PVC CONDUIT PIPES AND FITTINGS

1. INTRODUCTION

Rigid PVC Pipes are fast replacing the conventional metal pipes in many applications. The conventional metal pipes are already started replacing by PVC pipes. Use of PVC pipes as electrical conduits is well accepted in household and industrial activities. PVC conduits have been accepted by all Electricity Boards. PVC pipes of different diameters have gained wider acceptance for water supply. Their light weight, low cost, easy installation, non-corrosiveness, high tensile strength to withstand high fluid pressure make them ideal for number of purposes. They also offer resistance to most of the chemicals and have excellent electrical and heat insulation properties.Due to the chemical resistant properties the PVC pipe fittings are widely used in these areas. The most commonly used PVC fittings are Sockets, T's, Elbows, Bends and Joints. Most of these fittings are manufactured by injection moulding in different sizes corresponding to the size of PVC pipes.

2. PRODUCTS AND ITS APPLICATION

PVC pipes and fittings are mainly used in all sectors but the major usages are in household water supply, electrification in houses and industries, and irrigation facilities in agriculture.

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 TREND

PVC Conduit pipes and fittings constitute are the important segment of Indian plastic Industry. This is growing at the rate of 15 to 17% per annum.The outlook for this product is quite promising considering growth of construction sector the past trends have shown healthy growth and future trends of market for this segment is considered positive.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

In view of the priorities to rural water suppliers, irrigation facilities in the national planning and rapid rural electrification, the demand for rigid PVC pipe and fittings is growing regularly. The PVC pipe fittings are widely used in the housie constructions and commercial constructions.60% of the total demand of PVC pipe and fittings exist today is up to 110 mm outer diameter which is very much suitable for small scale sector industries.

6. RAW MATERIAL REQUIREMENTS

- PVC Resin
- D.O.P.
- Stabilizers
- Lubricants
- Colours
- Fillers

7. MANUFACTURING PROCESS

The basic material which on Polymerization produces P.V.C. Pipes is Polyvinyl chloride which in resin form is hard and rigid. The rigidity can be controlled by controlling the percentage of plasticizer at the time of compounding. Production of Rigid PVC pipe is

based on plasticizing and homogenizing PVC compound and then passing the compound through an extruder. The hot molten PVC compound is extruded through a circular slit. Circular slit governs the size of pipe to be extruded. Different dies are used for manufacturing different size of pipes.

The Pipes thus extruded through the die is then passed through a vacuum sizing tank wherein the dimensions of the pipe can be accurately set. It also helps in surface finish of the pipes. Vacuum sizing reduces the percentage of wastage considerably.

As the pipe being extruded is rigid in form they cannot be wound into coils. So an inline motorized cutting device should be provided for cutting the pipes into required sizes. For ascertaining the consistency in product quality the unit should be equipped with process control laboratory for preliminary testing of raw materials. The unit may also have arrangement for quality testing of finished products.

PVC fittings are made on the injection moulding machines. The PVC compound is fed into the hopper of the injection moulding machine which essentially has a mould locking and injection arrangements. The mould is held in-between the platens which are kept closed by the locking pressure and the materials which get plasticized by the heating arrangements, is injected under this pressure into mould which results into a moulded and high quality product. Mould should have proper injection arrangement for consistent high production.

8. MANPOWER REQUIREMENT

Sr. No.	Particulars	Nos	Salary
1	Production Engineer	1	12000
2	Supervisor	2	20000
3	Chemist	1	10000
4	Sales Executive	1	10000
5	Accountant	1	10000
6	Store Keeper	1	8000

7	Watchman	2	14000
8	Skilled Workers	6	48000
9	Unskilled Workers	10	60000
	Total	25	192000

9. IMPLEMENTATION SCHEDULE

Sr. No.	Particulars	Time Period
1	The Time requirement for preparation of Project report	Two months
2	Time requirement for selection of S	One month
3	Time required for registration as Small Scale Unit	One Week
4	Time required for acquiring the loan Machinery procurement, erection and commissioning	Three Months
5	Recruitment of labouretc	One month
6	Trial runs	One month

10. COST OF PROJECT

Sr. No.	Particulars	Rs. In lakhs
1	Land and Building	40.00
2	Plant and Machinery	59.60
3	Miscellaneous Assets	4.50
4	P & P Expenses	2.50
5	Contingencies @ 10% on land and building and plant and machinery	9.96
6	Working capital margin	38.00
	Total	154.56

