

## **HDPE PIPES**

### **1. INTRODUCTION**

High Density Polyethylene (HDPE) Pipes are manufactured all over the world by extrusion technique. Sizing methods still vary but the trend is the pressure sizing i.e. introducing air at the pressure of about 0.8 kg/cm<sup>2</sup> to 1 kg/cm<sup>2</sup> through one of the spider legs of the dies. HDPE Pipes are generally manufactured on single screw extruder.

HDPE Pipes find application in a variety of fields in India and abroad. The most important applications are as follows:

- Drinking water supply line
- Water lines in hilly areas. Here the property of flexibility of HDPE is exploited to the fullest extent
- Irrigation lines
- Industrial effluent disposal lines
- Sewage and gas lines
- Fuel gas line
- Mining Industry

### **2. MARKET POTENTIAL**

There is a large market and very good scope envisaged for HDPE Pipes in the near future. Though some units are already in the line, there is good demand with the increase in housing/building activities spreading in rural and urban areas. Number of Chemical and Petrochemical plants are also being set up. Therefore, the demand for HDPE Pipes is also likely to rise. One of the important applications is gas pipe line. It has advantage over PVC pipe because it is unaffected even by temperature as high as 80 degree C and is inert to almost all chemicals. These pipes are also used in the effluent treatment plants and line.

### 3. **BASIS & PRESUMPTIONS**

(i) The output capacity is taken as 100 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**

HDPE granules are fed into the hopper of the extruder which goes into the heated cylinder of the extruder, where the granules melt and are conveyed (pumped) to the die exit. Now the melt passes through the die and takes the shape of the die i.e. circular shape and emerges from the exit of the die. It then passes through the calibrator and is forced to take the shape of the inside of the calibrator which is round in diameter by the inside air pressure. This melt solidifies and takes round shape in the calibrator, which is cooled by passing chilled water through it continuously.

Now the solid pipe is taken out from the water and is drawn continuously from the die. The speed is adjusted according to the thickness of the pipe required and extruder output. The pipes are either cut into 5 meters length or wound on the winder unit. Generally pipes up to 110 mm diameter can be made on this extruder.

## 6. **QUALITY & STANDARD**

HDPE Pipes for Potable Water Supply are manufactured as per IS: 8360

## 7. **PRODUCTION CAPACITY** (Per Annum)

(a) Quantity (M.T.) : 600 kgs.  
(b) Value (Rs.) : 5,40,00,000.00

## 8. **TOTAL POWER REQUIREMENT**

Total connected load (KW) : 90

## 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) <u>LAND &amp; BUILDING:</u> (Rs.)	Area sq. mtrs.	Rate Rs.	per Sq. mtr.
Land	500	500.00	2,50,000.00
Building	300	3500.00	
10,50,000.00			
		Total :	-----
13,00,000.00			--
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ii) <u>MACHINERY &amp; EQUIPMENT:</u>			
(Rs.)	<u>Sr. No.</u>	<u>Description of machines</u>	<u>Qty.(Nos.)</u>
	(a)	Production Unit	
	i)	Complete HDPE Pipe Plant (Monolayer Single Screw Extruder)	
20,00,000.00			
	ii)	Cooling Tower	
2,00,000.00			
	iii)	Scrap Grinder	
75,000.00			

(b) Testing Equipment & Other Accessories

4,00,000.00

(c) Electrification & Installation @ 10% of cost & machinery

2,67,000.00

(a) & (b)

(d) Pre-operative expenses

50,000.00

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Total cost of machinery & equipment ( a to d )

29,92,000.00

(e) Cost of Moulds & Dies

1,00,000.00

(f) Cost of Office Equipment/Furniture/Computers etc.

