



## **DISPOSABLE NEEDLES** **AND SYRINGES**

### **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.

### **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.

## Product Uses

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.

## 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.

## Cost of Project

| Particulars                                                       | Amt. (Rs. In Lakhs) |
|-------------------------------------------------------------------|---------------------|
| Leasehold land                                                    | 1.60                |
| Civil works and Buildings (2500 sq. ft. @1200/-)                  | 30.00               |
| Plant and machinery                                               | 93.70               |
| Misc. Fixed Assets                                                | 1.25                |
| Escalation & Contingencies                                        | 6.33                |
| Preliminary & Pre-Operative Expenses                              | 5.28                |
| <b>Sub-total (A)</b>                                              | <b>138.16</b>       |
| Working Capital Margin @40% of Total WC Requirement               | 18.72               |
| <b>Total Project Cost</b>                                         | <b>156.88</b>       |
| Total Working Capital Required (B) 25% of 1st Year Proj. Turnover | 46.80               |
| <b>MEANS OF FINANCE</b>                                           |                     |
| Total funds required (A+B)                                        | 184.96              |
| Loan component                                                    |                     |
| Term loan (60% of A)                                              | 82.89               |
| Working capital (60% of B)                                        | 28.08               |
| <b>TOTAL</b>                                                      | <b>110.97</b>       |
| Equity                                                            | <b>73.98</b>        |
| <b>TOTAL</b>                                                      | <b>184.96</b>       |

## Detailed Cost Element

| SL | Particulars                          | Qty. | Amt. (Rs. In Lakhs) |
|----|--------------------------------------|------|---------------------|
| 1  | Stainless steel tube cutting machine | 1    | 3.20                |
| 2  | Tube tapping machine                 | 1    | 5.00                |
| 3  | Grinder machine                      | 1    | 9.00                |
| 4  | Honing machine                       | 1    | 10.00               |
| 5  | Needle assembling machine            | 1    | 15.00               |
| 6  | Plastic injection moulding machine   | 2    | 26.00               |
| 7  | Syringe barrel printing machine      | 1    | 10.50               |
| 8  | Syringe assembling machine           | 1    | 15.00               |
|    | <b>Total</b>                         |      | <b>93.70</b>        |

## Contingencies and Escalations

It has been assumed at approximately 5% at cost of project.

## Preliminary Expenses

| Particulars                                                   | Amt. (Rs. In Lakhs) |
|---------------------------------------------------------------|---------------------|
| Incorporation Expenses                                        | 0.15                |
| Project Report Preparation and Consultation                   | 0.35                |
| Feasibility and Engineer's/Architect's Report and Plans       | 0.75                |
| Rent payments upto the start of commercial production         | 0.38                |
| Legal Charges                                                 | 0.05                |
| Other recurring expenses up to start of commercial production | 1.83                |
| Interest Cost for period before commercial operation          | 1.77                |
| <b>Total</b>                                                  | <b>5.28</b>         |

## Salary

| Designation        | Manpower | Amt. (Rs. In Lakhs) |
|--------------------|----------|---------------------|
| Production Manager | 2        | 12.00               |
| Skilled labour     | 8        | 24.00               |
| Unskilled labour   | 15       | 27.00               |

