \frac{63,48,000 \times 100}{63,48,000 + 50,18,000} \\ &= \frac{53,48,000 \times 100}{1,13,66,000} \\ &= 55.85 \% \end{aligned}$$