

DISPOSABLE PLASTIC SYRINGES

INTRODUCTION

Syringe is an instrument which is used for injecting any liquid into the body of human beings or of animals. It consists of a cylinder and an air tight piston. These syringes are used for injecting the medicine into the body or into the nerve of the body which are not possible to take in through mouth or takes much time in mixing with blood.

These syringes are available in sizes varying from 2 C.C. to 100 C.C. Most popular and commonly used sizes are 2 C.C., and 5 C.C. Other sizes are also frequently used but upto lesser extent.

Previously glass was used for making these syringes, the most commonly used glass is Pyrex glass. This glass is shock-resistant, temperature-resistant and has low thermal co-efficient of expansion. But with the development of plastic technology, this glass has been substituted by high grade plastics. Plastic can be used in place of glass for making syringes without any problem.

Plastic syringes are becoming more popular in the medical world due to its lower cost and higher accuracy. To test the efficiency of a syringe, close the tip with a finger and attempt to withdraw the plunger or piston. If the plunger and barrel fit perfectly, the vacuum created in the cylinder will prevent withdrawal of the plunger. The plunger should not be pulled to return rapidly due to the vacuum created or the barrel may be cracked.

With the development of pharmaceutical industries the use of syringes has also developed. About 70% pharmaceutical industries are in small scale sector. The output of the small scale sector covers a wide spectrum of formulations, which includes antibiotics vitamins, anti T.B. drugs, anti-dysentery drugs, anti-rheumatics, haematinies, hormonal preparations, tranquilizers, analgesics and anti-phyreties. Indeed this is a very wider range of product mix. About 50 percent of the above listed drugs are injectable and for that purpose syringes are required.

SCOPE OF MARKET

Although there are many units in the country engaged in the manufacture of syringes, there are few units in organized sector, who are manufacturing all glass syringes in India. They all are using pyrex glass for the manufacture of syringes. Earlier there were very few units engaged in the manufacture of plastic syringes but with the rapid increase in demand for syringes, the plastic syringes making units are also growing. The main factors governing the demand of plastic syringes are given below:

- a) Expansion in medical facilities resulting in an increase in the number of hospitals, dispensaries etc.
- b) Increased turnover of medical personnel on account of expansion in medical institutes, colleges, training programmes.
- c) Performance for injection treatment to oral treatment because of its greater effectiveness and quicker results.

The use of plastic syringes is becoming more popular due to following advantages.

- i) Plastic syringes have been lower co-efficient of thermal expansion and hence greater accuracy.
- ii) It is unbreakable.
- iii) It is cheaper than any other material syringes.

In India there are several manufacturers of plastic syringes on small scale. Their installed capacity has been described below:

Sizes of Syringes	Installed Capacity (Annual)
2 C.C.	3.3 lacs dozens
5 C.C.	3.0 lacs dozens
10 C.C.	1.9 lacs dozens

The above size of syringes are in general use. There is not any specific installed capacity for other sizes because the manufacturer can produce any size of syringes according to market demand.

The export of Indian make plastic syringes is possible in middle east and other countries. The efforts are also being made by the manufacturers to export their plastic syringes and the favourable response is being received. It indicates that there is good export potential of this product.

Due to the above salient features of plastic syringes, there is a good scope for this industry.

It is technically feasible to manufacture these plastic syringes on small scale basis. The minimum viable capacity of such a unit is 500 syringes per day. The return on the total capacity investment is about 35%. All the raw material and machineries are available indigenously. No foreign collaboration is required for such unit.

SUGGESTED LOCATION : Major Centres in NER.

PLANT CAPACITY

1. 90,000 Nos. Syringes 5 C.C. capacity per annum.
2. 50,400 Nos. syringes of 2 C.C. capacity per annum.
3. 10,600 No.s of syringes of 1 C.C. capacity per annum.

