

PROJECT PROFILES FOR NORTH EASTERN REGION



**PROJECT PROFILES**  
for  
**NORTH EASTERN REGION**



भारतीय लघु उद्योग विकास बैंक

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SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA

*We empower Micro, Small & Medium Enterprises*

# **PROJECT PROFILES FOR NORTH EASTERN REGION**



**Small Industries Development Bank of India**

**We empower Micro, Small & Medium Enterprises**

**<http://www.sidbi.in>**

**October, 2008**



वित्त मंत्री  
भारत  
नई दिल्ली - 110001  
**FINANCE MINISTER**  
**INDIA**  
**NEW DELHI-110001**

## MESSAGE

All-round development of the North Eastern Region is our national priority and commitment. The Region is endowed with immense natural and human resources. To harness this potential and accelerate overall socio-economic development in the Region, we have to make special efforts. The growth process has to be inclusive and balanced. This calls for providing holistic support to entrepreneurs in the Region. Banks and financial institutions have an important role to play to usher in the process of financial inclusion.

2. The Government of India is committed to the progress of North Eastern Region. Every major Ministry in the Union Government spends at least 10 per cent of its budgetary allocation for the North Eastern Region. Most centrally sponsored schemes provide assistance to the North Eastern States with a grant component of 90 per cent. Additional funds are provided for special packages to address the specific requirements and needs of the Region. The Ministry of Development of North Eastern Region (DONER) has been specially created to act as a facilitator for the North Eastern States to ensure that their development is accelerated with the support of the Government of the India.

3. I am happy to know that SIDBI has brought out a compendium of 100 project profiles for the use of micro and small entrepreneurs in the North Eastern Region. SIDBI's compendium of project profiles has come at an appropriate time and will not only bridge an important information gap for the budding entrepreneurs but also help the bankers in taking informed credit decisions.

4. I congratulate SIDBI and extend my good wishes to this endeavour.

  
**(P. Chidambaram)**



**ARUN RAMANATHAN**  
SECRETARY



भारत सरकार  
वित्त मंत्रालय  
वित्तीय सेवाएँ विभाग  
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### Message

I am happy to know that Small Industries Development Bank of India (SIDBI) has come out with a compendium "Project Profiles for North Eastern Region", containing 100 project profiles on a wide range of Micro Enterprises for the Region.

The North Eastern Region has abundant resources for setting up of Micro, Small and Medium Enterprises (MSME) units in agro and food processing, eco-friendly building materials, handlooms and handicrafts and the service sector. One of the critical factors needed for grounding of micro and small units is the availability of information on project cost, sources of raw materials, machinery, market potential, etc. These project profiles will assist entrepreneurs in project formulation and minimize risks in implementation.

**(Arun Ramanathan)**



भारतीय रिजर्व बैंक  
RESERVE BANK OF INDIA

उप गवर्नर

Deputy Governor

www.rbi.org.in



**Foreword**

The Reserve Bank of India gives high priority for upgrading the banking services in North Eastern Region (NER) in tune with the Government's efforts for development of the region. Setting up of the Committee on Financial Sector Plan for NER including Sikkim under the aegis of Reserve Bank of India (RBI) reflected its intention to address the constraints of the region in a more focused and State specific manner. The Committee has made recommendations which have far reaching implications for financial inclusion of the people of NER. In order to escalate the progress of implementation of the recommendations, the RBI has also constituted a High Level Monitoring Group which periodically reviews the progress of implementation of the recommendations as also gives directions to the various implementing agencies to take these recommendations to their logical conclusions.

The initiative of SIDBI to make available project profiles for projects in tiny sector in respect of industries relevant for NER is an important development in this context. SIDBI has already brought out two sets of compendium of project profiles for NER. These have been widely accepted in the Region. This is the third set of compendium comprising 100 project profiles. These profiles cover the projects under agro, food processing, construction, chemical and plastic industries, as also, service sector. The compendium also contains 13 profiles of handloom and handicraft activities. Each profile highlights the market potential, manufacturing process, machinery/equipment, list of probable suppliers indicating cost of project and other essential information. Thus, the profiles contain essential information that any entrepreneur would like to have before considering setting up of an enterprise in NER.

I sincerely hope that this compendium contributes to bridging the information gap as well as in facilitating germination of a number of industries in the Region. This, coupled with other initiatives of the Government of India and SIDBI, such as, guarantee cover for loans under CGTMSE and EDPs, is expected to further the cause of industrialization and economic development of NER with greater emphasis on financial inclusion.

With wide publicity to availability of project profiles and their periodical updation, the cause of development of NER will be well-served. I compliment SIDBI on this initiative.

  
(Usha Thorat)

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हिंदी आसान है, इसका प्रयोग बढ़ाइए



# Introduction

Small Industries Development Bank of India (SIDBI), as the principal financial institution for the Micro, Small and Medium Enterprises (MSME) sector, always endeavours to usher in a holistic development of MSMEs. As a part of its Promotional and Developmental initiatives, the Bank is committed to widen and deepen the spirit of entrepreneurship all over the country, more particularly, in the North-Eastern Region (NER). SIDBI has always accorded high priority and special thrust to the economic development of NER. The Bank has also been nurturing and developing the entrepreneurship-spirit in the NER by way of tailor-made Entrepreneurship Development Programmes (EDP) and Rural Industries Programmes (RIP). The primary objective of SIDBI's promotional activities in NER is to ensure economic empowerment of the Region so as to bring it under the fold of inclusive growth process.

Towards this end, SIDBI has undertaken the initiatives to make available project profiles of having economic relevance to the micro enterprises in the NER. Such project profiles bridge the information gap and help the NER entrepreneurs to take up the projects according to their skills, economic relevance and availability of local raw materials. The Bank has already brought out two sets of compendium of project profiles which were well-received by the entrepreneurs in the Region and helped them in setting up various projects. In view of the success of the earlier two profiles and demand for more such project reports, SIDBI has brought out this third compendium comprising 100 project profiles. The present compendium contains project reports for 78 manufacturing activities under the nine broad categories of agro-based industries, building material, chemical products, demand based products, food processing, handloom & handicrafts, leather, plastic products and veterinary products, as also 22 projects in the services sector. These activity-specific profiles contain useful information and data pertaining to the areas of financial viability, costing, initial capital expenditure, sources of raw material, market potential, etc. The compendium also provides other information, such as, NE industrial policy, procedures and incentive schemes of Government of India, details of credit guarantee scheme, specialised rating agency for MSME, etc.

These project profiles are expected to act as guide-posts in setting up of new enterprises and bring about significant industrial development in the Region. While these project profiles provide a wide information platform, the entrepreneurs may note that the project costs are only indicative and based on FY 2008 prices. Similarly, the machineries and their suppliers listed in the profiles are also only illustrative. The entrepreneurs may, therefore, like to take informed decisions after ascertaining the current prices of the raw materials, finished products, machineries and their availability from other suppliers as well.

I take this opportunity to thank North-Eastern Industrial & Technical Consultancy Organisation Ltd. (NEITCO) for preparing the project profiles.

While reiterating SIDBI's commitment to the overall economic development of the NER, the Bank would continue to strengthen the information base of NER entrepreneurs by bringing about such project profiles in future as well.

  
**(R. M. Malla)**

Chairman and Managing Director  
Small Industries Development Bank of India

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## AYURVEDIC HAIR OIL

### INTRODUCTION

Hair oils are composed of oils of vegetable origin as a base blended with small quantities of perfumes. Vegetable oils commonly used are coconut oil, castor oil and sesame oil. Hair oils are also coloured with a view to characterizing different brands and also rendering appeal. Being an item of mass consumption and in view of essentially simple nature of operations, a hair oil unit is an attractive project proposition for budding entrepreneurs. Ayurvedic hair oil consists of herbal extracts in hair oil base, like bringaraj, amala brahmi hair oil etc.

### MARKET POTENTIAL

While hair oils are used both by the male and female population, its uses amongst females is comparatively more than with males. It may be conservatively assumed that about 80% of the female and 50% of the male population would use hair oils regularly. Taking population of the north eastern region as 34 million, the population of males and females about 50% each, and considering consumption of hair oils amongst males at 500 ml per year and amongst female at 1000 ml per year, the demand potential for hair oils in the north eastern region is estimated at 17.8 million litres per year. The market for hair oils is dominated by brands of leading companies like Tatas, Dabur and Hindustan Lever.

Local hands can penetrate the market if they are able to sell at a significantly lower price. Although there are a few units producing ayurvedic hair oil, their production is very limited. Asssuming that new tiny units can capture 10% of the existing market the demand potential for tiny units is estimated at 1.78 million litres per year which corresponds to about 1500 tons per year of hair oils. Considering the capacity of a typical tiny unit as 30 tons there is scope for over 50 each units to be set up in the region.

### PLANT CAPACITY

A capacity of 30 tons per annum is suggested on the following basis

Daily Production	- 100 litres
Operating days	- 300
Annual production	- 30 Kilolitres
- 100 ml bottles	- 150,000 nos.
- 200 ml. Bottles	- 75,000 nos.

### RAW MATERIALS

The major raw materials required are coconut oil, castor oil, Sesame oil, perfume, colour. Besides, packing materials including bottles and caps are required. The annual requirement of raw materials is as under :

	<u>Qty.</u> Tons/yr.
Coconut oil	24.0
Castor oil	5.1
Perfume	0.6
Colour	0.3
Amla extract	L.S.

None of the above materials are manufactured in the region at present but are available in the local market in Guwahati, through dealers. Coconut oil is produced mainly in Kerala. However, coconuts are available in large quantities in Assam and to some extent in Tripura, and it is expected that units to produce coconut oil will be set up. Castor seed is available in north eastern region and units producing castor oil may be expected to be set up.

### PROCESS

The manufacturing process involve the following steps :

- i) Mixing of oils, herbal extract, colours and perfume
- ii) Filtering

- iii) Filling in pre washed and dried bottles
- iv) Sealing of caps and packing

#### EQUIPMENT

The main equipment required for the production of hair oil are:

- i) Mixing tank with stirrer capacity 50 kg. : 2 Nos.
- ii) Bottle washing machine : 1
- iii) Bottle drier : 1
- iv) Filling machine : 1
- v) P.P. cap sealing machine : 1
- vi) Filtering equipment : 1
- vii) Misc. equipment :

#### LOCATION

The suggested locations are :

<u>State</u>	<u>Place</u>
Assam	Guwahati
	Dibrugarh
	Silchar
Meghalaya	Shillong
Manipur	Imphal
Nagaland	Kohima, Dimapur
Mizoram	Aizawl
Sikkim	bakhim, Chunthaow, Lachung, Yumthang, tashiding

#### INFRASTRUCTURE

The main infrastructure facilities required are:

Shed	- 1000 sq.ft, area
Power	- 8 KW
Water	- 500 Ltrs/day

#### TOTAL CAPITAL REQUIREMENT

The project cost comprising fixed capital and margin money on working capital is Rs. 9.48 lakhs.

( Rs. In lakh)

<b>A. Fixed Capital:</b>		
Shed		On rent
Plant and Machinery		4.00
Miscellaneous fixed assets		1.75
Preliminary and pre-operative expenses		1.10
	<b>Total (A) :</b>	<u>6.85</u>
		=====
<b>B. Working Capital:</b>		
Raw materials & packing materials	3 months	7.94
Finished goods	10 days	1.33
Working expenses	10 days	0.18
Receivables	10 Days	1.05
	<b>Total (B)</b>	<u>10.50</u>

Note: Working capital may be financed as:

Bank Finance	...	Rs. 7.87 lakhs
Margin Money	...	Rs. 2.63 lakhs

Rs. 10.50 lakhs

#### MEANS OF FINANCE

Promoter's Contribution (35%)	...	Rs. 3.32 lakhs
Term Loan (65%)	..	<u>Rs. 6.16 lakhs</u>
		<b>Rs. 9.48 lakhs</b>
		=====

## OPERATING EXPENSES

The operating expenses at rated capacity are estimated at Rs. 38.45 lakhs per year as follows :  
(Rs. In lakhs/year)

1.	Raw materials(As per Annexure-2)	27.40
2.	Packing materials(As per Annexure-2)	4.35
3.	Utilities	0.65
4.	Overheads	0.40
5.	Wages & Salaries	2.00
6.	Selling expenses @ 5% of annual sales turn over	2.05
7.	Interest	1.10
8.	Depreciation	<u>0.50</u>
		38.45
		=====

## SALES REALISATION

The north eastern market is mostly shared by the leading hair oil manufacturers. The retail prices of popular brand of hair oils is about Rs. 20/- to Rs. 30/- for 100 ml bottle and Rs. 45/- to Rs. 65/- for 200 ml bottle. Providing for dealers co-mission, taxes etc. an ex-factory sales prices of Rs. 14/- for 100 ml and Rs. 30/- for 200 ml bottles is considered. On this basis, the annual sales turn over for 2,25,000 bottles (30 TPA) is estimated at Rs. 43.50 lakhs on the following basis :

		(Rs. in Lakhs)
75,000 nos. 200 ml bottles @ Rs.30/- per piece	22.50	
1,50,000 nos. 100 ml. Bottles @ Rs. 14/- per piece		21.00
		-----
		43.50
		=====

## PROFITABILITY

Based on the annual sales turn over of Rs. 43.50 lakhs and the estimated operating expenses of Rs.38.65 lakhs, the annual profit is estimated at Rs.4.85 lakhs. This works out to be pre-tax return of 51% on the investment. The plant would break even at about 48% of the rated capacity.

## FINANCIAL HIGHLIGHTS

The major financial highlights of the project are as follows:

Total Capital Requirement	Rs. 9.48 lakhs
Promoter's equity	Rs. 3.32 lakhs
Sales realization	Rs. 43.50 lakhs
Operating expenses	Rs. 38.65 lakhs
Profit at rated capacity	Rs. 4.85 lakhs
Pre-tax return on investment	51%
Pre-tax return on sales	11%
Break-Even Point	48%
Manpower	7

## ANNEXURE-I

### LIST OF MACHINERY SUPPLIERS OF HAIR OIL UNIT

1. M/s. T.S. Enterprise  
Road No. 14, Plot No. E-412  
Viswakarma Industrial Area  
Jaipur – 300 013.
2. M/s. Gladwyn & Co.  
251, Dr. D.N. Road  
Bombay-400 001

## ANNEXURE-II

## RAW MATERIALS

		(Rs. lakhs)
1.	Coconut oil – 24 OT @ Rs. 1,00,000/T	24.00
2.	Castor oil – 5.1 T @ Rs. 30,000/T	1.53
3.	Perfume – 0.6 T @ Rs. 3,00,000/T	1.80
4.	Colour – 0.3 T @ Rs.24,000/T	<u>0.07</u>
		27.40 lakhs
		=====

**PACKING MATERIALS**

**A. Bottles**

i. 200 ml – 250 nos. x 300 days  
= 75,000 nos. @ Rs. 2.00 Rs. 1,50,000

ii. 100 ml – 500 nos. x 300 days  
= 1,50,000 nos. @ Rs. 1.50 p Rs. 1,50,000

Total (A) : Rs. 3,00,000

**B. Cartons**

i. 75,000 nos. @ Rs. 0.80 p = Rs. 60,000

ii. 1,50,000 nos. @ Rs. 0.50 p = Rs. 75,000

Total (B) : Rs. 1,35,000

Total (A+B) Rs. 4,35,000

=====

## MANUFACTURING OF AYURVEDIC MEDICINE CUM MASSAGING UNIT

### Introduction: Ayurvedic Medicine

Ayurvedic system of medicine is as old as the Vedic age. Now-a-days people give preference to the Ayurvedic medicines as the allopathic medicines are costlier and have side effects. Ayurvedic medicines are based on plants, animals extract and minerals both in single ingredient drugs and compound formulations, however, Ayurveda does not rule out any substances from being used as a potential source of medicine.

Ayurvedic compound formulations are mainly divided into two groups viz. (1) Kasthausadhi (predominantly plant drugs) and (2). Rasausadhi (predominantly metals and minerals).

