

Bleaching and Dyeing of Cotton Knitted Fabric

PRODUCT CODE	: 248100009
QUALITY AND STANDARDS	: As per IS 689:1956, IS 763:1957, IS 786:1957, IS 687:1966, IS 3417:1966
MONTH AND YEAR OF PREPARATION	: May, 2003
PREPARED BY	: Small Industries Service Institute Industrial Area—B, Ludhiana-141003

INTRODUCTION

Bleaching of textile grey fabrics is generally carried out to impart whiteness to textile fabrics by removing natural colouring matter. The process of dyeing is carried out to improve the marketability of textile products and also to suit the customer needs by adding colour. These two processes are generally carried out in open tank, kier machines, jet dyeing machines, jiggers, soft flow dyeing machines etc. For hosiery goods, it is carried out with winch machines, since it imparts very less tension during operation. Viable processing units can be set up as most of the fabric manufacturing units do not have their own processing units. In this report, details are provided for setting up the unit for bleaching and dyeing of cotton knitted fabrics.

MARKET POTENTIAL

The demand for hosiery garments is increasing due to its popularity in domestic and export market. There are

number of units engaged in manufacturing of knitted cloth and most of these units are not having their own captive processing units. Bleaching and dyeing of knitted fabric produced by these units are normally carried out from outside on paying requisite processing charges. It is, therefore, presumed that setting up of textile processing units is economically viable.

BASIS AND PRESUMPTIONS

This project is based on single shift basis with 300 working days in a year. Time period for achieving maximum capacity utilisation is considered from 3rd year from the date on which production is started. Rental value of the building is taken at Rs. 2 per sq. ft. Costs of machinery and equipments/materials indicated refer to a particular make and approximately to those prevailing at the time of preparation of this project.

Cost of installation and electrification is taken @ 10% of cost of machinery and equipment. Non-refundable deposits,

project report cost, trial production, security deposit with Electricity Board are classified under pre-operative expenses.

Depreciation has been considered at 10% on plant and machinery, 15% on office furniture, fixtures, vehicle and 20% on testing equipments. Interest rate on capital loan has been taken @ 14% per annum.

IMPLEMENTATION SCHEDULE

The implementation period required for executing this project right from selection of site to starting the trial run production will be 6 months.

TECHNICAL ASPECTS

Process of Manufacture

The knitted fabric to be bleached is thoroughly wet in a soap solution of 2% and piled in kier boiling pan containing 1.5% caustic soda, 2% soda ash and 1% lisapol etc. and allowed to boil for 6-8 hours. The cloth is washed well and taken to SS winches for bleaching using 2% bleaching powder and then washed thoroughly. This bleached cloth is scoured using hydrochloric acid of 1.5% concentration. After sometime, cloth is washed thoroughly to neutralise the traces of acid. In case of only bleaching the cloth is treated with optical whitening agent, thereafter, it is hydro-extracted, dried and calendered as final operations.

In case of dyeing, about 15-20% salts, 2% brightol C paste, 2-4% dyes as per shade are mixed and fabric is treated with the solution in winches. The cloth is allowed to run for several times in order to maintain uniform shade, thereafter, washed, hydro-extracted, dried and calendered.

Production Capacity (per annum)

	Quantity (Kg.)	Value (Rs.)
1. Bleaching Charges	1,50,000	27,00,000
2. Dyeing Charges	1,50,000	34,50,000
Total	3,00,000	61,50,000

Motive Power

20 HP is required to run the unit and proposed to be obtained from State Electricity Board.

Pollution Control

As this process involves treatment of chemicals, entrepreneurs are required to obtain NOC from State Pollution Control Board.

Energy Conservation

Energy can be conserved by proper house-keeping i.e. unnecessary running of boilers, heaters and fans are to be monitored in order to reduce the excess energy consumption.

FINANCIAL ASPECTS

A. Fixed Capital

(i) Land and Building	
Covered area	5,000 sq. ft.
Uncovered area	1,000 sq. ft.
Rent/month @ Rs. 2/sq.ft.	Rs. 12,000

(ii) Machinery and Equipments

Sl. No.	Description	No.	Rate (Rs.)	Amount (Rs.)
1.	SS Winch m/c of 6-4× 8×6 200kg.	1	1,05,000	1,05,000
2.	SS Winch m/c 6-4'× 6×6 size 150kg.	3	1,00,000	3,00,000
3.	MS Kier wall thick 1/4' bottom 8'	2	70,000	1,40,000

Sl. No.	Description	No.	Rate (Rs.)	Amount (Rs.)
4.	Steam callendering m/c roller sizes 51/21	1	70,000	70,000
5.	Hydro-extractor 40-45 kg capacity	2	70,000	1,40,000
6.	4 cylinder drier with motor and gear box	1	2,30,000	2,30,000
7.	Wooden conveyor with ball bearing	4	8,000	32,000
8.	Baby boiler	1	1,20,000	1,20,000
9.	Water softening plant (cap. 6kl/hr)	1	75,000	75,000
10.	Effluent treatment plant	1	50,000	50,000
11.	Steam, water pipeline and other accessories	LS	45,000	45,000
12.	Deep tube well with submersible pump	1	1,25,000	1,25,000
13.	Mini transport vehicle (3 Wheeler)	1	75,000	75,000
14.	Fire extinguisher 5 kg capacity	2	8,000	16,000
15.	Testing equipments	LS	50,000	50,000
16.	Computer colour matching equipment (optional)	1	18,00,000	18,00,000
Total				33,73,000

