

PRINTING INK

1. INTRODUCTION:

The manufacturing of printing ink enjoys an important place in chemical industry. With the growing demand of a wide spectrum of printing inks and with the advancement of printing processes, the industry offer entrepreneurs the opportunity for career development.

2. PRODUCT & ITS APPLICATION:

Printing ink is a recipe-oriented product having three basic materials as essential inputs.

1. Pigments - for coloring of ink. 2. Vehicles - to transport the pigment to the plate of printing machine. 3. Binders and extenders and plasticizers - are used to produce printing ink of specific uses. Printing ink is divided into three main classes:

1. Typographic printing ink.
2. Plano graphic printing ink.
3. Intaglio printing ink.

Printing ink is available in two forms:

1. Paste form like letter press, offset, screen printing, etc.
2. Liquid ink like flexographic, gravure, rotary newsprint etc.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Graduate in any discipline.

4. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

India is among the fast growing printing ink markets globally spurred by the rapid expansion of the domestic print markets. Backed by a strong demand from key end user segments such

as package printing, newsprint, publishing and other commercial printing, the printing ink market in India has registered strong growth in the recent years. The printing ink industry is fragmented with over 550 manufacturers and a large number of players in the un-organized sector.

Printing ink sector in India is estimated at 3, 60,000 tons for 2019-20, valued at around INR 55 billion; the market witnessed a growth of around 7.5% per annum during the last 10 years. Printed packaging accounts for around 27% of the demand for printing inks in India followed by newspapers at 20%. Commercial printing/ promotional and printed advertising together account for around 19% of the demand. Other key end user segments for printing inks include books and stationery. With the print sector forecast to grow at around 8% per annum, over the next 5 years, printing ink segment is expected to grow strongly during the same period.

Micro Inks (Huber group), DIC India, Sakata, Siegwerk, Flint and Toyo are the leading manufacturers of printing ink in India. The printing ink sector witnessed consolidation during the last 10 to 15 years. Some of the notable acquisitions-collaborations in the Indian ink industry during this period are: Huber Group – Micro Inks, Dai Nippon – Coates of India, Siegwerk –SICPA, Flint Group – Inco wax, etc.

More recently, some players have embarked on capacity expansions In 2013, Flint Group inaugurated new liquid ink plant in Vadodara In 2012, Siegwerk India increased its printing ink production capacity at its plant in Bhiwadi, Rajasthan, to 20,000 tons per annum from 10,000 tons per annum In 2011, DIC India undertook capacity expansion at the company's facility in Ahmedabad; the expansion increased the unit's capacity to 14,400 tons per annum from 6,000 tons per annum.

The top six players comprising domestic players and established multinational players account for around 75% of the market. Printing inks has a well-entrenched presence of multinational players who have entered the market either through a direct subsidiary or through Joint Ventures with existing domestic players. Going forward, the printing ink market is set to benefit from rapid urbanization, increasing literacy rates and growth of FMCG sector.

RAW MATERIAL REQUIREMENTS:

Raw-Material Including Packaging Requirement (per month)

Sr. No.	Particulars	Ind./Imp	Qty. Kg.	Rate(Rs.)	Value (Rs.)
1	Carbon black	Ind.	900	80	72,000
2	Victoria blue	Ind.	500	500	2,50,000
3	Phthlocyanine blue	Ind.	136	800	1,08,800
4	Phenolic Resin	Ind.	140	90	12,600
5	Maleic Resin	Ind.	140	100	14,000
6	Alkyd Resin	Ind.	80	90	7,200
7	Prussian blue	Ind.	52	200	10,400
8	Ester gum	Ind.	1500	75	1,12,500
9	Bitumen	Ind.	482	35	16,870
10	Calcium carbonate	Ind.	850	16	13,600
11	Linseed oil	Ind.	610	75	45,750
12	Stand oil	Ind.	64	90	5,760
13	Aromax solvent	Ind.	21 ltr	27/ ltr	567
14	Aluminium	Ind.	21	40	840
15	Hydrate Machine Oil	Ind.	866 ltr	20	17,320
16	Grease	Ind.	130	25	3,250
17	M.T.O.	Ind.	2600 Ltr	19	49,400
18	White spirit	Ind.	2200 ltr	19	38,000
19	Chrome pigment	Ind.	44	120	5,280
20	Cobalt drier	Ind.	64	400	25,600
21	Tin container for 1 Kg.pack	Ind.	8000pcs	28	2,24,000
	Total				10,33,737

5. MANUFACTURING PROCESS:

Printing Ink is manufactured by proper incorporation of dry pigments into the vehicle by grinding. These two ingredients in suitable proportions are mixed with or without modifiers,

driers, wetting agents, anti-oxidants, etc. Depending upon the types and quality of the printing ink in a mixer like dough type mills, triple roll mill, and agitator are used.