3,00,000.00

Total: 33,92,000.00

Fixed Capital (i) + (ii) = 13,00,000 + 33,92,000 =  
46,92,000.00

## B. WORKING CAPITAL

### i) Staff and Labour (Per Month)

Designation (Rs.)	Nos.	Salary (Rs.)	
Production Engineer/Manager	1	10,000.00	10,000.00
Sales Executive	1	5,000.00	5,000.00
Accountant-cum-Store Keeper	1	4,000.00	
4,000.00			
Watchman	2	3,000.00	6,000.00
Supervisor-cum-Chemist	1	5,000.00	
5,000.00			

Skilled Workers	3	3,500.00	10,500.00
Helpers	3	3,000.00	9,000.00
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			49,500.00

Add perquisite @ 10% of the Salary  
14,950.00

Total: 64,450.00  
Say Rs. 64,000.00

(Rs.)	ii) <u>Raw Material</u> (Per Month)	Qty. (M.T.)	Rate Rs. / M.T.
	HDPE Granules	50	75,000
			37,50,000.00

	iii) <u>Utilities</u> (per month):	(Rs.)
	a) Power	1,35,000.00
	(60% utilisation x 90 KW x 500 hrs. x Rs. 5 per unit)	
2,000.00	b) Water	

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Total: 1,37,000.00  
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(Rs.)	iv) <u>Other Contingent Expenses</u> (Per month)
	a) Repairs and Maintenance
	1,000.00
	b) Transportation Charges
	15,000.00
	c) Postage and stationery
	1,000.00
	d) Telephone/Fax/Computer
	2,000.00
	e) Consumable Stores
	1,000.00

f) Advertisement & Publicity	
2,000.00	
g) Insurance	7,000.00
h) Miscellaneous Expenses	
1,000.00	
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Total:	30,000.00
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**12. TOTAL WORKING CAPITAL ( Per Month ) (Rs.)**

i) Staff and Labour	64,000.00
ii) Raw Material	
37,50,000.00	
iii) Utilities	1,37,000.00
iv) Other Contingent Exp.	30,000.00
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Total:	39,81,000.00
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Working Capital for 3 months 1,19,43,000.00

**13. TOTAL CAPITAL INVESTMENT (Rs.)**

A. Fixed Capital	
46,92,000.00	
B. Working Capital for 3 months	1,19,43,000.00
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Total:	1,66,35,000.00
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**14. FIANCIAL ANALYSIS :**

A. Cost of Production (per year) (300 days)	
(a) Total Recurring Cost	
4,77,72,000.00	

- (b) Depreciation on building @ 5%  
52,500.00
- (c) Depreciation on machinery & equipment @ 10%  
2,99,200.00
- (d) Depreciation on Dies & Moulds @ 20%  
20,000.00
- (e) Depreciation on office equipment @ 20%  
60,000.00
- (f) Interest on total Capital Investment @ 12%  
19,96,200.00

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Total: 5,01,99,900.00

Or Say Rs.

5,02,00,000.00

B. Sales/Turn over (per year)

<u>Item</u>	<u>Qty. (MT)</u>	<u>Rate (MT)</u>	<u>Value (Rs.)</u>
HDPE Pipes	600	90,000	5,40,00,000.00

C. Net Profit (Per year)

Sales (Rs.)	–	Cost of Production (Rs.)	=	Profit
5,40,00,000	-	5,02,00,000	=	38,00,000.00

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

=  $\frac{38,00,000 \times 100}{5,40,00,000}$  = 7.0 %

E. Rate of Return =  $\frac{\text{Net Profit} \times 100}{\text{Total Capital Investment}}$

=  $\frac{38,00,000 \times 100}{1,66,35,000}$  = 22.84 %

F. Break-even Point

Fixed Cost (Per Year)  
Rs.

- a) Depreciation on Building @ 5%  
52,500.00
- b) Depreciation on Machinery & Equipment @ 10%  
2,99,200.00
- c) Depreciation on Moulds/Dies & Office Equipment @ 20%  
80,000.00
- d) Insurance 84,000.00
- e) Interest on total capital investment  
19,96,200.00
- f) 40% of salary and wages  
3,07,200.00
- g) 40% of other contingent expenses  
1,01,400.00

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Total: 29,29,500.00  
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Or Say Rs.  
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29,30,000.00

Net Profit (Per Year)

$$\begin{aligned}
 \text{B.E.P. \%} &= \frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Net Profit}} \\
 &= \frac{29,30,000 \times 100}{29,30,000 + 38,00,000} \\
 &= \frac{29,30,000 \times 100}{57,30,000} = 51.1\%
 \end{aligned}$$