There are several categories of Kasthausadhi formulations such as Asavaristra, Avleha, Grafa Churena, Taila etc. and of Rasausadhis such as Bhasma, Pisti, Lauha, Kapibadkva, Rasayana etc. The Ayurvedic drugs are derived from vegetable sources from the various parts of the plant like root, leaf, flower, fruit extrude or plant as a whole. There are about 21 varieties of compound formulations in which some of the single drugs of animal origin (52 Nos). Mineral origin (55 Nos.) and plant origin (351 Nos.) are used. There details of the single drugs and other particulars can be had from the Ayurvedic formulary of India, published by Govt. of India, Ministry of Health and Family Welfare.

### Massaging Unit

Kerala being the most health conscious state in the country leads on forecastive medicine and preventive therapies for physiological and genetic diseases such as cancer, diabetes and mental disorders. It also attempts to normalize all dimensions of life to ensure free flow of life. This uniqueness of massaging unit renders it to a status higher than that of a medical science and prefer to state massaging is a way of life practiced in India over the past years.

### Product uses:

A large number of diseases have Ayurvedic treatment much superior to the other system of medicines and this has been recognized world over. Thus Ayurvedic medicines/drugs are becoming popular day-by-day and demand for its usage is increasing not only in the country but also worldwide. The inherent quality of Ayurvedic treatment of having negligible side/after effects, has made great potential for its production.

### Market Potential:

There is more recognition for nonallopathic system of medicines in the country now than the past few decades. The concept of alternative system of treatment notably herbal and Ayurvedic medicines therapy is gaining ground and attracting attention worldwide. There is more and more scientific research being conducted in our country for treatment of various diseases by Ayurvedic and herbal therapy.

### Suggested Capacity:

The production and product-mix of different quantity per annum will be as follows:

Product	Quantity
<b>Ayurvedic Medicine</b>	
1 Ashokarishta	1500 bottles
2 Laxmibilas Ras (N)	100 KG
3 Bhaskar Lavan	2000 KG
4 Sitopaladi churna	1500 KG
5 Chyavan Prash	1500 KG
6 Mritasanjivani	2000 KG
7 Gandhkadi Malham	100 KG
<b>Massaging Unit</b>	
8 Massaging therapy	5 beds

**Basis:-**

No. of working days	=	300 days per year
No. of Shifts	=	1 per day.
One shift	=	8 hours

**Infrastructure Requirement:**

The main Infrastructure facilities required are:

Required area:	2000 Sq.ft.
Working Area:	1000 Sq.ft.
Power requirement	5 kw.

**Water (required in every working day)****4-5 KL****Raw Materials and its availability:**

A large number of medicinal plants, herbs, shrubs etc. are available in the hilly/forest areas of northeastern region. In order to boost the production of Ayurvedic/herbal drugs, Govt. of India has also set up a Board namely Indian system of Medicine and Homeopathy to encourage production of Ayurvedic medicines specially in the regions where basic raw materials are available in plenty. Thus there is a great potential for Ayurvedic medicines not only in the region but for export purpose also.

Raw materials, different parts of plants drugs from animal origin, minerals, sugar, honey etc. are available indigenously and consumables including packing materials like glass bottle etc.

All kinds of Ayurvedic/herbal oil and other ingredients for massaging unit can be collected from local agencies or can be extracted in the own unit.

**Suggested Location:**

Keeping in mind the market and well-developed road and air connectivity, the typical unit should be located near by large urban areas or Towns preferably near main marketing centers in northeastern states. Bakhim, Chunthaow, Lachung, Yumthang, Tashiding in Sikkim.

**Manufacturing Process:**

Ayurvedic medicines are available in the form of powder, tablets, pills, liquid and semi-solid which are classified into the following different categories:

**1. Aristha and Asava:** Asavas and Aristhas are made by soaking the herbs either in powder form or in the form of decoction (kasaya) in a solution of sugar or jaggery, as the case may be, for a specific period of time, during which it undergoes a process of fermentation generation alcohol and facilitates the extraction of the active ingredients contained in the herbs.

**2. Rasa Rasayan:** Ayurvedic medicines containing mineral drugs as main ingredients are called Rasa rasayan or Ras-yoga. They are in pill form or in powder form/ forest, minerals such as Anrala, Swarna, Rajata, Tamra etc. and sulphur impurified state are used to convert bhasma form, called kajjali then other drugs are added in small quantities, mixed well and grounded to form fine powder.

**3. Lauha:** Lauha kalpas are preparation of Loha Bhasma as main ingredient with other drugs. The other active ingredients are made to fine powder and mixed with Loha Bhasma.

**4. Vati or Gutika:** Medicines prepared in the form of tablets or pills are known as vati or gutika, these are made of one or more drugs of plant, animal or mineral origin.

**5. Churna:** Churna is a fine powder form of drugs. All these herbs and other active ingredients are cleaned, dried and powdered together by mechanical means to the fineness of at least 80 meshes.

**6. Avaleha Madak Paak:** Avaleha or lehya is a semi-solid preparation of drugs. These are prepared by the addition of jagger sugar or sugar dandy and boiled with prescribed drug juices decoction, Honey, if required, is added when the preparation is cold and mixed well.

**7. Ghrita:** Ghrita are preparations in which ghee is boiled with prescribed Kasayas (Decoction) and kalkas of drugs according to formulation as per Ayurvedic formulary.

**8. Parpati:** First Kajjali is prepared with purified Mercury and sulphur. Then other drugs as per Ayurvedic Formulae are added and mixed well in grinder. The powder is then heated in iron vessel and melted. This melted material is purified as per Ayurvedic method, cooled and again flakes of medicines are powdered.

**9. Taila:** Tailas are prepared by boiling prescribed kasyas (decoction) and kalkas of drugs in oils according to the formula prescribed in Ayurvedic formulary.

**10. Goggulu:** Ayurvedic medicines prepared by the exudates, and obtained from the plant commiphara mukul, are known as Goggulu. There are five different varieties of Goggulu in Ayurvedic Shastra but usually two varieties, mahiskasa and kanaka are preferred for medicinal preparation.

Exudates in small pieces are taken in a piece of cloth and boiled in gomutara or Dugdha or Triphala kasayua until the exudates pass into the fluid through the cloth to the maximum. The fluid after filtering is boiled till it forms a mass. After drying, the mass is formed into a paste by adding ghee till it becomes waxy.

**Quality Control and Standards:**

For standardization and quality control of Ayurvedic drugs, various steps can be followed like physical description, physical tests, pharmacoginised techniques etc, to ascertain the species of plant and study their pharmacoginostic character for the purpose of identification detection and analyzing the crude drug.

Generally quality of Ayurvedic products is fully dependent on the quality of raw materials and process of manufacture. The quality control process of some Ayurvedic formulations can be contained from 'Pharmacopica Laboratory of India Medicine, near ALTC, Ghaziabad (U.P)'. The products are to be manufactured as per Indian system of medicines of Ministry of Health.

**PROJECT ECONOMICS**

The total capital requirement estimated is Rs.27.70 lakhs as given below: -

<b>A. Fixed Capital</b>	<b>(Amount Rs. in lakhs)</b>	
<b>Land 2000 Sq. ft.</b>	Own/Lease	
<b>Civil Works</b>		
i.) Working Area 600 Sq. Ft. @ 700/ Sq. ft.		4.20
ii.) Massaging unit/Store 400 Sq. Ft. @ 800/sq.ft.		3.20
iii.) Misc. civil works like cemented open Space, internal drainage, Overhead Reservoir,		1.00
<b>Plant &amp; equipments</b>		13.00
<b>Other misc. Fixed Assets</b> (Water arrangement/ Pump-set Water & Electrical fittings/Other Equipments)		1.00
<b>Preliminary &amp; Pre-operative Expenses</b>		<u>0.80</u>
Sub Total (A) Rs.		<u>23.20</u>
<b>B. Working Capital</b>		
	<b>(Norms)</b>	<b>(Amount Rs. in lakhs)</b>
Raw Materials/Consumables	1 months	0.42
Working Expenses	1 month	1.12
Finished Goods	15 days	1.20
Receivable	15days	<u>1.76</u>
Sub Total (B) Rs.		<u>4.50</u>
Note: Working Capital to be financed as:-		
Margin Money:		Rs. 2.15
Bank Finance:		<u>Rs. 2.35</u>
		<u>Rs. 4.50</u>
<b>Means of Finance</b>		
Promoter's Equity(25%)		(Rs. in Lakhs) 6.35
Term Loan(75%)		<u>19.00</u>
		<u>Rs. 25.35</u>
<b>Production Expenses</b>		
Raw materials/consumables/ Packing Materials		5.00
Wages & Salaries		11.88
Utilities		1.54



Repair & Maintenance	0.20
Administrative Overhead	0.25
Selling expenses 10% on sales	3.47
Depreciation	1.82
Interest	<u>2.72</u>
	<u>Rs.26.88</u>

**Profitability:**

Based on the sales turnover and the operating expenses, the profit would be Rs. 7.82 lakhs per year. This works out to a return on capital investment of 28%. The unit would break-even at about 68% of the rated capacity.

**Raw Materials/Consumables/Packing Materials**

Raw-materials	Annual Requirement (Rs. in Lakhs)
Raw materials, different parts of plants, drugs from animal origin, minerals, sugar, honey and other indigenous and consumables including packing materials like glass bottle etc.	5.00

**Machinery and Equipments**

Sl. No.	Description	Rate (Rs.)	Qty. (Nos.)	Price (Rs.)
<b>AYURVEDIC MEDICINE</b>				
1.	S.S.Vat, 750 Kg. Capacity	70,000	1	70,000
2.	Fermenter 200 lit. Cap.	30,000	1	30,000
3.	Sintered Glass Crucible	10,000	3	30,000
4.	Disintegrator with 5 H.P. size 10" with sieves of different mesh sizes	80,000	1	80,000
5.	Micro pulverizer with 2 H.P.Motor	60,000	1	60,000
6.	Tablet making M/C	50,000	1	50,000
7.	Bottle filling machine	25,000	1	25,000
8.	Bottle sealing m/c	15,000	1	15,000
9.	S.S Pestle and motor	20,000	1	20,000
10.	S.S Mixing vessel with motor 100 Litre capacity	70,000	1	70,000
11.	Distillation unit 200 Lt. Cap. Electrically heated fitted with pipeline made of stainless steel AISI 316.12 kW	3,00,000	1	3,00,000
12.	Water treatment plant 50 liters cap	1,00,000	1	1,00,000
13.	Filtering unit fitted with paper and cloth	21,000	1	21,000
14.	Furnace	350,000	1	35,000
15.	Weighing scale 10 Kg. Cap	15,000	1	15,000
16.	Glass jars with stopper 25 liters. Cap	1,000	10	10,000
17.	Glass jars with lid 3 kg. Cap	300	20	6,000
18.	Vessel covered 100 Litres	8,000	2	16,000
19.	Air oven with 6 trays with 2.5 HP motor	25,000	1	25,000
20.	Bottle washing m/c	45,000	1	45,000
21.	Aluminium container for storage of powder etc.	2,000	15	30,000
22.	Testing equipments			2,00,000
<b>MASSAGING UNIT</b>				
23	Therapy Beds	5,000	5	25,000
24	Heat treatment moisturizing unit	11,000	2	22,000
<b>Total Rs.</b>				<b>13,00,000</b>

**Utilities:** Power Requirement:  
 For Plant & Machinery 20 H.P.  
 For General Lighting 5 H.P.  
 Total 25 H.P.  
Annual power consumption:  
 25 H.P. X 0.746 X 5 hrs. X 300 days X Rs= 5.50  
 Annual Electric Bill Rs.=1,54,000

**Sales Turnover:**

Total Sale (per annum)				Rupees.
<b>manufacturing of ayurvedic medicine</b>				
1. Ashokarishta	1500 bottles	750 ml.	@60	90,000
2. Lakhbilas Ras (N)	100 KG	10 gm.	@40	4,00,000
3. Bhaskarlavan	2000 KG	100 gm.	@60	12,00,000
4. Sitopaladi Churan	1500 KG	100 gm.	@50	7,50,000
5. Chyavan Prash	1500 KG	500 gm.	@70	2,10,000
6. Mritasanjivani	2000 KG	500 gm.	@80	3,20,000
7. Gandhkadi Malham	100 KG	20 gm.	@40	2,00,000
<b>Sub-total Rs.</b>				<b>31,70,000</b>
<b>Massage therapy</b>				
1500 patients annually	@ Rs.200 per patient as service charge, cost of oil & other ingredients would be borne by patients.			3,00,000
<b>Sub-total Rs.</b>				<b>34,70,000</b>

**Break Even Analysis**

**A. Variable Cost:** (Rs. in Lakhs)  
 Raw Materials/Consumables 5.00  
 Utilities 1.54  
 Selling Expenses 3.47  
**Rs 10.01**

**B. Semi-Variable Cost:** (Rs. in Lakhs)  
 Wages & Salaries 11.88  
 Repair & Maintenance 0.20  
 Administrative Overhead 0.25  
 Depreciation 1.82  
 Interest 2.72  
**Rs. 16.87**

C. Sales Turnover Rs. 34.70 Lakhs  
 D. Contribution: Rs. 24.69 Lakhs  
 E. Break Even Point B/D X 100% 68%

**Manpower:**

Sl.No.	Category	No. of Person	Salary Per Person Per Month(Rs)	Monthly Salary Bill (Rs.)
1.	Manager-Manufacturing Chemist	1	12,000	12,000
2.	Analytical Chemist	1	10,000	10,000
3.	Accountant-cum-typist	1	5,000	5,000
4.	Clerk-cum-Typist	1	5,000	5,000

5.	Skilled workers	4	6,000	24,000
6.	Unskilled workers	6	3,000	18,000
7.	Sales representative	2	8,000	16,000
<b>Total Rs.</b>				<b>90,000</b>

Salary Bill Rs 10.80 Lakhs + Benefits @ 10% annually i.e. Rs 1.08

**Total Annual Salary Bill: Rs.11.88**

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs.	27.70 lakhs
Promoter's contribution	Rs.	6.35 lakhs
Annual Sales realization	Rs.	34.70 lakhs
Annual Operating Expenses	Rs.	26.88 lakhs
Annual Profit	Rs.	7.82 lakhs
Return on sales		23 %
Break-even point		68 %
No. of person employed		16

**Addresses of Raw Material and Plant Machinery Suppliers**

- |   |  |
|---|--|
| 1. M/s. Modern Mechanical Works<br>Street,<br>1501, Qsim Jon Street,<br>Delhi-110006.                                     | 2. M/s. Associated Instrument 1501, Qsim Jon<br>Manufacturers Pvt.<br>26, Asaf Ali Road,<br>New Delhi-110006.  |
| 3. M/s. Amar Engineering works<br>W-28, Raja Garden,<br>New Delhi-110027.   | 4. M/s. Emkay (India) Trading Co.<br>286, Garhiaya, Jama Masjid,<br>New Delhi-110006.                          |
| 5. M/s. Rank and Co.<br>A-95/3, Wazirpur Industrial Estate,<br>New Delhi-110052.  | 6. M/s. Juta Biotech<br>215, Syndicate House,<br>3, Old Rohtak Road, Inderlok, Delhi-110035.7.                 |
| M/s. International Machinery<br>Manufacturing Co 3259,<br>Farhat Ullah Street, Kucha Pandit,<br>Lal Kuan,<br>Delhi-110006 | 8. M/s. Brintex Sales Corporation<br>Electrical Division,<br>55, Tagore Garden<br>New Delhi-110027             |
| 9. M/s. Harrisons Pharma Machinery (P)<br>4648/21, Shedumal Building,<br>Darya Ganj,<br>New Delhi-110002                  | 10. M/s. Techmac Engineering Works<br>310, Usha Kiran Building<br>Commercial Complex<br>Azadpur, Delhi-110033. |
| 11. M/s. Bio Products Pvt. Ltd.<br>221, Patparganj Industrial Area,<br>Delhi.   | 12. M/s. Engineers Syndicate<br>A-2, F.F. Ring Road,<br>Rajouri Garden, New Delhi-10027.                       |

**Material Suppliers**

Local Dealer in Herbs, Meicinal Plants etc.

