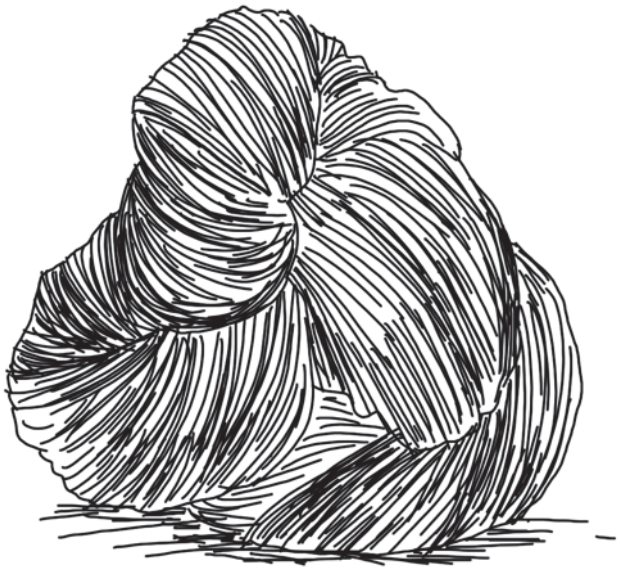
# YARN DYEING



## 1.0 INTRODUCTION

Dyeing is the process of adding colour to textile products like fibres, yarns and fabrics. Dyeing is normally done in a special solution containing dyes and particular chemical material. After dyeing, dye molecules have uncut chemical bond with fibre molecules. The temperature and time controlling are two key factors in dyeing. There are mainly two classes of dye, natural and man-made. The primary source of dye, historically, has generally been nature, with the dyes being extracted from animals or plants. Since the mid-18th century, however, humans have produced artificial dyes to achieve a broader range of colours and to render the dyes more stable to resist washing and general use. Different classes of dyes are used for different types of fibre and at different stages of the textile production process, from loose fibres through yarn and cloth to completed garments.

Perhaps one of the industries under the strong radar of the environmental agencies is the dyeing units and the dyestuff industries as a whole. Next to food, the second basic need of human is 'cloth' and is supplied by processing of natural and synthetic fibres. India is the second largest producer of cotton yarn & silk and third largest producer of cotton & cellulose fibre in the world. Increased population and modernized civilization trend gave rise to blooming of textile sectors in India.

This project profile is for setting up of an yarn dyeing unit, based on 300 working days per annum and 8 working hours per day. The installed processing capacity of the unit is 90000 Kgs of yarn per annum.

## 2.0 MARKET POTENTIAL

The N.E. Region has a great demand for dyed yarn both cotton and silk as it is the only raw material which feeds the handloom weaving sector. The manufactured yarn is either bleached or is grey in colour. It is subsequently dyed to give different colours. These coloured yarns are the raw material for weavers of the handloom sector. There is a great demand for the dyed yarn as nearly every household in the rural sector has a loom which cater to the day to day clothing required.

## 3.0 PROCESS DETAILS

The major process steps are:

i) Scouring of grey yarn in soft soap solution.

ii) Washing and squeezing the scoured yarn between bamboo poles.

iii) Dyeing of scoured yarns by Vatdyes/Sulpher dyes/ Napthol dyes.

iv) Washing in fresh water and squeezing of dyed yarns.

v) Drying of dyed yarns under fan.

## 4.0. COST OF THE PROJECT

The estimated project cost is given below:

(Rs. in lacs)

| Particulars | Amount (Rs) |
|---|---|
| **Land & Site Development** | **Own Land/ On Lease** |
| **Building & Civil works** | **0.50** |
| **Plant & Machinery** | **0.50** |
| **Misc. Fixed assets** | **0.32** |
| **Preliminary & pre-operative expenses** | **0.20** |
| **Contingencies & escalation @ 3%** | **0.04** |
| **Working capital** | **2.45** |
| **TOTAL** | **4.00** |

**4.1 Land & Site Development:** Nil.

Total Land: 3,000 Sq. Ft. ; Covered Area: 1,000 Sq. Ft.

**4.2 Building & Civil Works:** Details of building & civil works are given below.

| Particulars | Area (Sqft) | Rate (Rs) | Amount (Rs) |
|---|---|---|---|
| Repairing of building | 1000 | 50 | 50000 |
| | | **Sub total** | **50000** |
| | | **TOTAL** | **50000** |
| | | **Say (Rs. in lacs)** | **0.50** |