## Profitability Statement

|                                       | Amt. (Rs. In Lakhs) |               |               |               |               |
|---------------------------------------|---------------------|---------------|---------------|---------------|---------------|
| Particulars                           | Year- 1             | Year- 2       | Year- 3       | Year- 4       | Year- 5       |
| <b>A. INCOME</b>                      |                     |               |               |               |               |
| Production Capacity (units/per annum) | 36,00,000           | 36,00,000     | 36,00,000     | 36,00,000     | 36,00,000     |
| Capacity utilisation                  | 65%                 | 70%           | 75%           | 80%           | 85%           |
| Production During the                 | 23,40,000           | 25,20,000     | 27,00,000     | 28,80,000     | 30,60,000     |
| Annual turnover                       | 187.20              | 201.60        | 216.00        | 230.40        | 244.80        |
| <b>Total Income/Annum</b>             | <b>187.20</b>       | <b>201.60</b> | <b>216.00</b> | <b>230.40</b> | <b>244.80</b> |
|                                       |                     |               |               |               |               |
| <b>B. OPERATING EXPENSES</b>          |                     |               |               |               |               |
| Raw materials                         | 42.71               | 46.00         | 49.29         | 52.57         | 55.86         |
| Salary                                | 63.00               | 69.30         | 76.23         | 83.85         | 92.24         |
| Repair & Maintenance                  | 1.87                | 1.95          | 2.03          | 2.11          | 2.19          |
| Lease Rent                            | 1.50                | 1.50          | 1.50          | 1.50          | 1.50          |
| Power & utilities                     | 8.78                | 8.78          | 8.78          | 8.78          | 8.78          |
| Depreciation and Amortisation         | 19.22               | 19.22         | 19.15         | 19.09         | 19.09         |
| <b>Total Operating Expenses</b>       | <b>137.08</b>       | <b>146.74</b> | <b>156.97</b> | <b>167.90</b> | <b>179.66</b> |
|                                       |                     |               |               |               |               |
| <b>Operating Profit (A-B)</b>         | <b>50.12</b>        | <b>54.86</b>  | <b>59.03</b>  | <b>62.50</b>  | <b>65.14</b>  |
|                                       |                     |               |               |               |               |
| <b>C.FINANCIAL EXPENSES</b>           |                     |               |               |               |               |
| Interest on loan                      | 9.78                | 8.68          | 7.08          | 5.48          | 3.74          |
| <b>D. Other Expenses</b>              |                     |               |               |               |               |
| Administrative & general expenses     | 3.74                | 4.03          | 4.32          | 4.61          | 4.90          |
| <b>Total Expenses</b>                 | <b>13.52</b>        | <b>12.71</b>  | <b>11.40</b>  | <b>10.08</b>  | <b>8.64</b>   |
| <b>Profit before Tax</b>              | <b>36.59</b>        | <b>42.15</b>  | <b>47.63</b>  | <b>52.41</b>  | <b>56.50</b>  |
| Provision for Tax                     | 9.15                | 10.54         | 11.91         | 13.10         | 14.13         |
| <b>Profit after Tax (PAT)</b>         | <b>27.44</b>        | <b>31.61</b>  | <b>35.72</b>  | <b>39.31</b>  | <b>42.38</b>  |
| Dividend declared                     | 0.00                | 0.00          | 0.00          | 0.00          | 0.00          |
| <b>Retained profit</b>                | <b>27.44</b>        | <b>31.61</b>  | <b>35.72</b>  | <b>39.31</b>  | <b>42.38</b>  |

## Breakeven Point

| Break Even Point (BEP) |                                  |               |               |               | Amt. (Rs. In Lakhs) |               |
|------------------------|----------------------------------|---------------|---------------|---------------|---------------------|---------------|
| SL                     | Particulars                      | Year - 1      | Year - 2      | Year - 3      | Year - 4            | Year - 5      |
| A.                     | Net Sales                        | 187.20        | 201.60        | 216.00        | 230.40              | 244.80        |
| B.                     | <b>Variable Cost</b>             |               |               |               |                     |               |
|                        | Raw Material                     | 42.71         | 46.00         | 49.29         | 52.57               | 55.86         |
|                        | Power and Utility                | 8.78          | 8.78          | 8.78          | 8.78                | 8.78          |
|                        | Other Misc. Expenses             | 3.74          | 4.03          | 4.32          | 4.61                | 4.90          |
|                        | <b>Total Variable Cost</b>       | <b>55.24</b>  | <b>58.81</b>  | <b>62.39</b>  | <b>65.96</b>        | <b>69.53</b>  |
| C.                     | <b>Contribution (A-B)</b>        | <b>131.96</b> | <b>142.79</b> | <b>153.61</b> | <b>164.44</b>       | <b>175.27</b> |
| D.                     | <b>Fixed and Semi-Fixed Cost</b> |               |               |               |                     |               |
|                        | Salary                           | 63.00         | 69.30         | 76.23         | 83.85               | 92.24         |
|                        | Interest                         | 9.78          | 8.68          | 7.08          | 5.48                | 3.74          |
|                        | Repair & Maintenance             | 1.87          | 1.95          | 2.03          | 2.11                | 2.19          |
|                        | Lease Rental                     | 1.50          | 1.50          | 1.50          | 1.50                | 1.50          |
|                        | Depreciation and Amortization    | 19.22         | 19.22         | 19.15         | 19.09               | 19.09         |
|                        | <b>Total Fixed Cost</b>          | <b>95.37</b>  | <b>100.64</b> | <b>105.98</b> | <b>112.03</b>       | <b>118.76</b> |
| E.                     | <b>Breakeven Point</b>           | <b>72%</b>    | <b>70%</b>    | <b>69%</b>    | <b>68%</b>          | <b>68%</b>    |
| F.                     | <b>Cash BEP</b>                  | <b>58%</b>    | <b>57%</b>    | <b>57%</b>    | <b>57%</b>          | <b>57%</b>    |