## CITRONELLA OIL

### INTRODUCTION

Citronella oil is one of the major essential oils. It has a rose like odour and bitter taste. It is mainly used in the perfumery and cosmetic industry. Citronella oil is a raw material for production of geranial, citronellal, hydroxy-citronellal and other similar high value perfumery bases. It is also widely used as a starting material for various aromatic chemicals used in scented soaps, sprays, deodorants, detergents, polishes, mosquito repellants etc.

### MARKETS POTENTIAL

The essential oil industry in India has witnessed a remarkable growth since the early 70's. From a production of around 50 tpa in 1973, the industry has registered a ten-fold increase in production and the current production is about 700 tpa.

Citronella oil constitutes over 90% of the production of essential oils in the country. The major customers are the manufacturers of cosmetics and perfumes who are mainly located in Mumbai, Bangalore, Madras. Procurement of citronella oil is in the hands of four major buyers, namely, Hindustan Lever Limited, Industrial Perfumes, K.V. Aromatics and Gupta & Co. The total purchases of these four buyers was 1200 tonne in 1992, 2000 tonne in 1994 and 3000 tonne in 1996. Thus, in one year period their procurement increased by about 450 tonne per year at an average.

The substantial increase in the demand for essential oils is related to the spurt in the growth of consumer industry which in turn is related with the growing purchasing power of the Indian middle class. The present demand is placed at around 3400 tonne per year. Assuming that the trend would continue the demand is estimated to rise to 5000 tonne per year by 2000.

Besides the domestic demand, there is good potential for exports. Though there are no exports at present, the quality of essential oils produced in Assam is reported to be better than that produced in Sri Lanka and Indonesia which are the two major exporters at present. Citronella oil is being produced in the north-eastern states of Assam, Meghalaya, Arunachal Pradesh, Nagaland and Manipur. Considering the incentives offered by the Government for exports, an export demand of 1000 tpa may exist. Hence, the total demand for citronella oil is placed at 5000 tonne by 2000. Considering the present production of 1200 tonne, there will be an additional market opportunity for about 3800 tpa by 2000.

### PLANT CAPACITY

The capacity of a citronella oil plant depends mainly on the size of the distillation stills which is the main production unit. Plants are available in varying sizes with processing capacities ranging from 500 Kg to 1000 Kg per batch. Annual production envisaged is 6 tpa on the following basis.

Throughput capacity	1000 Kg of citronella grass
Process time per batch	3 ½ to 4 hours
No. of shifts per day	2
No. of batches/day	3
Yield of citronella oil	0.8%
Daily output	24 Kg.
Working days per year	250
Annual output	6 tonne

### RAW MATERIALS

The chief raw material is Java citronella grass which grows on sandy loamy soil. It has high affinity for moisture but cannot withstand waterlogging conditions. The most favourable planting period is during the rainy season from April to September though planting during other seasons is also possible with irrigation. Application of fertilizers is necessary for good growth and yield.

About six cuttings are possible in a year. After the harvest, citronella grass is withered in the shade for 24 hours before distillation. The average life of a citronella plantation is about 5 years.

Conditions for cultivation of Java citronella is highly favourable in the north-eastern region. Citronella grass is currently grown on a large scale in the following areas.

Assam	Boko, Rajapara, Boraigaon, Hajo, Dhubri, Mankachar, Golaghat, Oating, Makum, Pengeri, Dibrugarh
Arunachal Pradesh	Changlang, Tawang, Pasighat
Mizoram, Nagaland, Tripura and Manipur	Places at low altitudes on gentle hills slopes.

The annual requirement of citronella grass for a 6 tpa plant is 750 tonne.

### PROCESS

Technology for manufacture of citronella oil is readily available with the Regional Research Laboratory, Jorhat. Extraction of citronella oil is a distillation process. The process of distillation consists of the release of oil in the form of vapour from the leaves in contact with steam and condensing the mixture of oil vapour and steam to oil and water. The distillation unit consists of two parts – mild steel still in which the grass is placed and exposed to steam and a condenser which condenses the vapour/ steam mixture to water and oil.

Before the process starts, the distillation still is filled with water and a grid is put on top. The citronella grass leaves are lightly packed on the grid. On top of this Hessian or other packing materials are placed and covered with timber. A thick layer of mud is put along flanges before the cover is fastened.

The oil and water condensate flow into a receptacle where the oil floats on the water surface.

### MACHINERY

The major equipment required for a citronella oil plant are as follows:

Distillation plant with steam generator	: 1 Set
Lid lifting gear	: 1 No.
Furnace and accessories	: 1 Set
Separator	: 1 No.
Centrifugal pump	: 2 Nos.
Chimney	: 1 No.
Water storage tank	: 1 No.

### INFRASTRUCTURE

The major infrastructure requirements are :

Land	...	1000 Sq.ft.
Building	...	38' × 20' Shed
Power	...	4 Kw
Water	...	8750 Cu.m.

### LOCATION

If adequate land is available and the soil is sandy with pH content of 6.7 to 7.7, citronella can be grown anywhere in the north-east. The oil distillation plants should logically be located close to the source of citronella grass.

### TOTAL CAPITAL REQUIREMENT

For a typical 6 tpa plant, the project cost including margin money for working capital would be Rs. 4.56 lakhs. The total capital required for the project (fixed capital + working capital) is Rs. 6.06 lakhs as given below;

<b>A.</b>	<b>Fixed Capital:</b>	(Rs. in lakh)
	Land & Building	On rent
	Plant & Equipment	3.00
	Miscellaneous fixed assets	0.60
	Preliminary and pre-operative expenses	<u>0.30</u>
	Total (A)	<u>3.90</u>

<b>B. Working Capital:</b>		
Raw materials	1 month	0.98
Packing materials	1 month	0.16
Stock of Finished goods	15 Days	0.40
Working expenses	1 month	0.14
Receivables	½ month	<u>0.88</u>
	Total (B)	2.16
		=====
	<b>Total (A) + (B)</b>	<b>6.06</b>
		=====

Note:	Working capital may be finance as :	
	Bank Finance	...
	Margin Money	...
		Rs. 1.50 lakh
		Rs. 0.66 lakh
		<u>Rs. 2.74 lakh</u>
		=====

#### MEANS OF FINANCE

Promoter's Contribution(35%)	..	Rs. 1.60 lakhs
Term Loan(65%)	...	Rs. 2.96 lakhs
		<u>Rs. 4.56 lakhs</u>
		=====

#### OPERATING EXPENSES

The annual operating expenses are estimated at Rs.18.92 lakhs as given below:

<b>Raw materials –</b>		
Citronella grass 750 tonnes		
@ Rs. 1560/tonne		11.70
Packing materials –		
200 ml. size 20,000 bottle		
@ Rs.4/-each		0.80
Packing & leballing, printing		
24000 Nos. @ Rs.3/each		0.72
Carton & bulk packing (L.S.)		0.35
Utilities		0.50
Wages &Salaries		1.20
Rent		0.36
Other overheads		0.30
Selling expenses @ 10% on annual sales		2.10
Interest on term loan @12%		0.36
Interest on Bank Finance @ 15% for W.C.		0.23
Depreciation @ 10% on M/c.		0.30
		<u>18.92</u>
		=====

#### SALES REALISATION

Keeping in view the fluctuations in market price, a net ex-factory selling price of about Rs. 350/- per Kg has been assumed. On this basis the annual sales realization is estimated at about Rs. 21.00 lakhs per year.

#### PROFITABILITY

Based on the sales realization and the operating expenses, the profit at rated capacity would be Rs. 2.08 lakhs per year. This yields a return on investment of 34%. The plant would break-even at about 40% of the rated capacity.

## **HIGHLIGHTS**

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 6.06 lakhs
Promoter's contribution	Rs. 1.60 lakhs
Annual Sales realization	Rs. 21.00 lakhs
Annual operating expenses	Rs. 18.92 lakhs
Annual profit (pre-tax)	Rs. 2.18 lakhs
Pre-tax return on sales	10%
Break-Even Point	40%
No. of persons employed	4

## **KNOW-HOW SUPPLIER**

1. Regional Research Laboratory,  
Jorhat,  
Assam

## **MACHINERY SUPPLIERS**

1. M/S. A.p.v. Engineering Co. Pvt. Ltd.,  
2, Jessore Road,  
Dum-Dum,  
Kolkata – 700 028
2. M/s. Hocitri Distillant Co.,  
Makum Junctin,  
Makum – 786017  
Assam
3. M/s. Tempo Industrial Corporation,  
Lamington Chamber,  
Lamington Road,  
Kolkata -700 008



## FLORICULTURE

(Cymbidium, Gladiolus, Tube Rose, Anthodium, Lilium)

### INTRODUCTION:

The North Eastern region is flush with beautiful natural flora throughout the year due to its peculiar physiography, distinctive weather and agro climatic condition. The country is well recognized for growing traditional flowers such as jasmine, marigold, chrysanthemum, tuberose, crossandra and aster. It presents huge opportunity for commercial production and offers lucrative investment opportunity for farmer and agro entrepreneurs. Commercial cultivation of cut flowers such as rose, orchids, gladiolus, carnation, anthurium, gerbera and lilies have also been adopted by farmers on large scale. There is high demand for these products in the domestic and international market. India has significant prowess in floriculture and it has been identified as focus area for exports.

North Eastern region has the agro-climatic advantage at tropical and temperate regions to grow varieties of floricultural products in addition to rich genetic diversity. These factors are important for the investments in the sector advantageously. The project is an eco-friendly venture. Enhances the greenery of the waste/Jhum lands, reduces pressure on forest resources.

### PRODUCT USES:

Flowers are very intimately associated with the social and religious activities in India. In social life, flowers are offered to welcome, to felicitate and to greet friends or relatives and guests in functions. Flowers are needed in all the religious ceremonies functions including marriages. Garlands and wreaths are offered on dead bodies of martyrs and very important persons (VIPs) and national heroes as a gratitude for the work done and sacrifice made by them. Flower is a token of love and tenderness. They are wanted due to various attractive colours and fragrance. Flowers are also used for extracting essential oils, which are used in perfumes. Many flowers have medicinal values and hence are used in Ayurveda. In India, large numbers of flowers are grown in different parts according to soils and climate and also likings and preferences of the people for specific type of flowers.

### MARKET POTENTIAL:

The major markets for flowers are situated in the states, which produce significant quantities of flowers. Kerala is one state that has a fairly large market without any production of flowers. Indian floriculture industry has been shifting from traditional flowers to cut flowers for export purposes. The liberalized economy has given an impetus to the Indian entrepreneurs for establishing export oriented floriculture units under controlled climatic conditions. About 60,000 ha area is under floriculture at present. Production flowers is estimated to be 200,000 tonnes of loose flowers and 500 million (numbers) of cut flowers. An export of floriculture products was valued at Rs. 700 million (US\$ 20 million). There has been an impressive growth in the export of cut flowers from Rs. 10 million to Rs. 700 million in the previous years.

### Suggested Capacity:

The proposed garden will have harvesting facility of about 5.70 lakhs cut flowers per annum. The mix of cut flowers per annum will be as follows:

Product	Annual Production (pcs.)
Cymbidium	1.00 lakhs pieces
Gladiolus	0.50 lakhs pieces
Tube Rose	3.00 lakhs pieces
Anthodium	0.60 lakhs pieces
Lilium	0.60 lakhs pieces
<b>Total</b>	<b>5.70 Lakhs pieces</b>

**Basis:-**

No. of working days	=	365 days per year
No. of Shifts	=	1 per day.
One shift	=	8 hours

**Infrastructure requirement:**

The main Infrastructural facilities required are:

Required land area: 2 acres or 8000 sq. m.

Power requirement 20 kw.

Water (required in every working day) 6-7 KL of water

**Raw Materials/Consumables:**

The various materials required for production of cut flower project will be as follows:

Items	Value per Annum (Rs.)
Poly Sheet	5,000
Hard Wire	12,000
Glass ware	8,000
Seeds for nursery	3,000
Tissue Culture	22,000
Fertilizers	20,000
Insecticides	10,000
Trans plant cost	5,000
Diesel Required	15,000
Packing materials	50,000
<b>Total Cost</b>	<b>1,50,000</b>

a) All material & consumable items can be procured from local agencies in the open market.

**b) Suggested Location:**

c) Location for setting up of Cut flower unit should be based on well-developed road and air connectivity. Considering transportation bottlenecks which are a common feature in this region, such units are envisaged in following areas.

d) Assam: Guwahati, Dibrugarh, Tinsukia, Jorhat, Silchar, Karimganj and Nogaon,

e) Arunachal, Itanagar, Doimukh, Naharlagun, Dirang, Bhalukpung

f) Pradesh: Yachuli, Joram, Hapoli, Pasighat, Bobdilla & Tawang,

g) Meghalaya: Barapani, Nongphu, Bamihat, Shillong, Jowai, and Tura.

h) Nagaland: Kohima, Dimapur.

i) Manipur: Imphal

j) Mizoram: Aizwal

k) Tripura: Dharmanagar, Agartala and Udaipur.

l) Sikkim: Bakhim, Chunthaow, Lachung, Yumthang, Tashiding

**m) Process Steps:**

n) The main process steps involved are:

o) **Choosing a site:** Most cut flowers prefer a location in full sun throughout the entire day. The field and soil should be well drained. Wind protection is highly desirable for all plant.

- p) **Preparing the Bed** : Plants should be grown in beds raised 4-6 inches to maximize drainage. Poorly drained soil should be corrected by placing drain lines 10-12 inches deep under the bed.
- q) **Green House:** Green house envisaged for project will be basically shedding covers to safeguard the plants from excessive rains as well as in few cases from excessive sun. The Green house shed will be made by using local bamboo and sal wood for prop-up and trusses. The top cover will be made by using double ultraviolet stabilized poly films or shading net.
- r) **Choosing ideal crops:** Crops must be selected keeping mind the following conditions.
- a. Must be low cost of production – materials & labour.
  - b. High value and unlimited demand.
  - c. High production per sq. ft. of bed space.
  - d. Long productive life.
    - i. **Appropriate time to plant:** Planting must be taken depending on target market and on plant classification- whether it is an annuals, biennials or perennials.
    - ii. **How to Plant:** In general, transplants should be planted shallow with the roots placed just below the soil surface.
    - iii. **Watering:** To maintain floral quality and peak production, the plants must be watered frequently, sometimes daily with some soil types.
    - iv. **Fertilizer:** Before initiating any fertilizer programme, testing soil for getting nutrient content is most essential. The application of fertilizer should coincide with crop need.
    - v. **Weed Control:** Weeds must be controlled in field production of cut flowers. Competition with weeds reduces the quality and quantity of floral production.
- s) **Insect Control:** The ideal approach is a preventative programme, control insects early, when they are first detected.
- t) **Disease Control:** Foliar fungus diseases are the most serious disease problem on cut flowers.
- u) **Harvest:** Flowers should be harvested at the peak perfection, the peak of perfection is when the flower is showing its best colour and form and last the longer.
- v) **Post harvest:** After flowers are removed from the field and placed in the packing shed, the stems should be cut under water.
- w) **Pulsing:** pulsing is a chemical treatment of flower to prolong the vase life.
- x) **Marketing & Selling:** Flowers can be marketed to a flower wholesaler, a retail florist or directly to the public at a farmers market or farm market.

