

THREE LAYERS CO-EXTRUDED FILM

1. INTRODUCTION

Three layers blown film extrusion (also known as blow film co-extrusion) is a process of simultaneously extruding in molten stage three number of polymers which adhere to each other through a common die to form an integral film of unique strength and barrier properties. The selection of layers depend upon end properties required as well as items to be packed. Some combinations of layers as –

Sr. No.	Combination	Application
1	LL/LD/LL	Heavy duty bags
2	LL/HD/LL	Industrial based food oil, baked confectionery, dry vegetables, dry fruit, hydrogenated oil, Lube oil
3	LL/HD/LD	Industrial based food oil, baked confectionery, dry vegetables, dry fruit, hydrogenated oil, lube oil.
4	LD/Scrap/LD	Garbage bags
5	HD/LD/LD	Industrial based food oil, baked confectionery, dry vegetables, dry fruit, hydrogenated oil, lube oil.
6	HD/LL/Primacor	Oil packaging

In this project it is discussed LLDPE/LDPE/LLDPE layers combination, which produce the heavy duty bags.

2. MARKET POTENTIAL

Now a days the Three Layers Co extruded blown film is playing a major role in the packaging industry. It is replacing the conventional packing materials like paper, aluminium foil, tin, glass etc. These films are considered for packing purpose because of specific requirement of self life and protection to product. The other advantages are excellent resistance to puncturing, heat sealability, gas barrier, high mechanical property as well as high busting strength etc. Due to these properties these films are having very good scope for packaging.

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3. **BASIS & PRESUMPTIONS**

- (i) The output capacity is taken as 185 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**

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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

Raw materials are fed into the hopper which gets heated in the barrel with the help of the heater. The melt in the extruders is conveyed forwarded by the screw rotation. The three extruders individually feed the three channels within the die. All the flow channels coverage into a single flow channel just a little distance before the material is blown out from the annual die orifice. The rotating die

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ensures even distribution of the melt flow while coming out of the die orifice. The bubble is cooled by means of air circulation arrangements. The pre-determined size of the blown film is obtained by inserting compressed air through the die. Iris rings, flattering boards, counter rotating nip rolls draw the film upwards and flatten it into a two layer lay flat film, which is wound on the winder. The film is also treated with corona discharge equipment and then printed on flexographic or rotogravure printing machine in desired colours.

6. QUALITY & STANDARD

Co-extruded Films are manufactured as per IS : 10171

7. PRODUCTION CAPACITY (Per Annum)

- (a) Quantity (M.T.) : 1110
- (b) Value (Rs.) : 10,54,50,000.00

8. TOTAL POWER REQUIREMENT

Total connected load (HP/KW)

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) LAND & BUILDING: Area sq. mtrs. Rate Rs. per Sq. mtr.
(Rs.)

Land	500	500	2,50,000.00
Building	300	3500	
10,50,000.00			

Total : 13,00,000.00

ii) MACHINERY & EQUIPMENT:

<u>Sr. No.</u>	<u>Description of machines</u>	<u>Qty.(Nos.)</u>
(Rs.)		

(a) Production Unit

i) Three Layer Extruded Blown Film	1	
57,00,000.00		
Plant Working Capacity 185 kg/ltr.		
ii) Corona Treater	1	5,00,000.00
iii) Chilling plant	1	
5,00,000.00		
iv) Compressor	1	1,00,000.00
v) Rotogravure printing machine with four colours	1	15,00,000.00

(b) Testing Equipment & Other Accessories

2,00,000.00

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

8,50,000.00

(a) & (b)

(d) Pre-operative expenses

50,000.00

Total cost of machinery & equipment (a to d)

96,00,000.00

(e) Cost of Moulds/Dies & other equipment

2,00,000.00

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

3,00,000.00

Total: 1,01,00,000.00

Fixed Capital (i) + (ii) = 13,00,000 + 1,01,00,000 =
1,14,00,000.00

B. WORKING CAPITAL

i) Staff and Labour (Per Month)