**4.3 Plant & Machinery:** Details of plant & machinery are given below.

| Particulars | Qty | Rate (Rs) | Amount (Rs) |
|---|---|---|---|
| Cast Iron Pan (100 Litres) | 5 | 3800 | 19000 |
| Cast Iron Pan (20 Litres) | 4 | 1500 | 6000 |
| Electronic Weighing Machine | 1 | 8000 | 8000 |
| Storage Trays | 10 | 1150 | 11500 |
| Miscellaneous tools and equipment | LS | -- | 5000 |
| | | **Sub total** | **49500** |
| Add: Installation, transportation, etc @ 2% | | | 990 |
| | | **TOTAL** | **50490** |
| | | **Say (Rs. in lacs)** | **0.50** |

**4.4 Misc. Fixed assets:** Details of miscellaneous fixed assets are given below.

| Particulars | Qty | Rate (Rs) | Amount (Rs) |
|---|---|---|---|
| Furniture & fixtures | LS | -- | 20000 |
| Miscellaneous assets | LS | -- | 10000 |
| | | **Sub total** | **30000** |
| Add: Installation, transportation, etc @ 5% | | | 1500 |
| | | **TOTAL** | **31500** |
| | | **Say (Rs. in lacs)** | **0.32** |

**4.5 Contingencies & escalation:** Contingencies & escalation has been assumed at 3% of the cost of land & site development, building & civil works, plant & machinery and miscellaneous fixed assets.

**4.6 Preliminary & pre-operative expenses:** Details of preliminary & pre-operative expenses are given below.

**(Rs. In lacs)**

| Particulars | Amount (Rs) |
|---|---|
| Travelling expenses | 2000 |
| Professional & other fees | 10000 |
| Interest during implementation | 2640 |
| Miscellaneous expenses | 5000 |
| **TOTAL** | 19640 |
| **Say (Rs. in lacs)** | **0.20** |

**4.7 Working capital:** Details of working capital are given below.

**(Rs. in lacs)**

| | Period (Days) | Total Current Assets | | |
|---|---|---|---|---|
| | | Year 1 | Year 2 | Year 3 |
| Raw materials | 15 | 1.85 | 2.16 | 2.47 |
| Power & utility | 30 | 0.01 | 0.01 | 0.01 |
| Salary | 30 | 0.25 | 0.25 | 0.25 |
| Finished Goods | 15 | 1.99 | 2.30 | 2.61 |
| Receivables | 15 | 2.04 | 2.38 | 2.72 |
| **Total** | | **6.13** | **7.10** | **8.06** |
| | | | | |
| **Working capital margin in Year 1 (40%)** | **2.45** | | | |

## 5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

| Particulars | Percent | Amount |
|---|---|---|
| **EQUITY** | | |
| **A. Equity from Promoters** | **40%** | **1.60** |
| **B. Subsidy from Central/State Govt.** | **-** | |
| **DEBT** | | |
| **Term Loan from Banks/Financial Institutions** | **60%** | **2.40** |
| **TOTAL** | **100%** | **4.00** |

## 6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

| Particulars | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 |
|---|---|---|---|---|---|
| **A. INCOME** | | | | | |
| **Production Capacity (kg/annum)** | 90000 | 90000 | 90000 | 90000 | 90000 |
| Capacity utilisation | 60% | 70% | 80% | 80% | 80% |
| **Production/annum at capacity utilisation** | **54000** | **63000** | **72000** | **72000** | **72000** |
| **Total income/annum** | **49.68** | **57.96** | **66.24** | **66.24** | **66.24** |
| **B. OPERATING EXPENSES** | | | | | |
| Raw Materials | 45.00 | 52.50 | 60.00 | 60.00 | 60.00 |
| Power & Utility | 0.14 | 0.16 | 0.18 | 0.18 | 0.18 |
| Salary | 3.00 | 3.02 | 3.03 | 3.05 | 3.06 |

| | | | | | |
|---|---|---|---|---|---|
| Repair & Maintenance | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Other Expenses | 0.15 | 0.17 | 0.20 | 0.20 | 0.20 |
| **Total Operating Expenses** | **48.31** | **55.87** | **63.43** | **63.45** | **63.46** |
| **Operating profit** | **1.37** | **2.09** | **2.81** | **2.79** | **2.78** |
| | | | | | |
| **C. FINANCIAL EXPENSES** | | | | | |
| Depreciation | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Interest on Term Loan | 0.19 | 0.15 | 0.11 | 0.07 | 0.02 |
| Interest on Working Capital Loan | 0.29 | 0.34 | 0.39 | 0.39 | 0.39 |
| **Net Profit** | **0.83** | **1.54** | **2.25** | **2.28** | **2.30** |
| Net cash accruals | **0.89** | **1.60** | **2.31** | **2.34** | **2.37** |
| Principal Repayment | 0.27 | 0.53 | 0.53 | 0.53 | 0.53 |

**6.1 Production capacity and Sales Realisation:** Total annual **Yarn Dyeing** at 100% capacity utilization is estimated as below.

