

# **CORRUGATED BOXES**

## **1. INTRODUCTION**

Corrugated is easy to recognize. Corrugated is made of paper and has an arched layer, called "fluting," between smooth sheets, called "liner." This arched layer provides corrugated with a very high strength-to-weight ratio.

The corrugated most commonly used to make boxes has one layer of fluting between two smooth sheets. But there are many types of corrugated available, each with different flute sizes and thicknesses.

Corrugated Paper boxes are extensively used in the packaging of industrial as well as consumer goods. In some of products like crockery, electronic items, automobile components, glass and cigarettes, pharmaceuticals, soaps & cosmetics, biscuits, hosiery, toys, rubber & rubber products, refrigerator, cooler & fans, proper type of packaging becomes very important.

## **2. PRODUCTS AND ITS APPLICATION**

Corrugated is an extremely durable, versatile, economical and lightweight material used for custom-manufactured shipping containers, packaging and point-of-purchase displays, in addition to numerous non-traditional applications ranging from pallets to children's toys to furniture

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## **3. DESIRED QUALIFICATION FOR PROMOTER**

Bachelor of Science in Paper Science and Engineering or Master Degree in Paper Engineering or bachelor or master degree in chemicals.

#### **4. INDUSTRY OUTLOOK AND TREND**

Does paper have a future in the digital age? Ultimately, it is a question best answered by the needs of the consumers, but based on the global demand outlook, consumers still want paper well into the 21 st century. World demand for paper has doubled in the past 20 years and it is forecast to double again by the year 2020.

Per capita consumption of paper & paper board in India at 5 Kg is very low compared to other developing countries like China and Brazil. Therefore, despite the threat of paperless transaction, scope for paper demand appears to be bright. In developed nations it is as high as 160 Kgs per annum.

The challenge for the Indian paper industry to meet the ever-increasing demand of paper, board and newsprint is getting crippled due to shortage of fibres in the country. The future demand of paper is expected to grow from 13 MT at present TO 20 MT in 2020. Demand for cream wove paper and Map litho paper is expected to increase by 7-8%. Demand for different kinds of coated paper has increased by 8%, duplex board has recorded increase by 6.5%, kraft paper has registered a 6% rise in demand and newsprint an impressive 10%.

#### **5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY**

With the steady rise in the industrial production, the demand for corrugated paper boxes increasing every year. These boxes have got distinct advantages such as light in weight, easy to fabricate as per required specifications. The corrugated papers and boards may also find market in the rural areas for packing of fruits, vegetables & eggs.

#### **6. RAW MATERIAL REQUIREMENTS**

- Craft Papers
- Glue
- Staples wire etc.
- Packaging Material

## 7. MANUFACTURING PROCESS

Calculation has been based on single corrugated sheet pasted with one sheet of craft paper. Two paper reels are run together on corrugated machine. One layer of paper becomes corrugated after passing through the heated fluted rolls and other is brought in contact with the former having been glued at the tips. These two get pasted together and are wound in rolls. These will be procured on job work. By cutting this roll with board cutters and gluing the corrugated side on pasting machine. A double face board is produced by the 3rd ply of paper over it. This board is kept under a sheet pressing machines for some time for setting of wet glued sheets. Similarly board to board can be pasted to form thicker board i.e. 5 Ply, 7 Ply and 9 Ply etc.

## 8. MANPOWER REQUIREMENT

Sr. No.	Particulars	Nos	Salary
1	Production manager	1	12000
2	Production Supervisor	1	9000
3	Sales man	1	8000
4	Accountant	1	10000
5	Store Keeper	1	7000
6	Skilled worker	2	15000
7	Unskilled Worker	4	16000
8	Watchman	1	6000
	Total	12	83000

## 9. IMPLEMENTATION SCHEDULE

The estimated time required for implementing the project would be approximately 10-12 months

Sr. No.	Particulars	Time
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1	preparation of Project report	Two months
2	Sanction of loan	Three months
3	Selection of Site	One month
4	Completion of registration and other formalities	One month
5	Machinery procurement, erection and Installation	Four months
6	Trial production and commissioning	One month