Designation	Nos.	Salary (Rs.)	(Rs.)
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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
Skilled Workers	3	3,500.00	10,500.00
Helpers	3	3,000.00	9,000.00

		Total:	44,500.00

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Add perquisite @ 10% of the Salary
4,450.00

Total: -----
48,950.00

Or Say Rs. -----
49,000.00

ii) <u>Raw Material</u> (Per Month) (Rs.)	<u>Qty. (M.T.)</u>	<u>Rate Rs./MT</u>	
LLDPE Granules	62	75,000	
			46,50,000.00
LDPE Granules	30.5	90,000	
			27,45,000.00

		Total:	73,95,000.00

iii) Utilities (per month): (Rs.)

a) Power 3,00,000.00
(60% utilisation x 200 KW x 500 hrs. x Rs. 5 per unit)

b) Water
2,000.00

Total: -----
3,02,000.00

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(Rs.)	iv) <u>Other Contingent Expenses</u> (Per month)	
	a) Repairs and Maintenance	
	2,000.00	
	b) Transportation Charges	10,000.00
	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	5,000.00
	h) Miscellaneous Expenses	
	2,000.00	
	Total:	----- 25,000.00 -----

12. TOTAL WORKING CAPITAL (Per Month)
(Rs.)

i) Staff and Labour	49,000.00
ii) Raw Material	
73,95,000.00	

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iii) Utilities	3,02,000.00
iv) Other Contingent Exp.	25,000.00

77,71,000.00

Total:

Working Capital for 3 months Rs. 2,33,13,000.00

13. TOTAL CAPITAL INVESTMENT

(Rs.)

A. Fixed Capital
1,14,00,000.00

B. Working Capital for 3 months
2,33,13,000.00

Total: -----
3,47,13,000.00

14. FIANCIAL ANALYSIS

(Rs.)

A. Cost of Production (per year) (300 days)

(a) Total Recurring Cost

9,32,52,000.00

(b) Depreciation on building @ 5%

52,500.00

(c) Depreciation on machinery & equipment @ 10%

9,60,000.00

(d) Depreciation on office equipment @ 20%

60,000.00

(e) Interest on total Capital Investment @ 12%

41,65,560.00

Total: -----
9,84,90,060.00

Or Say Rs.

9,84,90,000.00

B. Sales/Turn over (per year)

Item (Rs.)	Qty.(MT)	Rate (MT)	Value
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Three Layer Co-Extruded Film 1110 95,000
 10,54,50,000.00

C. Net Profit (Per year)

Sales(Rs)	–	Cost of Production (Rs.)	=	Profit
(Rs.)				
10,54,50,000	-	9,84,90,000	=	
69,60,000.00				

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D. Net Profit Ratio = $\frac{\text{Net Profit} \times 100}{\text{Sales}}$
 = $\frac{69,60,000 \times 100}{10,54,50,000}$ = 6.60%

E. Rate of Return = $\frac{\text{Net Profit} \times 100}{\text{Total Capital Investment}}$
 = $\frac{69,60,000 \times 100}{3,47,13,000}$ = 20.00%

F. Break-even Point

Fixed Cost (Per Year) Rs.

a) Depreciation on Building @ 5%

52,500.00

b) Depreciation on Machinery & Equipment @ 10%

9,60,000.00

c) Depreciation on Dies, Moulds & Office Equipment

1,00,000.00

@ 20%

d) Insurance

60,000.00

e) Interest on total capital investment

41,65,560.00

f) 40% of salary and wages

2,35,200.00

g) 40% of other contingent expenses

96,000.00

Total: 56,69,260.00

Net Profit (Per Year)

Or Say Rs. 56,69,000.00

$$\begin{aligned} \text{B.E.P. \%} &= \frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Net Profit}} \\ &= \frac{56,69,000 \times 100}{56,69,000 + 69,60,000} \\ &= \frac{56,69,000 \times 100}{126,29,000} = 44.8\% \end{aligned}$$