(iii) Other Fixed Assets		(Rs.)
(a)	Erection and installation	98,500
(b)	Office furniture	40,000
(c)	Pre-operative expenses	25,000
Total		1,63,500
Total Fixed Capital		35,36,500

B. Working Capital

(i) Staff and Labour Wages

Sl. No.	Designation	Nos.	Rate (Rs.)	Amount (Rs.)
1.	Manager	1	8,500	8,500
2.	Accountant	1	4,500	4,500
3.	Computer Operator	1	3,500	3,500
4.	Clerk/Typist	1	3,000	3,000
5.	Peon	1	2,500	2,500
6.	Watchman	1	2,500	2,500
Total				24,500

(ii) Production Staff

Sl. No.	Designation	Nos.	Rate (Rs.)	Amount (Rs.)
7.	Dyeing Master	1	6,000	6,000
8.	Skilled Workers	5	4,000	20,000
9.	Semi-skilled Workers	4	2,500	10,000
10.	Lab. Attendant	1	3,000	3,000
11.	Boiler Attendant	1	2,500	2,500
12.	Electrician	1	2,500	2,500
Total				44,000
S. Total				68,500
Perquisites@ 20%				13,700
G. Total				82,200

(iii) Raw Material (per month)

Sl. No.	Description	Unit	Qty.	Rate/unit (Rs.)	Amount (Rs.)
1.	Caustic Soda	Kgs.	5	18	9,000
2.	Soda ash	Kgs.	1,750	14	24,500
3.	Sodium silicate	Kgs.	750	5	3,750
4.	Lisopal	Kgs.	250	90	22,500
5.	Bleaching Powder	Kgs.	1,000	13	13,000
6.	Hydrochloric acid	Kgs.	2,400	6	14,400
7.	Glabour's salt	Kgs.	250	8	2,000
8.	Common salt	Kgs.	350	2	700
9.	Optical whitening agent	Lit.	75	85	6,375
10.	Hydrogen peroxide	Lit.	355	5	1,175
11.	Sulphuric acid	Lit.	750	6	4,500
12.	Acetic acid	Lit.	250	40	10,000
13.	Dye fixing agent	Kgs.	250	80	20,000
14.	Dyes of different shades	Lump-sum			80,000
Total					2,12,500

(iv) Utilities		(Rs.)
Electricity bill		10,000
Water charges		3,000
Fuel Coal/furnace oil		20,000
Fuel for vehicle		2,000
Total		35,000

(v) Other Contingent Expenses	(Rs.)
(a) Rent	12,000
(b) Postage/stationery	1,000
(c) Repair and maintenance	8,208
(d) Transport/travelling charges	1,000
(e) Insurance	2,000
(f) Telephone bills	1,000
(g) Miscellaneous	1,000
Total	26,208
(vi) Total Recurring Expenses (per month)	3,55,908
(vii) Total Working Capital for 3 months	10,67,725

C. Total Capital Investment

(i) Machinery and equipment	Rs. 35,36,500
(ii) Working capital for 3 months	Rs. 10,67,725
Total	Rs. 46,04,225

MACHINERY UTILIZATION

Capacity utilisation is considered as 75% of installed capacity.

FINANCIAL ANALYSIS

(1) Cost of Production (per year)	(Rs.)
Recurring expenses	42,70,90
Depreciation on machinery @ 10%	1,26,200
Depreciation on office furniture @ 15%	6,000
Depreciation on testing equipments @20%	10,000
Depreciation on vehicle @ 15%	11,250
Interest on total investment @ 14%	64,4592
Total	50,68,942

(2) Turnover (per year)

Processing Charges	Qty. Kgs.	Rate /Kg.	Amount (Rs.)
Bleaching Charges	1,50,000	18	27,00,000
Dyeing charges	1,50,000	23	34,50,000
Total			61,50,000

(3) Net Profit (per year)	10,81,058
(4) Net profit ratio (Net profit/Turnover (per year))	17.57%
(5) Rate of return on investment (Net profit/Total capital investment)	23.47%

(6) Break-even Point

Fixed Cost	(Rs.)
Depreciation	1,53,450
Rent	1,44,000
Interest on capital investment	6,44,592
40% of wages of staff and labour	3,94,560
40% of other expenses	2,26,600
Insurance	24,000
Total	15,87,202

$$\begin{aligned}
 \text{B.E.P.} &= \frac{\text{FC} \times 100}{\text{FC} + \text{profit}} \\
 &= \frac{1587202 \times 100}{1587202 + 1081058} \\
 &= \frac{1587202 \times 100}{2668260} \\
 &= 59.48\%
 \end{aligned}$$

Addresses of Machinery and Equipment Suppliers

1. M/s. Gangan Mech. Works
28-B, Industrial Area,
Ludhiana-141003.
2. M/s. Ludhiana Dyeing Machinery Works
3064, St. No. 3, Ganesh Nagar,
Ludhiana-141003.
3. M/s. Paradise Engg. Corpn.
302, Industrial Area-A,
Ludhiana-141003.
4. M/s. Dynamic Engg. Corpn.
Dionic Chambers,
50, Rani Jhansi Road,
New Delhi-110055

5. M/s. Data Colour
3061/4, Lucky Lanes,
Andheri East,
Mumbai.

Raw Material Suppliers

1. M/s. Rangila Dyes Co.
Chauri Sarak,
Ludhiana.
2. M/s. Crescent Dye Industries

Chauri Sarak,
Ludhiana.

3. M/s. Sarjeevan Dyes Mfr. Co.
Industrial Area-A,
Ludhiana-141003.
4. M/s. ICI (India) Ltd.
P. B. No. 107,
Himaltane House,
New Delhi-110001.