## Debt-Service Coverage Ratio

|          |                            | Amt. (Rs. In Lakhs) |              |              |              |              |
|----------|----------------------------|---------------------|--------------|--------------|--------------|--------------|
| SL       | Particulars                | Year - 1            | Year - 2     | Year - 3     | Year - 4     | Year - 5     |
| i        | PAT                        | 27.44               | 31.61        | 35.72        | 39.31        | 42.38        |
| ii       | Depreciation               | 19.22               | 19.22        | 19.15        | 19.09        | 19.09        |
| iii      | Interest on loan           | 9.78                | 8.68         | 7.08         | 5.48         | 3.74         |
| <b>A</b> | <b>Total (i + ii +iii)</b> | <b>56.44</b>        | <b>59.50</b> | <b>61.95</b> | <b>63.88</b> | <b>65.21</b> |
| i        | Interest on loan           | 9.78                | 8.68         | 7.08         | 5.48         | 3.74         |
| ii       | Principal repayment        | 9.41                | 18.82        | 18.82        | 18.82        | 18.82        |
| <b>B</b> | <b>Total (i +ii)</b>       | <b>19.19</b>        | <b>27.50</b> | <b>25.90</b> | <b>24.30</b> | <b>22.56</b> |
|          | <b>DSCR (A /B)</b>         | <b>2.94</b>         | <b>2.16</b>  | <b>2.39</b>  | <b>2.63</b>  | <b>2.89</b>  |

## Interest on Term Loan and Principal Repayment

Refer **ANNEXURE – I** for loan repayment Schedule.

We have assumed the repayment tenure of term loan for a period of 7 years, rate of interest being @8.5% with the moratorium period being 9 months.

## Address of Vendors

| Name of the vendor  | Address and Contact Number                                                                                                                                       |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Amrit Enterprise    | No. 5-A, N. C. Dutta Sarani, Clive Ghat Street 4th Floor, Opposite Sagar Estate, B.B.D. Bagh, Kolkata-700001, West Bengal, India<br><br>Contact No.- 08048603168 |
| Sysmech Enterprises | D-17, HSIIDC Industrial Area, Udyog Vihar, Phase VI Sector 37, Gurgaon-122001, Haryana, India<br><br>Contact No.- 08048802746                                    |