| | |
|---|---|
| Yarn Dyeing | 90000 Kg |
| **Total production per annum at 100% capacity (in Kg)** | **90000 Kg** |

| Products | Qnty | Average Rate Per Unit (Rs.) | Amount (Rs) |
|---|---|---|---|
| Yarn Dyeing | 90000 Kg | 92 | 8280000 |
| **Total Sale Turnover per annum at 100% capacity** | | | **8280000** |

**6.2 Raw materials:** Total expenses on raw materials at 100% capacity utilization are estimated as below.

| Products | Qnty | Average Rate Per Unit (Rs.) | Amount (Rs) |
|---|---|---|---|
| Gray Yarn | 90000 Kg | 74 | 6660000 |
| Colour Powders and Packaging Materials | LS | Rs. 7,000 Per Month | 840000 |
| **Expenses on raw material at 100% capacity (Rs)** | | | 7500000 |

**6.3 Power & Utility:** Total expenses on power & utility at 100% capacity utilization is estimated as below.

| Particulars | Quantity | Power (Kw) | Total (Kw) |
|---|---|---|---|
| Plant & Machinery | -- | 1.50 | 1.50 |
| General Lighting | 5 | 0.10 | 0.50 |
| Total power requirement/day (Kw) | | | 2.00 |

| | |
|---|---|
| | |
| No. of hrs/day | 8 |
| No. of days/annum | 300 |
| Annual power requirement (kwh) | 4800 |
| Rate per unit (Rs) | 3.50 |
| Expenses on Power (Rs) | 16800 |
| Expenses on other Utility (Rs) | 6000 |
| **Expenses on power & Utility at 100% capacity (Rs)** | **22800** |

**6.4 Salary:** Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

| Particulars of Employees | Numbers | Salary/ Month (Rs) | Cost/ annum (Rs) |
|---|---|---|---|
| Manager | 1 | 5000 | 60000 |
| Skilled Workers | 2 | 4000 | 96000 |
| Semi skilled workers | 2 | 3000 | 72000 |
| Unskilled workers | 3 | 2000 | 72000 |
| **Expenses on salary in the 1st year (Rs)** | | | **300000** |

**6.5 Repair & Maintenance:** Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 2% every subsequent year.

**(Rs. in lacs)**

| Particulars | Cost (Rs) | Rate | Amount (Rs) |
|---|---|---|---|
| Building & Civil works | 0.50 | 1.00% | 0.01 |
| Plant & Machinery | 0.5 | 2.00% | 0.01 |
| Misc. Fixed assets | 0.32 | 1.50% | 0.00 |
| **Expenses on repair & maintenance in year 1** | | | **0.02** |

**6.6 Other Expenses:** Other expenses have been assumed at 0.3% of sales realisation.

**6.7 Depreciation:** Depreciation has been calculated by straight line method. The details of calculation are given below.

**(Rs in lacs)**

| Description | Cost (Rs) | Rate | Amount/ annum (Rs) |
|---|---|---|---|
| Building & Civil works | 0.50 | 3.34% | 0.02 |
| Plant & Machinery | 0.50 | 5.28% | 0.03 |
| Misc. Fixed assets | 0.32 | 6.33% | 0.02 |
| **TOTAL** | | | **0.06** |

**6.8 Interest on term loan & principal repayment:** Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 6 months with equal monthly instalments. The details of calculation are given below.