PROCESS

- i) Plastic materials in the form of granules (Raw materials) is subjected to heat and pressure in an extruder.
- ii) Semi-molten plastic in extruder passed through the nozzle known as parison. Adjustments have to be made in the machine to vary the wall thickness of the parison.
- iii) Suitable parison is then inserted in a female mould and air is blown into parison to force the molten plastic against the sides of the mould.
- iv) The material is then cooled before removal from the mould.
- v) The article is then trimmed to remove flashes.

MACHINERY

Sl.No.	Particulars	Nos.
1.	Bareel moulding machine	1
2.	Nozzle plate and Cap making machine	2
3.	Piston making machine	1
4.	Blender	1
5.	Grinder	1
6.	Universal printing machine	1
7.	Welding machine	1
8.	Steriliser	1
9.	Other assembling machine	1
10.	Automatic packing machine	1
11.	Moulds and other miscellaneous equipments	
<p>Total amount would be Rs. 6.30 lakhs</p>		

INFRASTRUCTURE

The main infrastructural facilities required are:

Shed	...	1000 Sq.ft.
Power	...	20 KW
Water	...	1000 Ltr. Per day

TOTAL CAPITAL REQUIREMENT

The project cost comprising fixed capital and margin money on working capital is Rs 19.43 lakhs.

			(Rs. In lakh)
A.	Fixed Capital:		
	Land (1000 M ²)		4.00
	Building (Factory, office etc.)		6.00
	Machinery		6.30
	Miscellaneous fixed assets		1.50
	Preliminary and pre-operative expenses		1.20
		Total (A) :	19.00
			=====
B.	Working Capital:		
	Raw materials & packing materials	3 month	1.05
	Finished goods	7 days	0.21
	Working expenses	1 month	0.18
	Receivables	7 Days	0.28
		Total (B)	1.72
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Note: Working capital may be financed as:

Bank Finance	...	Rs 1.29 lakh
Margin Money	...	Rs 0.43.lakh
		Rs 1.72 lakh
		=====

MEANS OF FINANCE

The project cost of Rs. 19.43 lakhs including margin money for working capital may be financed as under:

Promoter's Contribution (35%)	...	Rs. 6.80 lakhs
Term Loan (65%)	...	Rs. 12.63 lakhs
		Rs. 19.43 lakhs
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OPERATING EXPENSES

The annual operating expenses are estimated at Rs.8.99 lakhs as given below:

		(Rs. In lakhs)
1.	Raw materials	4.20
2.	Utilities	0.45
3.	Wages & Salaries	1.50
4.	Overheads	0.10
5.	Selling expenses @4% of annual sales	0.47
7.	Interest	1.67
9.	Depreciation @ 10%	0.60
	Total:	8.99

SALES REALISATION

Sl. No.	Particulars	Annual Sales Realisation (Rs. in lakhs)
1.	Receipt through sale of 90,000 Syringes 5 C.C. capacity @ Rs.9/-each	8.10
2.	50,400 Syringes of 2 C.C. capacity @ Rs.6/- each	3.02
3.	10,600 Syringes of 1 C.C. capacity @ Rs.5/- each	0.53
	Total:	11.65

PROFITABILITY

Based on the sales realization and the operating expenses, the profit at 100% capacity utilization would be Rs. 2.66 lakhs per year. This works out to a return on investment of 14%. The unit will break even 57% of the rated capacity.

HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 19.43 lakhs
Promoter's contribution	Rs. 6.80 lakhs
Annual Sales realization	Rs. 11.65 lakhs
Annual operating expenses	Rs. 8.99 lakhs
Annual profit (pre-tax)	Rs. 2.66 lakhs
Pre-tax return on sales	23%
Break-Even Point	57%
No. of persons employed	6

MACHINERY SUPPLIERS:

1. M/s. Boolani Engineering Corporation,
402, Prabhadevi Industrial Estate,
Savarkar road,
Mumbai- 400 018
2. M/s. Brimco Plastic Machinery Corporation,
Plot 55, Govt. Kandivli Industrial Estate,
Kandivli (West),
Mumbai – 400 067