For Paste Form Ink the ingredients are mixed well in a mixer like charge pan mixer, Rotary mixer. After completion of mixing the mixed ingredients is passed through triple roll mill. 7 to 8 passes are given till required fineness is obtained. For Liquid Ink formulated with pigments, resin, vehicles and solvent are grounded in a ball mill for 36 - 48 hrs. For low viscosity ink such as newsprint ink, gravure ink etc. Colloid mills are used. However, after completion of proper mixing and grinding the ink is packed in a suitable container after proper testing in the laboratory. Quality Control and Standards Printing inks have to possess all the physical and chemical properties as per Indian Standard specifications for getting good quality and marketability of the products.

The Bureau of Indian Standards has formulated specifications for different types of printing ink as given below:

1. Letter press Black book IS 5046 printing ink
2. Printing ink for general IS 2105 purpose
3. Halftone IS 7771
4. Newsprint ink black IS 8744
5. Offset ink black general IS 6830 purpose

The methods of testing of printing ink have been laid down in the IS 6931:72.

6. MANPOWER REQUIREMENT:

The enterprise requires 8 employees as detailed below:

Sr. No.	Designation of Employees	Monthly Salary ₹	Number of employees required				
			Year-1	Year-2	Year-3	Year-4	Year-5
1	Machine Operators @ 12000	12,000	1	1	1	1	1
2	Helpers @ 8000	24,000	3	3	3	3	3
1	Production supervisor @15000	15,000	1	1	1	1	1
2	Accounts/Stores Asst @12500	25,000	2	2	2	2	2
3	Office Boy @9000	9,000	1	1	1	1	1
	Total	85,000	8	8	8	8	8

7. IMPLEMENTATION SCHEDULE:

The project can be implemented in 3 months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	1.00
2	Construction (if applicable)	
3	Procurement & installation of Plant & Machinery	2.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required <i>(some activities shall run concurrently)</i>	3.00

8. COST OF PROJECT:

Fixed Capital

(i) Land and building Rented: Covered area including workshop, shed, raw-material Godown, office space, laboratory, finished products @ Rs. 16,000 per month.

The project shall cost ₹ 69.80 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	-
2	Building	-
3	Plant & Machinery	27.50
4	Furniture, Electrical Installations	3.30
5	Other Assets including Preliminary / Pre-operative expenses	1.00
6	Working Capital	38.00
	Total	69.80

9. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	17.50
2	Bank Finance	52.30
	Total	69.80

10. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 38.00 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	10.00	25	2.50	7.50
2	Receivables	25.00	25	6.25	18.75
3	Overheads	3.00	100	3.00	-
4	Creditors	-		-	-
	Total	38.00		11.75	26.25

10. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below:

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value (₹ in Lacs)
	Plant & Machinery / equipments				
a)	Main Machinery				
i.	Ball mill size 4"dia ×4"× 6" length made of M.S. plate with refractory Lining and 10 H.P. motor	Nos	2		4.50
ii.	Triple roll mill with refractory Lining and 10 H.P. motor	Nos	2		10.50

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value (₹ in Lacs)
iii.	hollow chilled cast iron roll of 12'x 26"size with water cooling arrangements and 12.5 H.P. motor		2		4.00
	Varnish kettle 250 kgs. Capacity made of S.S. Pot mill having		3		1.50
b)	Ancillary machinery				
i.	Planetary mixer made of S.S. Capacity 250 lts. With dual speed and 5 H.P. motor	Nos	2		2.50
	Procelain pot of capacity 2 lts. Each with 2 H.P. motor		2		1.50
ii.	Storage and potting Weighing scale platform type	LS			3.00
	<i>sub-total Plant & Machinery</i>				27.50
	Furniture / Electrical installations				
a)	Office furniture	LS	1.00		1.00
b)	Stores Almirah	LS	1.00		0.30
c)	Computer & Printer	Nos	2.00	1,00,000	2.00
	<i>sub total</i>				3.30
	Other Assets				
a)	Rent Deposits		2.00	50,000	1.00
	<i>sub-total Other Assets</i>				1.00
	Total				31.80

11. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	70%	80%	90%	90%	90%
2	Sales	₹. In Lacs	136.50	156.00	175.50	175.50	175.50
3	Raw Materials & Other direct inputs	₹. In Lacs	115.50	132.00	148.50	148.50	148.50
4	Gross Margin	₹. In Lacs	21.00	24.00	27.00	27.00	27.00
5	Overheads except interest	₹. In Lacs	17.50	17.50	18.50	19.50	20.00
6	Interest @ 10%	₹. In Lacs	5.50	5.50	4.50	3.65	2.50
7	Depreciation	₹. In Lacs	2.85	2.85	1.90	1.60	1.30
8	Net Profit before tax	₹. In Lacs	-04.85	-1.85	2.10	2.25	3.20

11. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 76.66 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	195.00
2	Variable costs	₹. In Lacs	192.50
3	Fixed costs incl. interest	₹. In Lacs	23.00
4	$BEP = FC/(SR-VC) \times 100 =$	% of capacity	76.66