## 10. COST OF PROJECT

Sr. No.	Particulars	Rs. In lakhs
1	Land and Building	40.00
2	Plant and Machinery	16.90
3	Miscellaneous Assets	5.50
4	P & P Expenses	3.20
5	Contingencies @ 10% on land and building and plant and machinery	5.69
6	Working capital margin	11.63
		82.92

## 11. MEANS OF FINANCE

Sr. No.	Particulars	Rs. (lakhs)
1	Promoter's contribution	24.876
2	Bank Finance	58.044
		82.92

## 12. WORKING CAPITAL CALCULATION

Sr. No.	Particulars	Rs. lakhs	Stock Period days	Promoter Margin	Margin Amt.	Bank Finance
1	Salaries and wages	0.83	30	1	0.83	-
2	Raw material and packaging material	9.81	30	0.5	4.905	4.905
3	Utilities	0.45	30	0.5	0.225	0.225
4	Debtors	14.17	30	0.4	5.668	8.502
	Total	25.26			11.628	

### 13. LIST OF MACHINERY REQUIRED

Sr. No.	Particulars	Rs. lakhs
1	Cutting machine	1.90
2	Paper Pasting machine size 75" complete with motor	7.50
3	Stapler 36"	1.00
4	Testing Equipment, Physical Balance meter scales	0.50
5	Generator set 5 KVA	1.20
6	4 Bar Rotary machine for creasing & sizing	2.30
7	Acentric Slotter	2.50
	Total	16.90

The machinery supplier details are

- Micromechanical works.
- Paper Board Machinery Co.
- SUN-UP (India) Engineering Industries.

### 14. PROFITABILITY CALCULATIONS

(Rs.  
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Sr. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
(A)	Sales Realization per annum	1190700	1360800	1530900	1530900	1530900
(B)	Cost of Production					
1	Raw material per annum	8241660	9419040	10596420	10596420	10596420
2	Utilities	377440	431360	485280	485280	485280
3	Salaries	912000	991680	1071360	1151040	1230720
4	Repairs and maintenance	220000	220000	240000	250000	245000

5	Selling expenses (3% on sales value)	357210	408240	459270	459270	459270
6	Administrative Expenses (other expenses)	150000	170000	180000	190000	200000
	Total	1025831	1164032	1303233	1313201	1321669
		0	0	0	0	0
<b>(C)</b>	Profit before interest & depreciation	1648690	1967680	2276670	2176990	2092310
	depreciation	853500	853500	853500	853500	853500
	Profit Before term loan and tax	795190	1114180	1423170	1323490	1238810
	Interest on term loan (11%)	606559.8	510787.2	383090.4	255393.6	127696.8
	Profit before tax	188630.2	603392.8	1040079.6	1068096.4	1111113.2
	Tax (30%)	56589.06	181017.84	312023.88	320428.92	333333.96
	Total Profit	132041.14	422374.96	728055.72	747667.48	777779.24

Underlying assumptions for probability calculation are:-

The installed capacity of the plant is assumed at 200 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. 62/- per KG. The selling price is taken at Rs.85/- per KG. Power cost is taken at Rs.8/- per unit. Interest rate on long term loan is taken at 11%.

## 15. BREAKEVEN ANALYSIS

<b>Fixed Cost (FC):</b>	<b>Rs. In lakhs</b>
Wages & Salaries	9.96
Repairs & Maintenance	2.2
Depreciation	8.54
Admin. & General expenses	1.5
Interest on Term Loan	6.06
<b>Total</b>	<b>28.26</b>

Fixed Cost: 28.26

Profit After Tax: 1.32

$$\text{BEP} = \text{FC} \times 100 / \text{FC} + \text{P}$$

$$28.26 / 29.58 \times 70 / 100 \times 100$$

**66.87%**

## **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. For example; Indian Institute of Packaging Management (IIPM).

Udyamimitra portal ( link : [www.udyamimitra.in](http://www.udyamimitra.in) ) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

**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.

Source:- Udyami Mitra/Sidbi