## PROJECT ECONOMICS

The total capital requirement estimated is Rs. 28.52 lakhs as given below: -

(Amount Rs. in lakhs)

<b>Land</b>		Own/Lease
<b>Land Development Cost</b>		3.50
<b>Building/Civil Works</b>		
i.) Construct the green house 2500 sq.m.		8.00
ii.) Office/Store/Reception 400 sq.ft.		2.80
iii.) Toilet/Bathroom/cemented open space Drainage facilities etc.		1.20
<b>Plant &amp; equipments</b>		4.00
<b>Other misc. Fixed Assets</b>		
(Water arrangement/Overhead-Reservoir/Pump-set Power line connection/Water & Electrical fittings Other Equipments/Office Equipments)		3.50
Preliminary & Pre-operative Expenses		<u>1.00</u>
Sub Total (A) Rs.		<u>24.00</u>
<b>B. Working Capital</b>		
	(Norms)	(Amount Rs. in lakhs)
Raw Materials/Consumables	year	1.50
Working Expenses	month	0.67
Finished Goods	5 days	0.16
Receivable	0 days	<u>2.19</u>
Sub Total (B) Rs.		<u>4.52</u>
Note: Working Capital to be financed as:-		
Margin Money:		Rs. 1.63
Bank Finance:		<u>Rs. 2.89</u>
		<u>Rs. 4.52</u>
<b>Means of Finance</b>		(Rs. in Lakhs)
Promoter's Equity(25%)		6.43
Term Loan(75%)		<u>19.20</u>
		<u>Rs. 25.63</u>
<b>Production Expenses</b>		(Rs. in Lakhs)
Raw materials/consumables		1.50
Wages & Salaries		7.40
Utilities		0.60
Repair & Maintenance		0.12
Administrative Overhead		0.24
Selling expenses 10% on sales		2.66
Depreciation		1.35
Interest		<u>2.92</u>
		<u>16.79</u>

### Sales Turnover

Flowers	Annual Production (pcs.)	Avg. whole sell price considered at Kolkatta marke (Rs. Per Pcs.)	Annual Turn Over (Rs. in Lakhs)
Cymbidium	1.00 lakhs	6.00	6.00
Gladiolus	0.50 lakhs	3.00	1.50
Tube Rose	3.00 lakhs	2.25	10.12
Anthodium	0.60 lakhs	12.50	7.50
Lilium	0.60 lakhs	2.50	1.50
<b>Total Rs.</b>			<b>26.62</b>

### Profitability:

Based on the sales Turnover and the operating expenses, the profit would be Rs. 9.83 lakhs per year. This works out to a return on capital investment of 38%. The unit would break-even at about 41% of the rated capacity.

### Break Even Analysis

<b>A. Variable Cost:</b>	(Rs. in Lakhs)
Raw Materials/Consumables	1.50
Utilities	0.60
Selling Expenses	<u>2.66</u>
	<u>4.76</u>
<b>B. Semi-Variable Cost:</b>	(Rs. in Lakhs)
Wages & Salaries	7.40
Repair & Maintenance	0.12
Administrative Overhead	0.24
Depreciation	1.35
Interest	<u>2.92</u>
	<u>2.03</u>
C. Sales Turnover:	Rs. 26.62 Lakhs
D. Contribution:	Rs. 21.86 Lakhs
E. Break Even Point B/D X 100%	55%

### Manpower

Category	No. of Person	Salary Per Person Per Month(Rs)	Monthly Salary Bill (Rs.)
a) Scientist (Horticulturist)	1	12,000	12,000
b) Laboratory Technician	1	6,000	6,000
c) Skilled Worker	2	6,000	12,000
d) Un-skilled workers	5	3,000	15,000
e) Accounts cum storekeeper	1	5,000	5,000
f) Marketing personal	1	6,000	6,000
<b>Total Manpower cost Rs.</b>			<b>56,000</b>

Salary Bill Rs 6.72 Lakhs + Benefits @10% annually i.e. Rs 7.40

**Total Annual Salary Bill: Rs. 7.40**

### Highlights:

The major highlights of the project are as follows:

Total Capital requirement	Rs.	28.52 lakhs
Promoter's contribution	Rs.	6.43 lakhs
Annual Sales realization	Rs.	26.62lakhs
Annual Operating Expenses	Rs.	16.79 lakhs
Annual Profit	Rs.	9.83 lakhs
Return on sales		37%
Break-even point		55%
No. of person employed		11

## HAIR OIL

### Introduction:

Base materials for hair oils are vegetable oils, like coconut, castor, sesame, benzoates oil and perfumes. Perfumes should not be fugitive and to prevent this they are usually mixed by sandal wood oil. Oil soluble colours are used to make different coloured hair oil.

### Market Potential:

There is tough competition in the market of hair oil. Demand for cosmetic items, like powder, cream, oil etc. is increasing very fast due to increase in urbanisation, income and colourful advertisement in the media.

### Production Target (Per annum):

Quantity	:	6000 kg.	
Value	:	Rs 18.00 lakhs	

### Manufacturing Process:

Main process of manufacturing hair oil is mixing. Ingredients consisting of oil, colour and perfumes are mixed by slow speed stirrer. Thereafter the oil is filtered and packed in bottles.

### Raw materials:

Major raw materials required for hair oil are coconut oil, castor oil, perfume and colour.

1)	Coconut oil	:	4,800 kg x 120 kg.	:	Rs 5.76 Lakh
2)	Castor oil	:	1,020 kg x 90 kg.	:	Rs 0.92 "
3)	Perfume	:	120 kg x 500 kg	:	Rs 0.60 "
4)	Colour	:	60 kg x 200 kg	:	Rs 0.12 "
5)	Packaging materials including bottles	:		:	<u>Rs 0.30 "</u>
				Total	: Rs 7.70 Lakhs

### Machinery & Equipment:

The major equipment required are –

- i) Mixing tank with stirrer.
- ii) Bottle washing machine.
- iii) Bottle dryer.
- iv) Filling machine (manual).
- v) Sealing machine (manual).
- vi) Filtering equipment.

### Infrastructure:

The major infrastructure requirement are –

Covered Area	:	100 sq.mt.
Power	:	2 KW

### Location:

The suggested locations are –

Assam	:	Guwahati, Jorhat, Tinsukia
Arunachal Pradesh	:	Itanagar,
Meghalaya	:	Shillong,
Nagaland	:	Dimapur,
Tripura	:	Agartala,
Manipur	:	Imphal,

### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 4.16 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 2.76 lakhs.

A. Fixed Capital:	(Rs in lakh)
Land building	Rented
Plant & Machinery	1.50
Miscellaneous fixed assets	0.30
Preliminary and pre-operative expenses	<u>0.20</u>
<b>Total (A)</b>	<b>2.00</b>
	=====

(Rs Lakh)

**B. Working Capital:**

Raw materials & Packing material	15 days	0.38
Finished goods	15 days	0.57
Working expenses	1 month	0.31
Receivables	15 days	<u>0.90</u>
	<b>Total (B)</b>	<b>2.16</b>

**Total (A)+(B) Rs. 4.16 Lakhs**

Note: Working capital may be financed as:

Bank Finance (65%)	.....	Rs 1.40 Lakhs
Margin Money(35%)	.....	Rs 0.76 Lakhs
		<b>Rs 2.16 lakhs</b>

**Capital Cost of Project:**

1. Fixed Cost	.....	Rs 2.00 Lakhs
2. Margin money for W.C.	.....	Rs 0.76 Lakhs
		<b>Rs 2.76 Lakhs</b>

**Means of Finance:**

Promoter's contribution (35%)		Rs 0.97 lakhs
Term Loan (65%)		Rs 1.79 lakhs
		<b>Rs 2.76 lakhs</b>

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 14.37 lakhs as given below:

	(Rs. lakhs)
1. Raw materials:	7.40
2. Packaging materials	0.30
3. Utilities	0.36
4. Wages & Salaries	3.24
5. Rent, Insurance	0.48
6. Other overheads	0.25
7. Selling expenses @ 10% on annual sales	1.80
8. Interest on term loan@ 12.50%	0.22
9. Interest on Bank Finance for Working Capital @12%	0.17
10. Depreciation @10% on m/c	<u>0.15</u>
<b>Grand Total</b>	<b>14.37</b>

**Sales Realization:**

Sl.No.	Particulars	Qty.	Rate (Rs)	Value (Rs Lakhs)
1..	Hair Oil	6,000 kg	300/kg	18.00
	<b>TOTAL</b>			<b>18.00</b>

**Profitability :**

Based on the sales realization of Rs 18.00 lakhs and the operating expenses of Rs. 14.37 lakhs the profit would be Rs 3.63 lakhs per year. This works out to a return on investment of 87%. The plant will break even at 55% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 4.16 Lakhs
Promoter's contribution	:	Rs 0.97 "
Annual sales realization (70% cap.)	:	Rs 18.00 "
Annual operating expenses (70% cap.)	:	Rs 14.37 "
Annual profit (pre-tax)	:	Rs 3.63 "
Pre-tax Return on Sales	:	20%
Break Even Point	:	55%
No.of persons employed	:	6 Nos.



**1. Suppliers of Machinery****2. Suppliers of Raw Materials.**

1.	M/s T.S. Enterprise, Road No.14, Plot No. E-412 Vishwakarma Industrial Area, Jaipur – 300 013	1.	M/s Amrit Lal Bhurabhai, Princess Street, Mumbai
2.	M/s Gladwyn & co. 251, Dr. D.N. road, Mumbai- 400 001	2.	M/s Haribhai Jeebhai, Princess Street, Mumbai
3.	M/s Pharmalab Industries, Star Metal Compound, L.B. Shastri Marg, Vikhroli, Mumbai – 400 083	3.	M/s R. Suresh Chandra & Co. 48, Princess Street, Mumbai
4.	M/s Frederic Harbert & Co. 2 <sup>nd</sup> Pasta Lane, Colaba, Mumbai – 400 006		

## HERBAL EXTRACTION PLANT

### INTRODUCTION

Herbal extraction plant has a tremendous scope in the North Eastern Part of India. Extracting of lemon grass is an important herbal and aromatic plant and its oil is one of the major essential oils used in the perfumery and cosmetic industry. It is widely used in the scented soaps, sprays, deodorants, polishes, medicines etc. The extracted oil is rich in Citral A & P. Citral is the starting material for the manufacture of vitamin A.

### MARKET POTENTIAL

The cosmetic and perfumery industry, which are mainly located in Mumbai, Bangalore and Chennai e.g. Hindustan Lever Ltd., Industrial Perfumer, K.V. Aromatics etc. are the major consumers of essential oils. Apart from the domestic market, lemon grass oil has got great export potential also. At present Sri-Lanka and Indonesia are the two major exporters of these oils.

Although there was tremendous growth in the citronella cultivation during the seventies in the region especially in the state of Assam, of late there is a change over from citronella to tea cultivation, thus reducing the availability of citronella grass. Of course, lemon grass is grown in abundance in few locations and foothills in the region. Foothills and lower hills of Sikkim is suitable for cultivation of lemon grass which will not only generate substantial return to the farmers but will also grow as a soil binding grass which will prevent erosion and land slides to a certain extent. The shifting of cultivation from essential oil grass to tea etc. may be attributed mainly to the fluctuating prices, falling price with increased availability and involvement of middlemen in marketing. The average life span of lemon grass plantation is from 6 – 8 years.

### PROCESS

The extraction of lemon grass oil is basically a steam distillation process. Regional Research Laboratory, Jorhat, had developed the technology for the same. The main raw material required is lemon grass besides fuel and water for the distillation process. The process needs accurate control as because the percentage of oil is as low as 0.5%. Little overheating or improper condensing may result in very low output or loss of some of the delicate aromatic components. The economics of the process works out to be same as citronella oil, although the yield percentage of citronella oil is 1.0%, lemon grass crop is double that of citronella grass thus equalizing the oil output. Lemon grass oil fetches higher and more or less uniform price.

The distillation process comprises of two units, the tilting type distillation still and the condenser. The distillation unit is connected to the condenser through a pipe at the top. The condenser is a wild copper tube, which is cooled by flowing water. The condenser is connected to the oil accumulators.

First, the distillation unit is filled with water to the desired level over which the grid is placed. Lemon grass collected from the field are then filled in the still over the grid and the lid is closed. The lid must be airtight. The still is then heated with the heat source provided below the still. The type of heat source depends on the fuel availability. Oil and water vapour mixture flowing out of the still and passes through the condenser. The mixture gets cooled in the condenser and condense. The mixture of water and oil gas collected in the accumulator. The oil is then separated from water as per the specific gravity.

### PLANT CAPACITY

The plant capacity is mainly dependent on the distillation still, which is available 500 Kg. to 1000 Kg. per batch. A plant can be set up based on lemon grass from own cultivation or on bought out grass. Two-batch processing is possible per day. The plant utilization is dependent on the availability of grass.

Throughput capacity	1000 kg. of lemon grass per batch.
Number of batch	2 batches per day
Yield of lemon grass oil	0.5%
Working days	250 days per year

## INFRASTRUCTURE

Land	1000 sq. ft.
Building	35'x20' shed with grass storage facility
Power	5 KW
Water	2K.L./day

## MACHINERY

(Rupees)

1. Distillation unit
2. Lid lifting gear
3. Furnace, accessories and Chimney
4. Condenser
5. Water pump
6. Water storage tank

## SUGGESTED LOCATION :

Major Centres in NER  
Bakhim, Chunthaow, Lachung, Yumthang, Tashiding in Sikkim.

The project cost comprising fixed capital and margin money on working capital is Rs. 14.58 lakhs.

## TOTAL CAPITAL REQUIREMENT

The project cost comprising fixed capital and margin money on working capital is Rs. 14.58 lakhs.

	Rs. lakhs
<b>A. Fixed Capital</b>	
Land and building	5.50
Plant and machinery 4.62	
Miscellaneous fixed assets	2.46
Preliminary & Pre-operative expenses	<u>1.32</u>
<b>Total (A)</b>	<b><u>13.90</u></b>
<b>B. Working Capital</b>	
Raw materials and packing materials 3 months	1.63
Finished goods ½ months	0.38
Working expenses 10 days	0.30
Receivable 10 days	<u>0.40</u>
<b>Total (B)</b>	<b><u>2.71</u></b>
<b>Total (A) + (B)</b>	<b><u>16.61 lakhs</u></b>

Working capital may be financed as:

Bank Finance	Rs. 2.03 lakh
Margin Money	Rs. 0.68 lakh

The project cost of Rs. 14.58 lakh including margin money on working capital may be financed as under:

	Rs. Lakhs
Promoter's contribution(35%)	5.10
Term Loan(65%)	<u>9.48</u>
	<b><u>14.58</u></b>

## OPERATING EXPENSES

	(Rupees)
1. Raw material – lemon grass 500 tonne @ Rs. 1300 per tonne	6.50
2. Wages and Salaries	1.00
3. Utilities	0.60
4. Other overheads	0.20
5. Selling expenses	0.15
6. Interest	0.40
7. Depreciation	<u>0.30</u>
Total:	<u>9.15</u>

## SALES REALISATION

Yield @ 0.5% of total oil produced	2500 Kg
Sales price of oil	Rs. 400 per Kg.
Sales realization	Rs. 10.00 lakh

## PROFITABILITY

Based on sales realization and the operating expenses, the profit at the 100% capacity would be Rs.0.85 lakh per year. This works out to a return on investment of 6%. The plant would break-even at about 58% of the targeted annual production.

## HIGHLIGHTS

The highlights of the project are as follows:

Total capital requirement	Rs.	16.61 lakh
Promoter's contribution	Rs.	5.81 lakh
Annual sales realization	Rs.	10.00 lakh
Annual operating expenses	Rs.	9.15 lakh
Annual profit (pre-tax)	Rs.	0.85 lakh
Pre-tax return on sales		9%
Break-Even Point		58%
No. of persons employed		5

## Name and Address of Machinery Suppliers:

1. M/s. Hocitri Distillant Co.  
Makum Junction  
Makum – 786 170
2. M/s Tempo Industrial Corporation  
Lamington Chamber  
Lamington Road  
Kolkata – 700 028
3. M/s A.P.V. Engineering Co. Pvt. Ltd.  
2, Jessore Road  
Kolkata – 700 028

## INCENSE STICK

### INTRODUCTION

Incense sticks, colloquially called "*Dhup*" or "*Agarbatt*" are used in most Indian households, and in substantial quantities in temples, and religious functions. Incense sticks are available in different fragrance. Production of incense sticks is a labour intensive process.