11. MEANS OF FINANCE

Sr. No.	Particulars	Rs. (lakhs)

1	Promoter's contribution	46.37
2	Bank Finance	108.19
3	**Total**	154.56

12. WORKING CAPITAL CALCULATION

Sr. No.	Particulars	Rs. lakhs	Stock Period days	Promoter Margin	Margin Amt.	Bank Finance
1	Salaries and wages	1.92	30	1	1.92	-
2	Raw material and packaging material	35.74	30	0.5	17.87	17.87
3	Utilities	2.36	30	0.5	1.18	1.18
4	Debtors	45.06	30	0.4	18.024	27.036
	Total	85.08			38.994	

13. LIST OF MACHINERY REQUIRED

Sr. No.	Particulars	Rs. lakhs
1	High speed Mixer	1.50
2	PVC rigid pipeextrusion plant	25.00
3	Automatic Injection moulding machine	20.00
4	Dies size 20, 25, 45, 63, 75, 90,110 mm and mandrel size 2.5kg/cm2, 4 kg/cm2, 6 kg/cm2, 10kg/cm2.	1.20
5	Dies &moulds of assorted sizes for Fittings	4.00
6	Scraper, grinder	1.50
7	Overhead water tank and recycling Pump units	0.90
8	Weighing balance, heavy type industrial model 100 gm to 5 kg.-do- 1 kg. to 100 kg	0.30
9	Pipe storage, racks, maintenance of small hand tools, greasing, oiling equipment, etc.	0.40
10	Testing Equipment & Other Accessories	2.00

11	Small tools such as greasing and common electrical lighting equipment	0.80
12	Water cooling unit	2.00
	Total	59.60

Indicative and illustrative list of machinery manufacturers for this project is as given below.

- Dop Windsor India Ltd.
- Remica Plastic Machinery
- Archana Extrusion Machinery
- KBM Extrusion Machinery Pvt. Ltd.

14. PROFITABILITY CALCULATIONS

Sr. No.	Particulars		Year 1	Year 2	Year 3	Year 4	Year 5
(A)	Sales Realization per annum	94250	54076409	61801610	69526811	69526811	69526811
(B)	Cost of Production						
1	Raw material per annum	72500	42883750	49010000	55136250	55136250	55136250
2	Utilities	2836000	1985200	2268800	2552400	2552400	2552400
3	Salaries	2304000	2304000	2488320	2672640	2856960	3041280
4	Repairs and maintenance		650000	650000	670000	690000	710000
5	Selling expenses (3% on sales value)	3%	1622292	1854048	2085804	2085804	2085804
6	Administrative Expenses (other expenses)		950000	970000	990000	1010000	1030000
	Total		50395242	57241168	64107094	64331414	64555734
(C)	Profit before interest & depreciation		3681166	4560442	5419717	5195397	4971077
	depreciation		1494000	1494000	1494000	1494000	1494000
	Profit Before term		2187166	3066442	3925717	3701397	3477077

	loan and tax						
	Interest on term loan (11%)		1147608	1020096	850080	680064	510048
	Profit before tax		1039558	2046346	3075637	3021333	2967029
	Tax (30%)		311867.5	613903.7	922691.1	906399.9	890108.7
	Total Profit		727690.9	1432442	2152946	2114933	2076920

Underlying assumptions for probability calculation are:-

The installed capacity of the plant is assumed at 850 MT per annum. The capacity utilization for the first year is taken at 70% of installed capacity. The raw material price is assumed at Rs. 72-73/- per KG. The selling price is taken at Rs.94/- per KG. Power cost is taken at Rs.8/- per unit. Interest rate on long term loan is taken at 11%.

15. BREAKEVEN ANALYSIS

Fixed Cost (FC):	**Rs. In lakhs**
Wages & Salaries	23.04
Repairs & Maintenance	6.5
Depreciation	14.94
Admin. & General expenses	9.5
Interest on Term Loan	11.47
Total	**65.45**

Fixed Cost: 65.45

Profit After Tax: 7.28

BEP = FC x 100/FC+P

=65.45/72.73 x 70/100 x 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) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

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.