

# **DISPOSABLE PLASTIC 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.

## **2. PRODUCTS AND ITS APPLICATION**

Disposable syringes commonly are used in modern medicine for the injection of drugs and vaccines or for the extraction of blood. They often are used instead of reusable syringes in an effort to avoid spreading a disease. Among the common uses of disposable syringes are the injecting of insulin by a diabetic person and the administering of a local anesthesia by a dentist.

## **3. DESIRED QUALIFICATION FOR PROMOTER**

The Promoter should have preferably a basic degree in plastic engineering/ processing or a degree/ diploma in engineering / or a degree in chemistry. Experience of at least two to three years in plastic industry is desirable.

## **4. INDUSTRY OUTLOOK AND TRENDS**

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.

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.

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.

The growth prospects, trends of consumption and overall outlook for this product is very positive in line with increasing growth of pharmaceutical industry clubbed with increasing emphasis on high degree of clean and sterile environment and practices in this industry.

## **5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY**

The advent of AIDS, serum Hepatitis and other dreaded infectious diseases have added new 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.

## **6. RAW MATERIAL REQUIREMENTS**

Medical grade Transparent Polypropylene.

## **7. MANUFACTURING PROCESS**

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

Polypropylene granules are fed into an injection-moulding machine, where they are plasticized and then injected into a Multi cavity 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.

## 8. MANPOWER REQUIREMENT

Sr. No.	Particulars	Nos	Salary(Rs .)
1	Production Engineer	1	12000
2	Manager	1	20000
3	Sales Executive	2	16000
4	Accountant	1	10000
5	Store Keeper	1	8000
6	Clerk	1	7000
7	Watchman	3	21000
8	Supervisor	2	18000
	Skilled Workers	6	48000
9	Unskilled Workers	4	24000
	Total		184000

## 9. IMPLEMENTATION SCHEDULE

Estimated implementation time for the project would be 15 to 17 months.

Sr. No.	Particulars	Time Period
1	Preparation of Project report	Two months
2	Sanction of loan	Four months
3	Selection of Site	Two month
4	Registration and other formalities	One month
5	Machinery procurement, erection and Installation	six Months
6	Trial production and commissioning	Two Months

## 10. COST OF PROJECT

Sr. No.	Particulars	Rs. In lakhs
1	Land and Building	30.00
2	Plant and Machinery	77.00
3	Miscellaneous Assets	4.00
4	P & P Expenses	2.50
5	Contingencies @ 10% on land and building and plant and machinery	10.70
6	Working capital margin	25.96
	<b>Total</b>	<b>150.16</b>

## 11. MEANS OF FINANCE

Sr. No.	Particulars	Rs. (lakhs)
1	Promoter's contribution	45.048
2	Bank Finance	105.112
3	<b>Total</b>	<b>150.16</b>

## 12. WORKING CAPITAL CALCULATION

Sr. No.	Particulars	Rs. lakhs	Stock Period days	Promoter Margin	Margin Amt.	Bank Finance
1	Salaries and wages	1.84	30	1	1.84	-
2	Raw material and packaging material	8.55	30	0.5	4.275	4.275
3	Utilities	7.25	30	0.5	3.625	3.625
4	Debtors	40.55	30	0.4	16.22	24.33
	Total	58.19			25.96	

## 13. LIST OF MACHINERY REQUIRED

Sr. No.	Particulars	Rs. lakhs
1	Injection Moulding M/c. 125 T	22.00
2	Sterilization Plant and Assembling Line	45.00
3	Clean Room Air System	6.00
4	Testing Equipment & Other Accessories	2.00
5	Cost of Moulds & Dies	2.00
	Total	77.00

Major machinery required namely injection moulding machines are manufactured by more than 50 manufactures in the country.

- Klockner Vincor,
- Patel Plastic Machinery Manufacturers

#### 14. PROFITABILITY CALCULATIONS

(Rs.  
)

Sr. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
(A)	Sales Realization per annum	2498222 2	2855111 1	3212000 0	3212000 0	3212000 0
(B)	Cost of Production					
1	Raw material per annum	8951250	1023000 0	1150875 0	1150875 0	1150875 0
2	Utilities	8704800	9943200	1118160 0	1118160 0	1118160 0
3	Salaries	2208000	2384640	2561280	2737920	2914560
4	Repairs and maintenance	350000	450000	550000	650000	750000
5	Selling expenses (3% on sales value)	749466.7	856533.3	963600	963600	963600
6	Administrative Expenses (other expenses)	700000	720000	740000	760000	780000
	Total	2166351 7	2458437 3	2750523 0	2780187 0	2809851 0
	(C) Profit before interest & depreciation	3318705	3966738	4614770	4318130	4021490
	depreciation	1605000	1605000	1605000	1605000	1605000
	Profit Before term loan and tax	1713705	2361738	3009770	2713130	2416490
	Interest on term loan (11%)	1114938	991056	825880	660704	495528
	Profit before tax	598767.3	1370682	2183890	2052426	1920962
	Tax (30%)	179630.2	411204.5	655167	615727.8	576288.6
	Total Profit	419137.1	959477.2	1528723	1436698	1344673

Underlying assumptions for probability calculation are:-

The installed capacity of the plant is assumed at 850 MT per annum. The capacity utilization is taken at 70% for the first year, 80% for the second year and 90% for third year. The raw material price is assumed at Rs. 85/- per KG. The selling price is taken at Rs.126/- per KG. Power cost is taken at Rs.8/- per unit. Interest rate on long term loan is taken at 11%.

## 15. BREAKEVEN ANALYSIS

<b>Fixed Cost (FC):</b>	<b>Rs. In lakhs</b>
Wages & Salaries	22.08
Repairs & Maintenance	3.5
Depreciation	16.05
Admin. & General expenses	7
Interest on Term Loan	11.14
<b>Total</b>	<b>59.77</b>

Fixed Cost: 59.77

Profit After Tax: 4.19

$$\text{BEP} = \text{FC} \times 100 / \text{FC} + \text{P}$$

$$59.77 / 72.73 \times 70 / 100 \times 100$$

**63.00%**

## 16. STATUTORY/GOVERNMENT APPROVALS

There is no specific statutory requirement for plastic industry process. However, MSME registration various taxation related registration and labour law related compliances have to be ensured. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

## 17. BACKWARD & FORWARD LINKAGES

There are no specific backward or forward linkages related techno-economic advantages or synergies for this type of project. However, in future after achieving certain growth entrepreneur may consider backward linkage.

## **18. TRAINING CENTRE AND COURSES:**

There are number of institutions providing facilities and training courses on production/marketing for the proposed project. These are Central Institute of Plastic Engineering and Technology (CIPET), Indian Institute of Packaging Management (IIPM), Plastic and Rubber Institute (PRI), Indo German Tool Room (IGTR), etc.

Udyamimitra portal ( link : [www.udyamimitra.in](http://www.udyamimitra.in) ) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

### **Disclaimer:**

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.

Source:- Udyami Mitra/Sidbi