### MARKET POTENTIAL

The total population of the north-eastern region is 365 lakhs. Considering an average family size of 5, the number of households is estimated at 73 lakhs. Assuming that 15% of the households would use incense sticks and taking an average requirement of 5 packets per household per year, the demand potential for incense sticks is estimated at 54.75 lakh packets per year. Besides, there is a substantial demand for incense sticks in temples and religious functions. The total demand for incense sticks would thus be anywhere upto 105 lakh packets per year. There are several small units around Hpjai in Assam which have been set up with the assistance from the Khadi and Village Industries Commission (KVIC). There are a few registered units under DICC, Kamrup. The value of output of these unite is about Rs. 25 lakhs per year, which would correspond to about 12.5 lakh packets per year. However, bulk of the supply of incense sticks comes from outside, namely, Kamataka and Tamil Nadu. Assuming that new units can get a 20% market share, the demand potential for such units is estimated at 8 lakh packets per year. Considering the capacity of a typical tiny unit as 2 lakh packets per year, there is scope for about 4 new units.

### TARGET PRODUCTION

A typical unit, it is envisaged, would produce 198,000 incense stick packets per year on the following basis:

Production targe	: 100 packets per hour
Production rate	: 75 packets per fwur
Working hours per day	: 8 (One shift)
Daily production	: 600 Packets
Working Days	: 300 Days
Annual Production	: 1,98,000 packets.

### RAW MATERIALS

The major raw materials are charcoal powder, Gigaty (a herb), white chips, sandalwood powder, bamboo sticks, camphor, perfume and Diethylphthalate. Agar oil is a material which is used by manufacturers of costly agarbatti. Use of agar oil is not envisaged since it is proposed to manufacture tow cost incense socks for mass consumption In north-eastern region. The annual requirement of raw materials is as under

Charcoal Powder	118BKg
Gigaty	990 Kg
White chips	396 Kg
Sandal wood powder	198 Kg
Bamboo sticks	1188 Kg
Kuppam dust	398 Kg
Perfume	308 Kg
Diethylphthalate	924 Kg
Packing materials-	
Paper carton	1,98,000Nos.
Wrapping paper	1,98,000 Nos.
Inner paper bags	1,98,000 Nos.

### PROCESS

The main process steps are:

- Mixing the ingredient in proper proportion and preparing a pasts.
- Applying paste to bamboo sticks and rolling on wooden planks manually.
- Drying of raw sticks
- Packing in bundles

## EQUIPMENT

The major equipment required are:

i) Wooden Planks	16 Nos.
ii) Balance	1 No.
iii) Hand sieves	3 Nos.
iv) Plastic trays (20 Ltr. capacity)	2 Nos.
v) Wooden racks	2 Nos.
vi) Plastic bucket (50 ltr. capacity)	1 No.
vii) Dipping trays (Aluminium)	8 Nos.
viii) Plastic Mugs	4 Nos.

## INFRASTRUCTURE

The major infrastructural requirement are:

Shed	: 500sq.ft.
Water	: 1000 ltr. per day

## LOCATION

The suggested locations are:

Assam	: Dhubri, Bongaigaon, Hojai,
Nalbari, Nagaon	
Manipur	: Imphal, Thoubal
Tripura	: Agartala, Dharmanagar
Sikkim	: Bakhim, chunthaow, Lachurg, Yumthang, Tashiding

## TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs.2.16 lakhs. Of this, the project cost comprising fixed capital and margin money on working capital is Rs. 1.36 lakhs as follows.

A.

(Rs.in lakh)

Fixed Capital:

Land and Building	On rent
Machinery	0.50
Miscellaneous fixed assets	0.15
Preliminary and pre-operative expenses	<u>0.05</u>
<b>Total (A)</b>	<b><u>0.70</u></b>

B. Working Capital:

Raw materials & packing	1 month	0.34
Materials		
Finished goods	7 days	0.21
Working expenses	1 month	0.39
Receivables	15 days	0.52
	Total (B)	1.46
	Total (A) + (B)	2.16

Note: Working capital may be financed as :

Bank Finance	...	Rs.0.80 lakh
Margin Money	...	Rs.0.66 lakh
		<b><u>Rs.1.46 lakh</u></b>

## MEANS OF FINANCE

Promoter's Contribution (25%)	..	<b>Rs. 0.48 lakh</b>
Term Loan (75%)	...	<b><u>Rs. 0.88 lakh</u></b>
		<b><u>Rs. 1.36 lakhs</u></b>

## OPERATING EXPENSES

The annual operating expenses are estimated at Rs. 10.49 lakhs as given below:

(Rs.in lakhs)	
1. Raw materials (refer annexure)	2.14
2. Packing materials	1.99
3. Utilities	0.06
4. Wages & Salaries	4.50
5. Rent	0.18
6. Other overheads	0.15
7. Selling expenses @ 10% on annual sales	1.19
8. Interest on term loan	0.11
7. Interest on Bank Finance for Working Capital	0.12
8. Depreciation	<u>0.05</u>
	<b><u>10.49</u></b>

## SALES REALISATION

The average market price of cheaper varieties of incense sticks is around Rs.6 to Rs.8 per packet. Considering the margin for distributors/retailers, an ex-factory setting price of Rs.6.00 per packet has been considered. Based on this, the annual sales realization works out to Rs.11.88 lakhs.

## PROFITABILITY

Based on the sales realization of Rs. 11.88 lakhs and the operating expenses of Rs. 10.49 lakhs, the profit at rated capacity utilization would be Rs. 1.39 lakhs per year. This works out to be return on investment of 64%. The unit will break even at about 55% of the targetted annual production.

## HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 2.16 Lakhs
Promoter's contribution	Rs. 0.48 Lakhs
Annual Sales realization	Rs.11.88 Lakhs
Annual operating expenses	Rs.10.49. Lakhs
Annual profit (pre-tax)	Rs. 1.39 Lakhs
Pre-tax return on sales	12%
Break-Even Point	55 %
No. of persons employed	20%

## RAW MATERIAL SUPPLIERS

Sandal wood powder, Kuppam dust, White Chips:

1. M/s. Ravi Flour Mills & Industries,  
339 Bapuji Nagar,  
Mysore Road,  
Bangalore – 26
2. M/s. Ram Chandra Pulverisers & Industries,  
IV Main Road,  
New Tharagupet,  
Bangalore – 2
3. M/s. Shakti Flour Mills,  
Swatantra Building,  
R.K. Puram,  
Bangalore –9



**Perfumes:**

1. M/s.. Pushpa Perfumery Products,  
138 Akkipper Main Road,  
Bangalore – 2
2. M/s. Goodwill Agencies,  
Keshav Niwas,  
24,1 Main Road,  
P.B. No.9715,  
Gandhinagar,  
Bangalore-560 009
3. M/s. Bharani Agencies,  
P.B. No. 9505,  
Gandhinagar,  
Bangalore - 560 009

**Packing Materials**

1. M/s. Lakshmi Paper Industries  
38, Town, Rly. Station Road  
Salem  
Tamil Nadu
2. M/s. The Paper Products Ltd  
60, Chinthamani St.  
Chennai -1
3. M/s. R.K. Paper Industries  
C -18, Ambattur Industrial Estate,  
Chennai – 56

**ANNEXURE  
RAW MATERIALS & PACKING MATERIALS**

Hems	Quantity	Rate (Rs./Kg)	Total Amount (Rs. in lakhs)
A. Raw Materials: Charcoal powder	1188 Kg.	8.00	0.95
Gigaty	990 Kg.	15.00	0.15
White chips	396 Kg	9.00	0.04
Sandalwood powder	198 Kg	50.00	0.10
Bamboo Sticks	1188 Kg	13.00	0.15
Kuppam dust	396 Kg	6.00	0.02
Perfume	308 Kg	60.00	0.18
Diethylphthalate	924 Kg	60.00	0.55
<b>Total (A)</b>			2.14
B.Packing Materials: Paper carton	1,98,000	0.60	1.19
Wrapping paper	1,98,000	0.25	0.50
Inner paper bags	1,98,000	0.15	0.30
<b>Total (B)</b>			1.99
<b>Total (A) + (B)</b>			4.13

## LEAF PLATE AND BOWL

### INTRODUCTION:

Disposable items like cups, plates, saucers are being increasingly used. Such disposables items are made with natural materials like leaf as well as manmade products like paper, plastics. Leaf plates are being increasingly used in urban areas during marriage parties, festive occasions when large number of people are invited to take food. Besides, many people prefer leaf plates as they consider them to be more hygienic than manmade products.

The cost of hiring steel plates for parties is about Rs 3/- per plate at Guwahati. In addition, the cost of bowl/small plate is Rs 2/- per unit. Thus, if steel products are to be hired for marriage parties/festive occasions, the net hiring cost per set will be Rs 5/- per set. Hiring of steel utensils also requires payment of security deposit. On the other hand, the cost of a set of leaf plates along with bowl is Rs 2.00 to Rs 2.50 per set and no security deposit is called for. In view of the cost benefit and greater hygiene value, leaf plates have considerable demand.

### ABOUT THE PRODUCT:

Leaf cups, plates has greater hygiene value . Cost-wise also it is cheaper than steel plates etc. Raw material for the same is locally available from the forest area. It has good demand in urban areas.

### MARKET POTENTIAL:

Assuming that for a population of 4 lakhs (i.e. 60000 households), only 5% of the households would be using leaf plates and bowls. Further, assuming that these households invite about 100 guests a year, a total requirement of 4,00,000 plates and bowls is projected. Thus, there would be scope of setting up one unit producing four lakh sets of every 4 lakh populations.

### TARGET PRODUCTION:

A typical unit would produce 4,00,000 sets (one leaf plate and one bowl) per annum on the following basis.

Production rate	:	150 pieces/machine/hr.
Working hours/day	:	8 hours.
Daily production	:	1200 sets
Working days/year	:	330 days
Annual production	:	396,000 sets
		Say: 4 lakh sets.

### RAW MATERIALS:

The main raw material required is leaves of sal tree which are abundantly available all over the north-eastern region. The other materials required are bamboo sticks for joining the leaves and polythene film which is pressed on to the leaf in order to confer a clean base. Considering about four leaves per plate and 1,000 leaves per purchased bundles, about 1600 bundles would be required for making leaf plates. Providing for bowls along with the plate the annual requirement of leaves is estimated at 2600 bundles. Keeping in view the total volume of production, 4,00,000 cut sheets of polythene film would be required. Polythene film would be available from Guwahati market.

### PROCESS:

The main process steps are –

- a) Assembling leaves
- b) Joining leaves by bamboo sticks
- c) Pressing with polythene film
- d) Packaging in bundles

**MACHINERY:**

The only equipment required is heavy duty foot operated leaf plate making machine complete with mould. To meet the required production two such machines are suggested.

**INFRASTRUCTURE:**

A small shed of about 750 sq.ft. area is the main infrastructural requirement.

**LOCATIONS:**

The suggested locations are –

Assam	:	Tinsukia, Nalbari, Barpeta, Silchar, Nagaon, Lakhimpur, Guwahati.
Manipur	:	Ukhrul, Tamenglong, Imphal.
Tripura	:	Agartala.
Sikkim	:	Bakhim, Chunthaow, Lachung, Yumthang, Tashiding

**TOTAL CAPITAL REQUIREMENT:**

The total capital required including fixed capital and working capital is estimated at Rs 0.75 lakh as follows:

		(Rs. lakhs)
<b>(A. Fixed Capital:</b>		
Land and building	:	On rent
Machinery	:	0.40
Misc. Fixed Assets and other expenses	:	0.10
Preliminary & Pre-operative expenses	:	<u>0.10</u>
Total (A)	:	0.60
<b>(A. Working Capital:</b>		
	<b>Norms</b>	<b>(Rs in lakh)</b>
Raw Materials and packaging materials	: 1 month	0.18
Finished goods	: 1 week	0.06
Working expenses	: 1 month	0.05
Receivable	: 1 week	<u>0.13</u>
Total (B)		0.42
Grand Total (A + B)		Rs.1.02 lakh.

**MEANS OF FINANCING:**

Since the total requirement of finance is only Rs 1.02 lakh, the project can be financed under the composite loan scheme satisfying the terms and conditions of the scheme. The project cost of Rs 1.02 lakh may be financed as under (merely indicative and subject to change by SFC/Banks).

		(Rs lakh)
Term Loan and Working Capital Loan(75%)	:	0.77
Promoter's contribution and Equity Assistance (25%)	:	<u>0.25</u>
		Rs.1.02 lakh

**OPERATING EXPENSES:**

The annual operating expenses are estimated at Rs 4.50 lakh as under:

		(Rs lakh)
Raw Materials –		
Sal leaves 2000 bundles @ Rs.60/bundle		1.20
Polythene film 4,00,000 @ 20 paise/sheet		0.80
Bamboo sticks		0.08
Utilities		0.12
Rent		0.12
Other overheads		0.20
Wages		1.50
Selling expenses 5%		0.30
Interest on Term Loan & Working Capital Loan 15%		0.12
Depreciation		<u>0.05</u>
Total:		4.49
Say		Rs. 4.50 Lakh

**SALES REALISATION:**

The market price for a set of leaf plate and bowl is about Rs 2.50 per set in Guwahati. Conservatively, assuming a price of Rs 1.50/set (net ex-works), the annual sales realization is estimated at Rs 6.00 lakh.

**PROFITABILITY:**

Based on the sales realization and operating expenses, the profit at annual production envisaged would be Rs 1.50 lakh per year. This works out to a return on investment of 153%. The unit would break-even at about 56% of the targeted production.

**BREAK-EVEN POINT ANALYSIS:**

(At 100% Capacity Utilization)

A.	<u>Variable Cost:</u>	(Rs.lakh)
	Raw materials	2.08
	Utilities	0.12
	Selling Expenses	<u>0.30</u>
	Total	<u>2.50</u>
B.	<u>Semi-Variable Cost:</u>	
	Wages & Salaries	1.50
	Rent, Insurance etc.	0.12
	Depreciation	0.05
	Administrative overhead	0.20
	Interest	<u>0.12</u>
	Total	<u>1.99</u>
C.	Sales Realization	6.00
D.	Contribution (C – A)	3.50
E.	B.E.P. B/D x % on installed capacity	56%

**HIGHLIGHTS:**

The major highlights of the projects are as follows:

Total Capital requirement	:	Rs 1.02 lakh
Annual Sales realization	:	Rs 6.00 lakh
Annual operating expenses	:	Rs 4.50 lakh
Annual Profit	:	Rs 1.50 lakh
Return on sales	:	25%
Break-Even Point	:	56%
Number of persons employed	:	8 Nos.

**MACHINERY SUPPLIER**

1. M/s Oriental Machinery (1919) Pvt. Ltd.,  
25 R.N. Mukherjee Road,  
Kolkata – 700 001  
Ph: 22438818.

## MANUFACTURE OF SHAMPOO

### Introduction:

Shampoo is defined as a preparation of a surfactant (surface active material) in suitable form liquid solid or power which when used under the conditions specified will remove surface grease, dirt and skin debris from the hair shaft and scalp without affecting adversely the hair, scalp or health of the user.

Shampoos are of various types and forms on the basis of physical appearances, constituents and properties. Various forms are as under:

- Liquid clear shampoos.
- Liquid cream or cream lotion shampoos.
- Cream paste shampoos.
- Egg shampoos.
- Dry shampoos & liquid dry shampoos.
- Baby shampoos.

### Market Potential:

With the raise in the standard of living & health consciousness of people the demand for cosmetics is growing very fast. Shampoo is one of such cosmetic products which find application in every household (both urban & rural household). Demand is still growing very fast as smaller sizes (sachet type) are vigorously promoted by the leading manufacturers and selling it even in the smaller roadside panshops. Thus for cleaning & conditioning of hairs shampoos have largely replaced normal bath soap with the different requirement for different types of hairs viz. Dry, Oil, and normal wide varieties of shampoos are in demand. Besides this shampoos fortified with protein sources like egg and almond etc show exclusive demand.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 300
Annual Production capacity	: 1.50 lakh liters of shampoo.