**(Rs in lacs)**

| Month | Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Month 1 | Opening balance | 2.40 | 2.14 | 1.60 | 1.07 | 0.53 |
| | Repayment | 0.00 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest (8%) | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| | **Closing balance** | **2.40** | **2.09** | **1.56** | **1.02** | **0.49** |
| Month 2 | Opening balance | 2.40 | 2.09 | 1.56 | 1.02 | 0.49 |
| | Repayment | 0.00 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| | **Closing balance** | **2.40** | **2.05** | **1.51** | **0.98** | **0.44** |
| Month 3 | Opening balance | 2.40 | 2.05 | 1.51 | 0.98 | 0.44 |
| | Repayment | 0.00 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| | **Closing balance** | **2.40** | **2.00** | **1.47** | **0.93** | **0.40** |
| Month 4 | Opening balance | 2.40 | 2.00 | 1.47 | 0.93 | 0.40 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Repayment | 0.00 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| | **Closing balance** | **2.40** | **1.96** | **1.42** | **0.89** | **0.36** |
| Month 5 | Opening balance | 2.40 | 1.96 | 1.42 | 0.89 | 0.36 |
| | Repayment | 0.00 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| | **Closing balance** | **2.40** | **1.91** | **1.38** | **0.85** | **0.31** |
| Month 6 | Opening balance | 2.40 | 1.91 | 1.38 | 0.85 | 0.31 |
| | Repayment | 0.00 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| | **Closing balance** | **2.40** | **1.87** | **1.33** | **0.80** | **0.27** |
| Month 7 | Opening balance | 2.40 | 1.87 | 1.33 | 0.80 | 0.27 |
| | Repayment | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| | **Closing balance** | **2.36** | **1.82** | **1.29** | **0.76** | **0.22** |
| Month 8 | Opening balance | 2.36 | 1.82 | 1.29 | 0.76 | 0.22 |
| | Repayment | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| | **Closing balance** | **2.31** | **1.78** | **1.25** | **0.71** | **0.18** |
| Month 9 | Opening balance | 2.31 | 1.78 | 1.25 | 0.71 | 0.18 |
| | Repayment | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 |
| | **Closing balance** | **2.27** | **1.74** | **1.20** | **0.67** | **0.13** |
| Month 10 | Opening balance | 2.27 | 1.74 | 1.20 | 0.67 | 0.13 |
| | Repayment | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 |
| | **Closing balance** | **2.22** | **1.69** | **1.16** | **0.62** | **0.09** |
| Month 11 | Opening balance | 2.22 | 1.69 | 1.16 | 0.62 | 0.09 |
| | Repayment | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 |
| | **Closing balance** | **2.18** | **1.65** | **1.11** | **0.58** | **0.04** |
| Month 12 | Opening balance | 2.18 | 1.65 | 1.11 | 0.58 | 0.04 |
| | Repayment | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Interest | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 |
| | **Closing balance** | **2.14** | **1.60** | **1.07** | **0.53** | **0.00** |
| | | | | | | |
| **Principal Repayment** | | **0.27** | **0.53** | **0.53** | **0.53** | **0.53** |
| **Interest** | | **0.19** | **0.15** | **0.11** | **0.07** | **0.02** |

## 7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

| Year | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Profit After Tax (Net Profit) | 0.83 | 1.54 | 2.25 | 2.28 | 2.30 |
| Depreciation | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Interest | 0.19 | 0.49 | 0.50 | 0.45 | 0.41 |
| **Total** | **1.08** | **2.09** | **2.81** | **2.79** | **2.78** |
| Interest | 0.19 | 0.49 | 0.50 | 0.45 | 0.41 |
| Loan repayment | 0.27 | 0.53 | 0.53 | 0.53 | 0.53 |
| **Total** | **0.45** | **1.03** | **1.03** | **0.99** | **0.94** |
| **DSCR** | **2.38** | **2.04** | **2.73** | **2.83** | **2.94** |

Average DSCR = 2.60

## 8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

| Year | 1 | 2 | 3 |
|---|---|---|---|
| | | | |
| **A. Net sales** | **49.68** | **57.96** | **66.24** |
| **B. Variable cost** | | | |
| Raw Materials | 45.00 | 52.50 | 60.00 |
| Power & Utility | 0.14 | 0.16 | 0.18 |
| Other expenses | 0.15 | 0.17 | 0.20 |
| Interest on Working Capital Loan | 0.29 | 0.34 | 0.39 |
| **Total variable cost** | **45.58** | **53.17** | **60.77** |
| **C. Contribution (A-B)** | **4.10** | **4.79** | **5.47** |
| **D. Fixed & Semi-fixed Costs** | | | |
| Salary | 3.00 | 3.02 | 3.03 |
| Repair & maintenance | 0.02 | 0.02 | 0.02 |
| Interest on Term Loan | 0.19 | 0.15 | 0.11 |
| Depreciation | 0.06 | 0.06 | 0.06 |
| **Total fixed cost** | **3.27** | **3.25** | **3.22** |
| **E. BREAK EVEN POINT** | **79.77%** | **67.90%** | **58.88%** |
| **F. BEP at operating capacity** | **47.86%** | **47.53%** | **47.11%** |
| **G. Cash BEP** | **46.94%** | **46.61%** | **46.19%** |

## 9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

| Year | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **CASH OUTFLOW** | | | | | | |
| | | | | | | |
| Capital Expenditure | 1.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Working Capital | 0.00 | 6.13 | 0.96 | 0.96 | 0.00 | 0.00 |
| **Total (A)** | **1.35** | **6.13** | **0.96** | **0.96** | **0.00** | **0.00** |
| | | | | | | |
| **CASH INFLOW** | | | | | | |
| Profit After Tax | | 0.83 | 1.54 | 2.25 | 2.28 | 2.30 |
| Add: Depreciation | | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Add: Interest | | 0.19 | 0.15 | 0.11 | 0.07 | 0.02 |
| Add: Salvage Value | | | | | | |
| | | | | | | |
| **Total (B)** | **0.00** | **1.08** | **1.75** | **2.42** | **2.41** | **2.39** |
| | | | | | | |
| **NET FLOW (B-A)** | **1.35** | **-5.05** | **0.79** | **1.46** | **2.41** | **2.39** |

IRR = 17%