# ANNEXURE- I

| Year             | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 | Annually    |
|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|-------------|
| <b>O</b>         |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>Principal</b> |         |         |         |         |         |         |         |         |         |          |          |          |             |
| Opening          | 82.89   | 83.48   | 84.07   |         |         |         |         |         |         |          |          |          |             |
| Repaid           |         |         |         |         |         |         |         |         |         |          |          |          | -           |
| Closing          | 83.48   | 84.07   | 84.67   |         |         |         |         |         |         |          |          |          |             |
| <b>Interest</b>  | 0.59    | 0.59    | 0.60    |         |         |         |         |         |         |          |          |          | <b>1.77</b> |
|                  | 5.68    |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>I</b>         |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>Principal</b> |         |         |         |         |         |         |         |         |         |          |          |          |             |
| Opening          | 112.75  | 113.54  | 114.35  | 115.16  | 115.97  | 116.80  | 117.62  | 116.89  | 116.15  | 115.40   | 113.83   | 112.27   |             |
| Repaid           | -       | -       | -       | -       | -       | -       | 1.57    | 1.57    | 1.57    | 1.57     | 1.57     | 1.57     | 9.41        |
| Closing          | 113.54  | 114.35  | 115.16  | 115.97  | 116.80  | 117.62  | 116.89  | 116.15  | 115.40  | 113.83   | 112.27   | 110.70   |             |
| <b>Interest</b>  | 0.80    | 0.80    | 0.81    | 0.82    | 0.82    | 0.83    | 0.83    | 0.83    | 0.82    | 0.82     | 0.81     | 0.80     | 9.78        |
|                  |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>II</b>        |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>Principal</b> |         |         |         |         |         |         |         |         |         |          |          |          |             |
| Opening          | 110.70  | 109.13  | 107.56  | 105.99  | 104.42  | 102.86  | 101.29  | 99.72   | 98.15   | 96.58    | 95.01    | 93.45    |             |
| Repaid           | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57     | 1.57     | 1.57     | 18.82       |
| Closing          | 109.13  | 107.56  | 105.99  | 104.42  | 102.86  | 101.29  | 99.72   | 98.15   | 96.58   | 95.01    | 93.45    | 91.88    |             |
| <b>Interest</b>  | 0.78    | 0.77    | 0.76    | 0.75    | 0.74    | 0.73    | 0.72    | 0.71    | 0.70    | 0.68     | 0.67     | 0.66     | 8.68        |
|                  |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>III</b>       |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>Principal</b> |         |         |         |         |         |         |         |         |         |          |          |          |             |
| Opening          | 91.88   | 90.31   | 88.74   | 87.17   | 85.60   | 84.04   | 82.47   | 80.90   | 79.33   | 77.76    | 76.19    | 74.63    |             |
| Repaid           | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57     | 1.57     | 1.57     | 18.82       |
| Closing          | 90.31   | 88.74   | 87.17   | 85.60   | 84.04   | 82.47   | 80.90   | 79.33   | 77.76   | 76.19    | 74.63    | 73.06    |             |
| <b>Interest</b>  | 0.65    | 0.64    | 0.63    | 0.62    | 0.61    | 0.60    | 0.58    | 0.57    | 0.56    | 0.55     | 0.54     | 0.53     | 7.08        |
|                  |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>IV</b>        |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>Principal</b> |         |         |         |         |         |         |         |         |         |          |          |          |             |
| Opening          | 73.06   | 71.49   | 69.92   | 68.35   | 66.78   | 65.22   | 63.65   | 62.08   | 60.51   | 58.94    | 57.37    | 55.81    |             |
| Repaid           | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57     | 1.57     | 1.57     | 18.82       |
| Closing          | 71.49   | 69.92   | 68.35   | 66.78   | 65.22   | 63.65   | 62.08   | 60.51   | 58.94   | 57.37    | 55.81    | 54.24    |             |
| <b>Interest</b>  | 0.52    | 0.51    | 0.50    | 0.48    | 0.47    | 0.46    | 0.45    | 0.44    | 0.43    | 0.42     | 0.41     | 0.40     | 5.48        |
|                  |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>V</b>         |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>Principal</b> |         |         |         |         |         |         |         |         |         |          |          |          |             |
| Opening          | 54.24   | 52.67   | 51.10   | 49.53   | 47.96   | 46.40   | 44.83   | 43.26   | 41.69   | 40.12    | 38.55    | 36.99    |             |
| Repaid           | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57     | 1.57     | 1.57     | 18.82       |
| Closing          | 52.67   | 51.10   | 49.53   | 47.96   | 46.40   | 44.83   | 43.26   | 41.69   | 40.12   | 38.55    | 36.99    | 35.42    |             |
| <b>Interest</b>  | 0.37    | 0.36    | 0.35    | 0.34    | 0.33    | 0.32    | 0.31    | 0.30    | 0.28    | 0.27     | 0.26     | 0.25     | 3.74        |
|                  |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>VI</b>        |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>Principal</b> |         |         |         |         |         |         |         |         |         |          |          |          |             |
| Opening          | 35.42   | 33.85   | 32.28   | 30.71   | 29.15   | 27.58   | 26.01   | 24.44   | 22.87   | 21.30    | 19.74    | 18.17    |             |
| Repaid           | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57     | 1.57     | 1.57     | 18.82       |
| Closing          | 33.85   | 32.28   | 30.71   | 29.15   | 27.58   | 26.01   | 24.44   | 22.87   | 21.30   | 19.74    | 18.17    | 16.60    |             |
| <b>Interest</b>  | 0.25    | 0.24    | 0.23    | 0.22    | 0.21    | 0.20    | 0.18    | 0.17    | 0.16    | 0.15     | 0.14     | 0.13     | 2.28        |
|                  |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>VII</b>       |         |         |         |         |         |         |         |         |         |          |          |          |             |
| <b>Principal</b> |         |         |         |         |         |         |         |         |         |          |          |          |             |
| Opening          | 16.60   | 15.03   | 13.46   | 11.89   | 10.33   | 8.76    | 7.19    | 5.62    | 4.05    | 2.48     | 0.92     | -        |             |
| Repaid           | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57    | 1.57     | 0.92     | -        |             |
| Closing          | 15.03   | 13.46   | 11.89   | 10.33   | 8.76    | 7.19    | 5.62    | 4.05    | 2.48    | 0.92     | -        | -        |             |
| <b>Interest</b>  | 0.12    | 0.11    | 0.10    | 0.08    | 0.07    | 0.06    | 0.05    | 0.04    | 0.03    | 0.02     | 0.01     | -        | 0.68        |