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw materials required are provided below:

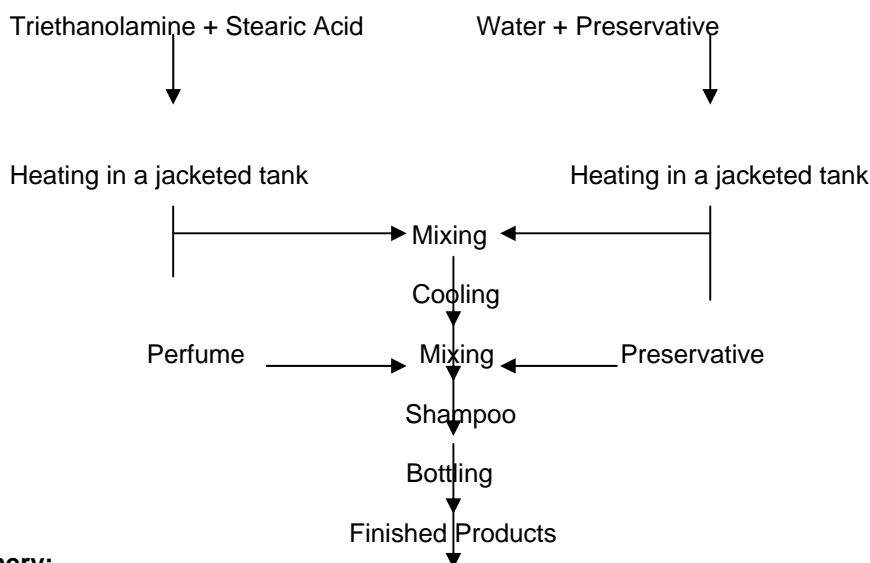
- Triethanolamine Lanvyl Sulfate
- Sulphofated castor oil
- Ethyl Alcohol.
- Oleic acid/Stearic acid.
- Coconut oil.
- Colour, perfumes & preservations.

The above raw materials can be procured through local dealer in Guwahati and from Kolkata.

### Process:

For preparing liquid shampoo, Triethanolamine lauvyl sulfate, stearic acid are heated to about 65°C. Water & preservatives are also heated to 65°C. Both the solutions are mixed together and then cooled. Perfumes are added after that. The shampoo thus prepared is bottled by automatic bottle filling machine.

### Process Flow Chart



**Machinery:**

The major equipment required for manufacture of shampoo are as follows:

- S.S. 304 open tank with slow speed stirrer for shampoo – 1 No.
- Mixing machine – 1 No.
- Cooling machine – 1 No.
- Bottle filling and sealing machine – 1 No.

**Location:**

The suitable locations for the project may be –

- Guwahati & Tinsukia in Assam
- Shillong in Meghalaya.
- Dimapur in Nagaland.
- Agartala in Tripura.

**Infrastructure:**

The basic infrastructure required are :

Land	:	6,000 sq.ft.
Building	:	2,000 sq.ft.
Power	:	20 KW
Water	:	2,000 Ltr. Per day.
Manpower	:	15 Nos. (Administrative (5), Factory Staff (10)),

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 39.50 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 26.50 lakhs.

			(Rs in lakh)
<b>A. Fixed Capital:</b>			
Land			Rented
Building			Rented
Machinery			15.00
Miscellaneous fixed assets			3.00
Preliminary and pre-operative expenses			<u>2.00</u>
	<b>Total (A)</b>		<b>20.00</b>
			=====
<b>B. Working Capital:</b>			
Raw materials & Packing material	2 weeks		6.00
Finished goods	1 week		6.00
Working expenses	1 month		1.00
Receivables	1 week		<u>6.50</u>
	<b>Total (B)</b>		<b>19.50</b>
			=====
	<b>Total (A)+(B)</b>		<b>39.50</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 13.00 lakhs
Margin Money	.....	<u>Rs 6.50 lakhs</u>
		<u>Rs 19.50 lakhs</u>

#### Means of Finance:

The project cost of Rs 26.50 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 9.30 lakhs
Term Loan (65%)	....	<u>Rs 17.20 lakhs</u>
		<u>Rs 26.50 lakhs</u>
		=====

#### Operating Expenses:

The annual operating expenses are estimated at Rs 295.90 lakhs (70% capacity utilization) as given below:

		(Rs in lakhs)
1.	Raw materials & consumables	274.00
2.	Utilities	2.40
3.	Wages & Salaries	7.50
4.	Overheads	1.80
5.	Selling expenses @ 1.5% on annual sales	4.70
6.	Interest on term loan (13.50%)	2.30
7.	Interest on Bank Finance for working capital(13%)	1.70
8.	Depreciation @10%	<u>1.50</u>
		<b>295.90</b>
		=====

#### Sales Realization:

The basis on which average ex-factory sales realization from the sale of shampoo is based is provided below:

Items	Qty.(Ltrs)	Unit Sales Price (Rs per ltr.)	Annual Sales Price (Rs)
Shampoo	1,50,000	300/-	450,00,000

Based on this the annual sales realization is estimated to be Rs 450.00 lakhs and at 70% capacity utilization the same is Rs 315.00 lakhs.

#### Profitability :

Based on the sales realization and the operating expenses, the profit would be Rs 19.10 lakhs per year (70% capacity utilization). This works out to a return on investment of 75%. The plant will break even at 40% of the rated capacity.

#### Highlight:

The major highlights of the project are as follows:

Total capital requirement	:	Rs 39.50 lakhs
Promoter's contribution	:	Rs 9.30 lakhs
Annual sales realization (70% cap.)	:	Rs 315.00 lakhs
Annual operating expenses (70% cap.)	:	Rs 295.90 lakhs
Annual profit (pre-tax)	:	Rs 19.10 lakhs
Pre-tax Return on Sales	:	7%
Break Even Point	:	40%
No.of persons employed	:	15

**List of Machinery Suppliers:****List of Raw Materials Suppliers:**

1.	M/s Chemi Tex Engineers, 13, Laxmi Co-op Industrial Estate, Near Nagarvel Hanuman mandir, Amvaiwadi, Ahmedabad – 380 026	1.	From local dealers in Guwahati
2.	M/s Industrial Machinery Mfg.Pvt.Ltd., 3607 to 3609, GIDC Estate, Phase-IV Ahmedabad Highway, Vatva, Ahmedabad- 382 445		



## MUSHROOM CULTIVATION AND PROCESSING

### Introduction:

Mushroom is a simple form of fungus with high nutritive and medicinal value. Mushrooms are rich in high quality protein having around 60 – 70 percent digestible amino acids. It is also rich in vitamins like B.C, D, K and minerals like calcium, phosphorous, potassium, iron, copper and high fibre content. Mushrooms have a low quantity of carbohydrate and fats high quantity of water. Research studies have shown that it is an ideal food for people suffering from diabetics, heart ailments, hypertension and anemia.

### The Product:

Mushroom have been considered as a delicacy the world over. The oyster mushroom (pleurotus) which is mostly cultivated and marketed in the North East. Oyster mushrooms are easier to grow and less cumbersome to process. The climatic conditions in the North East is favorable for its growth. The product is available mainly in two forms i.e. fresh and dried. The proposed unit can would sell 2000 kgs of fresh mushroom and 3000 kg as dried mushroom.

### Market Potential:

The North Eastern Region including Sikkim has a good market for mushrooms. Apart from domestic consumption, the hotels, resorts which are coming up in a big way in the region are potential buyers of the product.

### Plant Capacity:

Working Days/Year	:	300
Annual production	:	2000 kg of fresh mushroom & 3000 kg of dry mushroom

### Raw Materials:

	<u>Qty.</u>	<u>Amount (Rs)</u>
Paddy straw	150 qtls @ Rs 1000/ctl.	1,50,000
Spawn	25,000 @ Rs 10/-	2,50,000
Saw dust	40 qtl. @ Rs 100/-	4,000
Wheat flour	25 qtl @ Rs 1200/-	30,000
Quick lime	20 qtls. @ Rs 150/-	3,000
Packing material	L.S.	<u>9,000</u>
		Rs. 4,46,000
		=====

### Process:

The major process steps are –

#### Cultivation of mushroom:

- Substrate preparation,
- Steam pasteurization/hot water treatment of substrate.
- Spawning of substrate.
- Filling of spawned substrate in trays and polythene sheet enclosures.
- Incubation of spawned substrate in trays & enclosures.
- Harvesting and storage of fruit bodies.

#### Processing:

- Cleaning and grading.
- Separation of mushroom for drying.
- Packing of fresh mushroom for marketing.
- Drying of mushrooms.
- Packing of dried mushrooms.
- Marketing.

### Machinery:

Sl.No.	Items	Value (Rs)
1.	Dryer - 1 No. @ Rs 30,000	30,000
2.	Big drum - 4 Nos. @ Rs 7,000/-	28,000
3.	Trays – 50 Nos. @ Rs 500/-	25,000
4.	Shaft cutter – 3 Nos. @ Rs 5000/-	15,000
5.	Poly sheet – 3000 Mtrs. @ Rs 20/-	60,000
6.	Sprayers, thermometer, boards – 4 Nos.	8,000
	Total	1,75,000

**Location:**

Urban and semi-urban areas in NER including sikkim preferably near to the market area where cultivation is possible and consumers are suitably located nearby so that fresh mushroom from the unit can be easily marketed.

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 5,46,380 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 4,64,233 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		Own
Site development		25,000
Building (750 sq.ft.)		2,00,000
Machinery		1,75,000
Miscellaneous fixed assets		30,000
Preliminary and pre-operative expenses		<u>15,000</u>
	<b>Total (A)</b>	<b>4,20,000</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	15 days	22,300
Finished goods	15 days	34,800
Working expenses	1 month	10,280
Receivables	15 days	<u>59,000</u>
	<b>Total (B)</b>	<b>1,26,380</b>
		=====
	<b>Total (A)+(B)</b>	<b>5,46,380</b>
Note: Working capital may be financed as:		
Bank Finance (65%)	.....	Rs 82,147
Margin Money (35%)	.....	<u>Rs 44,233</u>
		<b>Rs 1,26,380</b>
		=====

**Capital Cost of Project:**

Fixed capital	:	4,20,000
Margin Money for Working Capital	:	<u>44,233</u>
		<b><u>4,64,233</u></b>

**Means of Finance:**

Promoter's contribution (35%)	Rs 1,62,482	
Term Loan (65%)		<u>Rs 3,01,751</u>
		<b>Rs 4,64,233</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 7,07,700 as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials:	4,37,000
2.	Packing materials	9,000
3.	Utilities	15,360
4.	Wages & Salaries	1,08,000
5.	Other overheads	12,000
6.	Selling expenses @ 5% on annual sales	59,000
7.	Interest on term loan @ 13.25%	39,982
8.	Interest on Bank Finance for Working Capital @ 12%	9,858
9.	Depreciation @ 10%	<u>17,500</u>
		<b>7,07,700</b>
		=====
<b>Operating profit</b>		<b>4,72,300</b>

**Sales Realization:**

Sl.No.	Particulars	Qty.	Rate (Rs)	Value (Rs)
1.	Fresh Mushroom	2000 Kg.	140/-	2,80,000
2.	Dry Mushroom	3000 Kg.	300/-	9,00,000
	<b>TOTAL</b>			<b>11,80,000</b>

**Profitability :**

Based on the sales realization of Rs 11.80,000 and the operating expenses, the profit would be Rs 4,72,300 per year. This works out to a return on investment of 86%. The plant will break even at 19% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 5,46,380
Promoter's contribution	:	Rs 1,62,482
Annual sales realization (70% cap.)	:	Rs 11,80,000
Annual operating expenses (70% cap.)	:	Rs 7,07,700
Annual profit (pre-tax)	:	Rs 4,72,300
Pre-tax Return on Sales	:	40%
Break Even Point	:	19%
No.of persons employed	:	5

**Suppliers of Machinery****List of Machinery Suppliers:****List of Raw Materials Suppliers:**

1.	M/s B. Sen & Berry & Co. 65/11, Rothak Road, Karol Bagh, New Delhi – 110 005	1.	State Institute of Rural Development (SIRD) Jorabat, Guwahati
2.	M/s Narag Corporation P-25 Connaught Place Below Madrass Hotel, New Delhi – 110 001	2.	Shanti Sadhana Asharam Basistha, Guwahati
3.	M/s Gardeners Corporations 6, Doctor Lane, Post Box No. 229 New Delhi – 110 001	3.	Regional Research Laboratory, Jorhat.
4.	M/s K.S.J. Foods & Service (P) Ltd. 7/87, Vishnu Prasad Mehant Road, Vile Parle, Mumbai – 400 057		

## PROCESSING OF HERBS & AROMATIC PLANTS

### Introduction:

The North Eastern States of India including Sikkim are blessed with the bounties of mother nature. Studies conducted by experts show that more than 300 species of herbs growing in this region either find a mention in classical books of Ayurveda or used traditionally as remedial measures to treat various illnesses.

Owing to the richness of soil and favorable geo-climatic condition the herbs growing in this region are very potent, i.e. they are full of the therapeutically active constituents, the list includes the herbs that are rich in glycosides, alkaloids, flavonoids and volatile oils. Even tribal of this region are known to use them by tradition for their protective, cosmetic, nutritional and therapeutic values.

Medicinal herbs naturally grow in the vast expanse of coastal and hilly areas. Many of the annual/biannual herbs may be collected without disturbing the eco-balance. Procurement and processing of such herbs and aromatic plants in the same state would not only be cost effective but also be an employment generating activity.

### Market Potential:

The market of the herbal extracts and aromatic plants is gradually growing with the increasing demand for herbal products as safe alternatives/substitutes to the synthetic modern medicines. In spite of being the pioneer country in the field of herbals, unfortunately India's share in the international market is less than 0.3%. Our export turnover of herbal extracts including the standardized ones and the isolated active principals from herbs is not even 500 crores whereas the international potential is more than eleven thousand crores. The inherent herbal treasure of the North East provides ample opportunities to position it as key herbal processing centre of the country. Presently the herbal traders in the State are primarily engaged in cultivation and collection of raw herbs and supply them as raw material to the herbal formulation units across the country. A modern processing plant with State-of-the-art analytical, standardization and quality control functions would enable processing of raw herbs into value added products and formulations and would assist the state in realizing high value margins in the domestic and international market.

### Process:

1. **Sorting and Milling of Crude Herbs:-** Sort all the herbs individually for any foreign matter. Mill these herbs separately using suitable mill. Herbs should be reduced to around 8 mesh sieve.
2. **Steam Distillation and Decoction for Volatile constituents and extraction of Crude Herbs:-** Take specified quantity of milled crude herb powder in steam distillation unit containing DM water or a specific solvent in 1:6 to 1:10 (depending on the nature of material) proportion. Steam distill volatile constituents if present (It may be noted that volatile constituent separation is possible only in case of aqueous extraction). Collect the distillate in a SS container and close it tightly. Separate the liquid from slurry used for steam distillation and transfer to a suitable steam jacketed SS tank. Start steam spraying and circulation of the decoction. During this process samples of decoction are taken out at regular intervals to check the concentration of the extract in water (solvent). When the concentration level remains unchanged (less than 0.1% w/v) transfer the solution to a storage vessel after filtration (filter press/Nylon cloth/sieve/centrifuge). Repeat the entire process if required (This stage is for syrup/liquid preparations) with another specific solvent.
3. The filtrated solution from the above stage is allowed to stand between 12 to 18 hours for settlement of suspended particles if any at the bottom. Decant the supernatant liquid and send it for concentration.

4. **Concentration of Extract:-** Concentration is done in close distribution unit or open evaporating pan. In close distillation unit it is to be done under vacuum till honey like thick paste is obtained (similarly in open pan) with recovered solvent. In certain selected cases, this is achieved with help of specially designed evaporators also.
5. **Drying of the Extract:-** The concentrate obtained in stage (4) is dried in a vacuum tray dryer at 60°C with 30mm pressure or spray dried.
6. **Pulverization of Dry Extract:-** The extract obtained in stage (5) is pulverized in suitable mill to get 40/60 mesh powder (Temp. NMT 25°C/RH NMT 45%).
7. **Storage of Extract:-** Store the powder/liquid extract with appropriate preservatives (0.25% w/w Na. methyl paraben for liquid and 0.02% w/w bromidiol for powder) in a cool dry place away from light at a temperature of NMT 25°C and RH NMT 45% (Powder only).

**Suggested Capacity:**

Processing herbs per annum	:	350 Tones
No. of shift per day	:	1
Working days/annum	:	300

**Machinery & Equipment:**

<u>Sl.No.</u>	<u>Particulars</u>	<u>Quantity (Nos.)</u>
1.	Mechanical platform balance of 500 kg. cap.	2
2.	Digital platform balance of 200 capacity	2
3.	Hammer mill dust extraction system of 100 kg/hr. cap.	1
4.	SS-316 open top and bottom dished end vessel with distillation column and receiver assembly (vessel – 2000 lt. receiver – 300 lit)	3
5.	SS-316 feed vessel of 300 lit. capacity	3
6.	SS-304 cylindrical tanks for storage of 1000 lit	8
7.	SS-304 filter press with 18" diameter with transfer pump	2
8.	Centrifuge	3
9.	Portable mechanical sifter of 20" diameter	2
10.	Portable dehumidifier	2
11.	Air conditioner of 1.5 ton capacity	2
12.	Process pump sets	8
13.	DM water plant of 1000 lit/day capacity	1
14.	HDPE storage tanks for DM water	8
15.	I.DO fired boiler with 600 kg/hr. capacity	1
16.	Tray dryer – 96 trays	1
17.	Vacuum dryer – 18 trays	1
18.	Spray dryer (50 lit/hour)	1
19.	Rotary film evaporator	1
20.	Other evaporators	2
21.	Laboratory equipment	

**Infrastructure:**

The main infrastructure requirement are:

Shed	:	2000 sq.ft.
Power	:	25 KW
Water	:	15,000 ltrs./day

**Total Capital Requirement:**

The project cost comprising fixed capital and margin money on working capital is Rs 73.57 lakhs.

<b>A. Fixed Capital:</b>	<b>(Rs in lakh)</b>
Land & building	8.00
Plant & Machinery	56.00
Miscellaneous fixed assets	2.45
Preliminary and pre-operative expenses	<u>0.75</u>
<b>Total (A)</b>	<b>67.20</b>
	=====

**B. Working Capital:**

Raw materials & Packing material	3 months	19.00
Finished goods	7 days	1.25
Working expenses	1 month	0.72
Receivables	15 days	<u>4.50</u>
<b>Total (B)</b>		<b>25.47</b>

=====

Note: Working capital may be financed as:

Bank Finance	.....	Rs 19.10 Lakhs
Margin Money	.....	<u>Rs 6.37 Lakhs</u>
		<b>Rs 25.47 lakhs</b>

=====

**Means of Finance:**

The project cost of Rs 73.57 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	Rs 25.75 lakhs
Term Loan (65%)	<u>Rs 47.82 lakhs</u>
	<b>Rs 73.57 lakhs</b>

=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 164.43 lakhs as given below:

	(Rs. lakhs)
1. Raw materials 500 kg/day @ Rs 50/kg.for 300 days	75.00
2. Packing materials	0.85
2. Utilities	3.66
3. Wages & Salaries	8.00
4. Other overheads	4.75
Selling expenses 10%	13.50
6. Interest	7.84
8. Depreciation @10% on m/c	<u>0.56</u>
<b>Grand Total</b>	<b>114.16</b>

=====

**Sales Realization:**

The ex-factory price has been taken at Rs 3.00 lakhs per tonne for 45.00 tones of herbal extract (30% yield). The sales realization works out to Rs 135.00 lakhs per annum.

**Profitability :**

Based on the sales realization and the operating expenses, the profit at 100% capacity would be Rs 20.84 lakhs per year. This works out to a return on investment of 28%. The plant would break-even at about 52% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 73.57 Lakhs
Promoter's contribution	:	Rs 25.75 "
Annual sales realization	:	Rs 135.00 "
Annual operating expenses	:	Rs 114.16 "
Annual profit (pre-tax)	:	Rs 20.84 "
Pre-tax Return on Sales	:	15%
Break Even Point	:	52%
No.of persons employed	:	15 Nos.

**Suppliers of Machinery**

M/s Biotech Consortium India Ltd.,  
4<sup>th</sup> floor, Kundan House,  
New Delhi – 110 019  
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## BIO-DIESEL FROM JATROPHA

### INTRODUCTION

Jatropha is a bush that grows in regions around the equator. In equatorial regions where moisture is not a limiting factor, Jatropha can bloom and produce fruit throughout the year. It requires specialized nursery techniques to raise the saplings in the nursery. Jatropha starts yielding seeds from the end of first year and the economic yield stabilizes from the end of 3<sup>rd</sup> year onwards. The plantation cost per hectare inclusive of site preparation, plant, material, maintenance for one year, overheads etc. shall be in the tune of Rs. 30,000 to Rs. 35,000 per hectare. It has been estimated that one hectare of land can accommodate 2500 Jatropha plants. The yield per plant in one harvest is around 3.5 kg. and from one kg of seeds, a little over 300 ml. of bio-diesel can be procured.

An integrated Jatropha bio-diesel project has three stages : i) the first stage of the production process of bio-diesel production from the seeds of Jatropha is the plantation stage, ii) extraction stages of bio-diesel production, and iii) the final stage of bio-diesel production is the transesterification stage in which raw oil is transesterified to bio-diesel.

With global oil prices on the rise, there have been vigorous efforts across the world to develop and utilize bio-fuels extracted from variety of plants. In India, the focus is an expanding the area under the cultivation of Jatropha which has lately emerged as major sources of bio-fuel in the country. If around 60 million hectares of wasteland in the country are brought under Jatropha cultivation, it would produce 60 million tones of Jatropha bio-fuel, while the country's total requirement of fossil fuel is around 200 million tones a year.

### PRODUCT USES

Jatropha can be used for bio-energy to replace petrol-diesel and lubricant. it has applications as medicine, for soap production and climatic protections. As Jatropha is toxic, it is not eaten by cows or other animals. In India efforts are on to use Jatropha bio-fuel for running cars.

### MARKET POTENTIAL

In addition to the Indian Railways, a large number of state-owned transportation corporation are now making use of Jatropha bio-fuel as a substitute of fossil fuel. Good quantities of Jatropha bio-fuel are procuring by public sector oil companies. The market for Jatropha oil will be huge, whether in India or outside India. Sensing the growing demand for bio-fuel in India, over a dozen of private outfits have started contracting villagers and tribal for growing Jatropha cultivation.

### SUGGESTED CAPACITY

The production capacity per annum will be as follows:

According to initial feasibility studies, plant with a capacity of 500 kg Jatropha fruit per batch of 8-10 hrs. is envisaged.

Production Capacity	=	One MT (two batch) per day
Annual Production	=	365 MT Per year.
Annual Production of Bio-diesel	=	146 MT Per year.

#### **Basis:-**

No. of working days	=	365 days per year.
No. of Shifts	=	2 batch per day.
One shift	=	8 – 10 hours.

## **INFRASTRUCTURE REQUIRED**

The main Infrastructural facilities required are:

Total Area Required	5000 sq.ft.
Covered shed area	1000 sq. ft.
Open area	2000 sq.ft.
Power requirement	12 kw.
Water (required in every working day)	General Purpose

## **RAW MATERIALS REQUIRED AND AVAILABILITY**

Jatropha is grown in areas that are unsuitable for other plants, because they are too dry or too arid. 1Kg. of good Jatropha seed will give around 1100 seeds. Approximately 794 Kgs fruit are grown in one hectare of land. To Cultivate 100 000 hectares of land to produce up to 1 million metric tons of Bio-fuel.

Jatropha cultivation generates an income of Rs. 25000.00 per hectare. One hectare of jatropha produces 1,892 liters of fuel (about 6.5 barrels per acre). One kilogram ripe Jatropha fruit is cost Rs.3.00.

## **SUGGESTED LOCATION**

Bio-diesel Plant should be located mainly in Jatropha growing area and also should be surrounded by available Jatropha cultivation throughout the year as well as skilled manpower.

(i) karbi angling, Jorhat in Assam (ii) Ri-bhoi and East Garo Hiis Dist. In Meghalaya (iii) tamenglang Dist. In Manipur (iv) Sikkim.

## **PRODUCTION PROCESS**

Ripe fruits are plucked from the tree and seeds are sun dried. Ripe fruits are decorticated manually or by decorticator. To prepare seeds for oil extraction, the seeds should be solar heated for several hours or roasted for 10 minutes, overheating is to be avoided. The main steps for manufacturing process of bio-diesel fuel are:

1. Jatropha oil is filtered to remove any solid particles.
2. Jatropha oil is then heated to remove any water content.
3. Titration is done to determine how much catalyst is needed.
4. Exact quantity of potassium hydroxide is then thoroughly mixed in methanol till it dissolves completely to get potassium methoxide.
5. Jatropha oil is heated if required (during winter), and mixed in the potassium methoxide while with agitator running.
6. It is then allowed to settle and glycerine is removed from bottom.
7. Bio-diesel fraction is then washed and dried.
8. It is then checked for quality.

## **PROJECT ECONOMICS**

The total capital requirement estimated is Rs. 66.00 lakhs as given below:-

<b>A. Fixed Capital</b>		(Rs. in Lakhs)
		Own/Lease
Land		
Land Development Cost		1.00
<u>Building/Civil Works</u>		
i.)	Work shed 700 sq. ft.	4.20
ii.)	Office/Reception 200 sq.ft.	1.40
iii.)	Storing tanks pipe lining etc	2.50
iv.)	Toilet/Bathroom/cemented open space	
	Drainage facilities etc.	1.00
Plant & Machinery		44.85



Misc. Fixed Assets (water arrangement/overhead-reservoir/ pump-set/power line connection/ water & electrical fittings/office equipments)	2.50
--	------

Preliminary & Pre-operative Expenses	<u>1.00</u>
<b>Sub-Total(A)Rs</b>	<b><u>58.45</u></b>

**Working Capital**

	(Norms)	(Rs. in Lakhs)
Raw Materials/Consumables	1 month	1.12
Working Expenses	1 month	1.12
Finished Goods	10 days	0.82
Receivable	5 days	<u>0.56</u>
<b>Sub-Total(B) Rs</b>		<b><u>3.62</u></b>

Note: Working Capital to be financed as:-

Margin Money :	Rs. 1.75 lakhs
Bank Finance:	<u>Rs. 1.87 lakhs</u>
	<u>Rs. 3.62 lakhs</u>

**Means of Finance**

	(Rs. in Lakhs)
promoter's Equity(25%)	Rs. 15.52
Term Loan(75%)	<u>Rs. 46.55</u>
	<u>Rs 62.07</u>

**Cost of Production & Profitability**

	(Rs. in Lakhs)
Raw materials/consumables	13.40
Wages & Salaries	10.68
Utilities	2.72
Repair & Maintenance	0.20
Administrative Overhead	0.40
Depreciation	2.30
Interest	<u>6.00</u>
<b>Total Rs.</b>	<b><u>35.70</u></b>

**Sales Turnover**

	(Rs. in Lakhs)
I. Selling of 146 MT of bio-fuel @ Rs. 29.00 per ltrs.	42.34

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs. 6.64 lakhs per year. This works out to a return on capital investment of 10.7%. The unit would break-even at about 75% of the rated capacity.

**Break Even Analysis**

<b>A. Variable Cost:</b>	(Rs. in Lakhs)
Raw Materials/Consumables	13.40
Utilities	<u>2.72</u>
<b>Total Rs</b>	<b><u>16.12</u></b>
<b>B. Semi-Variable Cost:</b>	(Rs. in Lakhs)
Wages & Salaries	10.68
Repair & Maintenance	0.20
Administrative Overhead	0.40
Depreciation	2.30
Interest	<u>6.00</u>
<b>Total Rs</b>	<b><u>19.58</u></b>
<b>C. Sales Realisation:</b>	Rs. 42.34 Lakhs
<b>D. Contribution</b>	Rs. 26.22 Lakhs

**E. Break Even Point** 75%  
 B/D X 100% (capacity Utilization)

**Machinery & Equipment**

Name of the machinery	No. of M/C required	Capacity
<b>CLARIFIER SECTION</b>		
1. PH Adjuster reactor	1	3.00 MT
2. Drier Reactor	1	1.00 MT
3. Raw Oil Tank	1	5.50 MT
4. Caustic Tank	1	0.50 MT
5. Soak Tank	1	0.50 MT
6. Clear Oil Tank	1	0.75 MT
7. Dried Oil Tank	1	0.50 MT
8. Structural support for Clarifier section	-	-
9. Motor	2	2 HP
10. Geared Motor	2	2 HP
11. Other Miscellaneous fittings.		
<b>CONVERTER SECTION</b>		
12. M. S. Tank	6	1.0 MT
13. Barometric Catchchuller	-	-
14. Barometric Condenser	-	-
15. S.S 304 tube & M.S. Shell Condenser	3	-
16. Catalyst Mixture(S.S.304)	1	300 KG
17. Setting Tank(S.S.304)	2	700 KG
18. Washer Tank(S.S.304)	1	700 KG
19. Distillation Reactor(S.S.304)	1	1.0 MT
20. Plate Filter of 18"X18"	1	-
21. Structural support for converter section	1	-
22. Geared Motor	1	2 HP
23. Vacuum Pump	1	5.0 HP
24. Pump & Motor	4	2.0 HP
25. Lot of S.S. 304 pipes (1"), Valves, Flanges, bends, nuts, bolts.	-	-
26. Electrical Starter & Switch	-	-
27. Steam Boiler	1	50 KG/ Hr.
<b>Total Cost of Plant Rs. 39.00 Lakhs</b>		
Add. 15% towards Packaging, forwarding, Insurance, Transportation, Loading, Unloading, Installation & Commissioning etc.		
<b>Total Cost of Machinery Installation Rs. 44.85 Lakhs</b>		

**Manpower**

Category	No. of Person	Salary Per Person Per Month(Rs)	Monthly Salary Bill (Rs.)
a) Manager	1	8,000	8,000
b) Chemist	1	7,000	7,000
c) Skilled Worker	4	6,000	24,000
d) Semi-skilled workers	6	4,000	24,000
e) Un-skilled workers	2	3,000	6,000
f) Store Keeper/Accountant	2	6,000	12,000
<b>Total Manpower cost Rs.</b>			<b>81,000</b>

Salary Bill Rs 9.72 Lakhs + Benefits @10% annually i.e. Rs 0.96 lakh

**Total Annual Salary Bill : Rs. 10.68**

**Utilities**

Power for Machinery: 12 H.P.  
 General Lighting: 2 H.P.  
 -----  
**16 H.P.**  
 -----

a)	Electricity Bill: 14 H.P. X 0.746 KW X 14 Hrs. X 365 days X	Rs. 5.00 Hence, Annual Electric Bill	Rs. 2,67,000 lakhs
b)	Water Charge	(L.S.)	Rs. 5,000 lakhs
	<b>Total Utilities (a + b)</b>		<b>Rs. 2,72,000 lakhs</b>

**Highlights:** The major highlights of the project are as follows:

Total Capital requirement	Rs.	62.07 lakhs
Promoter's contribution	Rs.	15.52 lakhs
Annual Sales realization	Rs.	42.34 lakhs
Annual Operating Expenses	Rs.	35.70 lakhs
Annual Profit	Rs.	6.64 lakhs
Return on sales		15.5%
Break-even point		75.0%
No. of person employed		16

**Machinery Suppliers:**

- |  |  |
|--|--|
| 1. Institute of Agriculture, Forest & Environment<br>House No. 31,<br>Street No. 2 Chhipabakhal Near Sitlamata Temple,<br>Indore, Madhya Pradesh - 452 002           | 2. Arnab Biotech Farm<br>30/B, Lenin Sarani,<br>Kolkata- 700 013,  |
| 3. Dhanwanti Bhawan,<br>Railway Road,<br>Kurukshetra,<br>Haryana - 136 118   | 4. Beast Engineering Technologies<br>162, Prasanthi Nagar,<br>Industrial Estate,<br>Near Balaji Temple,<br>Kukatpally, Hyderabad,<br>Andhra Pradesh - 500 072, |
| 5. Swaraj Herbal Plants Pvt. Ltd,<br>Tripuri Chowk ,<br>Nagpur Road, Jabalpur,<br>Madhya Pradesh - 482 003,<br>Faizabad Road, Barabanki,<br>Uttar Pradesh - 225 001, | 6. Umech Engineering Pvt. Ltd<br>L-13, Gali No. 9,<br>New Rohtak Road Indl. Area,<br>Anand Parbat<br>New Delhi - 110 001                                       |

## **BRICK PLANT (Traditional)**

### **INTRODUCTION**

In view of the increased building construction activities and the various ambitious projects envisaged by the central/State Government in the 10<sup>th</sup> Plan, the demand for bricks will increase manifold in the coming years. A significant change is taking place in the building habits of the region, i.e. more emphasis is given on R.C.C. construction rather than traditional Assam Type houses. With more major construction projects coming up in the NE Region, the demand for bricks is registering a substantial increase. Therefore, there is good scope for brick plants in this part of the country.

The brick season in this region starts in November and continues till April. The operations like digging of earth, soaking the clay, moulding the bricks etc. are done manually in the traditional brick plants. The drying of the green bricks is done in the open. Because of this, this industry is seasonal, operating only in dry season. However, in view of the increasing construction activities, the demand for bricks will increase manifold in the near future. Therefore, a brick plant may benefit the users of bricks by way of supplying bricks at competitive rates.

### **CAPACITY**

A unit manufacturing 18,00,000 Nos. bricks per annum (seasonal) has been found to be an economically viable proposition.

### **RAW MATERIALS**

The only basic raw material required for the brick plant is alluvial clay with suitable plastic properties. The requirement of clay for the plant has been calculated on the basis of land requirement for 20 years. Around 2.83 cubic meters of clay is required per 1000 number of bricks. The depth of clay available for the plant will be between 2.5 to 3 meters. The following will be the cost of raw materials.

#### **Cost of raw materials**

<b>Particulars of raw materials</b>	<b>Annual requirement of bricks</b>	<b>Cost per unit</b>	<b>Total Cost Rs. Lakhs</b>
Cost of raw materials includes labour, cost of excavation, handling and transportation to the storage heaps.	18,00,000	Rs. 0.80	14.40

The requirement of clay for the proposed capacity of the plant (18,00,000 bricks on seasonal basis) is 5400 m<sup>3</sup> per season. This requirement will be met from the land procured for the project. The promoter has procured 10 bighas of land for this purpose. As mentioned above the raw materials cost is Rs. 14.40 lakhs.

#### **SUGGESTED LOCATION :**

Major centres of Assam, Meghalaya, Manipur, Tripura and Nagaland.

### **INFRASTRUCTURE**

#### **UTILITIES**

The unit would require power for general purpose only. The consumption of coal in the Kiln will be around 500 Kgs per 1000 bricks. This requirement will be met from Assam/Meghalaya coal. The annual requirement of coal at 100% capacity utilization will be around 900 MT. The cost of which is around Rs.18.00 lakhs @ Rs.2000/- per M.T. therefore, the cost of utility including general lighting comes to approximately Rs.18.08 lakhs/annum.

### **MANUFACTURING PROCESS**

The various stages in the process of manufacture of bricks are as follows :

1. Clay digging (manual) from clay pits.
2. Transportation to storage heaps manually.
3. Clay feeding to the box feeder.
4. Mechanised brick cutting.
5. Off bearing green bricks in finger cars.

6. Manual setting in drying sheds.
7. Wheeling in barrows the dried bricks to the kiln.
8. Firing the kiln.
9. Sorting and storing the finished red bricks/brick bats.

#### MANPOWER ESTIMATE

Category	No. Reqd.	Monthly Salary per person	Total monthly salary
1. Manager	1	4000	4000
2. Kiln Operators	1	2000	2000
3. Clerk cum Accountant	1	2500	2500
4. Peon/Watchman	2	1500	3000
5. Skilled Workers	6	1500	9000
<b>Total :</b>	<b>11</b>		<b>20500</b>

Total salary per annum (Rs.20,500 x 6 months) : Rs. 1,23,000/-  
 Unskilled Workers 60 Nos. @ Rs.500/-  
 Per month. Therefore, the total wage bill of : Rs. 1,80,000/-  
 60 workers for 6 month will be (30000x6) : -----  
 The total manpower estimate comes to : Rs.3,03,000/-  
 =====

#### EQUIPMENT

Particulars	Qty.	Cost (Rs. In lakhs)
1. Hand operated Cutting table for cutting bricks	1	0.15
2. Wheel barrows	5	0.40
3. Pallets 3 mm thick M.S. plate measuring 64 x 25mm each and capable of handling 6 bricks at a time.	15	0.20
4. Kiln with all accessories.	1	10.00
5. Box type wheel burrows with a capacity to carry 40 to 50 bricks each.	6	0.35
<b>Total</b>		<b>11.10</b>

#### WORKING CAPITAL REQUIREMENT

Particulars	Norms	Total Amount (Rs. in lakhs)
Raw Materials	1 month	2.40
Utilities	1 month	3.01
Wages & Salaries	1 month	0.51
Stock of finished goods	10 days	2.08
Receivables	10 days	2.54
		<b>10.54</b>
<b>Bank Finance (75%)</b>		<b>7.91</b>
<b>Margin Money (25%)</b>		<b>2.63</b>
<b>Total</b>		<b>10.54</b>

#### CAPITAL COST OF THE PROJECT

	<b>(Rs. Lakhs)</b>
1. Land 10 bighas	10.00
2. Site Development	0.25
3. Building & Civil Works	2.15
4. Equipment	9.10
5. Misc. Fixed Assets.	0.40
6. Preliminary & Pre-Op. Expenses.	0.47
7. Margin Money for Working Capital	<u>2.63</u>
<b>Total :</b>	<b><u>25.00</u></b>

**MEANS OF FINANCE**

	<b>( Rs. Lakhs)</b>
Term Loan (75%)	18.75
Promoter's contribution (25%)	<u>6.25</u>
	<b>Total : <u>25.00</u></b>

**COST OF PRODUCTION  
(AT 100% CAPACITY)**

		<b>( Rs. lakhs)</b>
Raw materials	:	14.40
Utilities	:	18.08
Wages & Salaries	:	3.03
Repair and maintenance	:	0.05
Admn. Overheads.	:	1.55
Selling expenses @2% of sales	:	0.92
Insurance	:	0.15
Interest on Loan @ 17%.	:	2.15
Depreciation 10%	:	<u>0.95</u>
	<b>Total :</b>	<b>41.28</b>
		<b>=====</b>

**SALES REVENUE****( 100% CAPACITY)**

By sale of 18,00,000 bricks @ Rs2500/- per 1000 bricks.	45.00
Brickets – approx. 50,000 Nos. @ Rs.1500 per 1000 Nos.	0.75
Broken @ Rs.500/- per truck for 10 trucks.	<u>0.05</u>
	<b>Total : <u>45.80</u></b>
	<b>=====</b>

**OPERATING PROFIT**

The operating profit comes to Rs.45.80 – Rs.41.28 lakhs. Rs. 4.52 lakhs.

**BREAK EVEN POINT - Approx. 55%.****LIST OF MACHINERY SUPPLIERS –**

M/s. B.B.Engineering Works,  
166/22, B.T. Road,  
Kolkata – 700008.

## CLAY BRICK PLANT

### Introduction:

Bricks are a significant basic material of construction required in all spheres of constructional activities and constitute about 13 percent of the total cost of building material required for construction. By and large three types of materials are used in walling viz. Conventional Burnt Clay Bricks, different types of board and Concrete Blocks/Bricks. It has been established that the use of clay bricks provide a superior and comfortable physical living environment than the use of other materials as far as residential construction is concerned. Despite all initiatives to introduce alternative walling materials like compressed earth block, concrete/stone Crete block and fly-ash brick, it is envisaged that burnt clay bricks would still occupy the dominant position.

Typical characteristics of burnt clay brick are as follows:

Dimensions – 250 (L) 125 (W) 75mm (H)

Colour – Red

Weight – 3.6 Kg.

Bulk density – 1700 – 1800 kg/m<sup>3</sup>

Cold crushing strength – 70 – 90 kg/m<sup>3</sup>

Water Absorption – 20%

### Market Potential:

The demand for bricks have been increasing year by year with the increased building construction activities in Private/ Govt. Sectors as well as various projects/development activities envisaged by the Central/State Governments. A significant change is taking place in the building habits of the region by way of tendency to shift from the traditional Assam Type houses to RCC type houses using bricks. That is why Bricks industry in the region has been registering a steady and significant growth over the years.

Current consumption of bricks in NER (year 2005 – 06) is approximately 3000 Million. Assam is the major consumer of bricks in the NER comprising nearly 70% of the total consumption. Assam is followed by Tripura with consumption of approximately 9%. The other states make up balance. Within the state of Assam, consumption of bricks is highest in Central Assam (41%), followed by Lower Assam (25%), Upper Assam (25%) and South Assam (9%). At present there are around 1200 brick plants in the region with a total production of approximately 3000 million bricks. Existing brick plants are concentrated in the State of Assam, Tripura & Mizoram.

Brick consumption at the national level has shown an Annual Cumulative Growth Rate (ACGR) of 7% for the last few years. However, NER lags behind the national growth rate and it is expected to increase at an ACGR of 6% in the N.E. Region. At this growth rate, the demand for bricks in NER is likely to increase to 4000 million bricks in 2009-10. During the same period, the production from existing plants within the NER is expected to reach 3400 million bricks. This takes into consideration possible improvement in capacity utilization of existing plants. The deficit for bricks in the NER may be 600 million bricks by 2009-10. Considering 70% of this deficit being clay bricks, there will be a demand for 420 million clay bricks by 2009-10. In order to meet this demand an additional requirement of 200 brick plants (capacity 20 lakh clay bricks/year each) in the region.

### Plant Capacity:

Keeping in view the gap between demand and supply, technological factors and economic viability etc., the suggested production capacity of a typical clay bricks manufacturing unit is 20 lakhs clay bricks per annum.

### Raw Material:

The basic raw material required is Alluvial Clay with suitable plastic properties. Around 2.83 cubic metres of clay is required per 1000 number of bricks. The requirement of clay for the unit has been calculated on the basis of land requirement for 20 years. The depth of clay available for the plant will be between 2.5 to 3 metres. The requirement of inputs per 1000 clay bricks is as follows:

<u>Inputs</u>	<u>Quantity</u>
Clay	4 Tonnes
Silt	0 – 0.04 Tonnes
Coal	0.2 Tonnes
Water	4 KL.

**Process:**

The process to be employed is based on the process developed and designed by the Central Building Research Institute, Roorkee. The main process steps are as follows:

- Clay digging (manual) from clay pits and its storage.
- Moulding of clay and manual cutting.
- Manual setting and drying in drying shed.
- Processing to the final product by firing in the kiln firing.
- Storing.

**Machinery:**

The major equipment required for the unit are as follows:

- Cutting table (3 bricks at a time) – 1 No.
- Wheel barrow's (transport 14 pallets) – 8 Nos.
- Pallets (3mm thick & 64 x 25 mm size) – 20 Nos.
- I.D. Fan with motor & starter – 1 No.
- Box type wheel barrows (Cap. 40/50 dry bricks) – 10 Nos.
- Kiln accessories (dampers, fed pot etc.)

**Location:**

The suitable locations for the project may be –

- Outskirts of Guwahati, Jorhat, Tinsukia, Silchar, Bongaigaon, Tezpur, N.Lakhimpur in Assam.
- Jorabat/ Byrnihat in Meghalaya.
- Outskirts of Agartala, Dharmanagar in Tripura.

**Note:** Exact location for the plant needs an investigation of the clay quality and quantity, during feasibility study of clay brick plant at the desired location.

**Infrastructure:**

The basic infrastructure required are :

Land	:	14 bighas
Building	:	1200 sq.ft.
Power	:	50 Kwh per day
Coal	:	200 kg. per 1000 clay bricks.
Manpower	:	50 Nos. (Administrative, skilled & unskilled Workers).

**Note:** The brick industry is highly seasonal in the NE region due to heavy rains in the region and production takes place for around 6 – 7 months in a year. Normally the labourers with some past experience travel to region from West Bengal and Bihar during the said season of brick manufacturing.

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 35.80 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 29.80 lakhs.

<b>A. Fixed Capital:</b>	<b>(Rs in lakh)</b>
Land	3.50
Building	8.50
Machinery	10.00
Miscellaneous fixed assets	2.00
Preliminary and pre-operative expenses	<u>1.80</u>
<b>Total (A)</b>	<b>25.80</b>
	=====



<b>B. Working Capital:</b>		
Raw materials	1 month	2.00
Finished goods	2 weeks	3.50
Working expenses	1 month	2.50
Receivables	1 week	<u>2.00</u>
	<b>Total (B)</b>	<b>10.00</b>
		====
	<b>Total (A)+(B)</b>	<b>35.80</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 6.00 lakhs
Margin Money	.....	<u>Rs 4.00 lakhs</u>
		<u>Rs 10.00 lakhs</u>
		=====

#### Means of Finance:

The project cost of Rs 29.80 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 10.50 lakhs
Term Loan (65%)	....	<u>Rs 19.50 lakhs</u>
		<u>Rs 29.80 lakhs</u>
		=====

#### Operating Expenses:

The annual operating expenses are estimated at Rs 34.00 lakhs as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials	12.50
2.	Utilities	3.00
3.	Wages & Salaries	8.75
4.	Overheads	3.70
5.	Selling expenses @ 2.5% on annual sales	1.25
6.	Interest on term loan (13.50%)	2.60
7.	Interest on Bank Finance for Working Capital (13.50%)	0.80
8.	Depreciation @10%	<u>1.00</u>
		<u>33.60</u>
		=====

#### Sales Realization:

The estimated average ex-factory sales realization from the sale of clay bricks (Grade-1 & II) is Rs 2500/- per 1000 clay bricks. Based on this the annual sales realization is estimated to be Rs 50.00 lakhs.

#### Profitability:

Based on the sales realization and the operating expenses, the profit would be Rs 16.40 lakhs per year. This works out to a return on investment of 30%. The plant will break even at 49% of the rated capacity.

#### Highlight:

The major highlights of the project are as follows:

Total capital requirement	:	Rs 35.80 lakhs
Promoter's contribution	:	Rs 10.50 lakhs
Annual sales realization	:	Rs 50.00 lakhs
Annual operating expenses	:	Rs 33.60 lakhs
Annual profit (pre-tax)	:	Rs 16.40 lakhs
Pre-tax Return on Sales	:	32%
Break Even Point	:	49%
No.of persons employed	:	50

**List of Machinery Suppliers:**

1. Hi-Tech Machines & Toold,  
5, Khetra Das Lane,  
Kolkata – 700 012
2. M/s Beta Instruments Co. (P) Ltd.,  
S. Block,  
Plot No. W – 21,  
Bhosari,  
Poona – 26
3. M/s The Aluminium Industries,  
(Machinery Divisions),  
Lingampalli,  
Ramchandrapuram,  
Hydrabad – 32

**List of Raw Materials Suppliers:**

1. Coal from local coal dealers.

## **CONCRETE PRODUCTS (Well Rings)**

### **INTRODUCTION**

Some of the major concrete products include concrete well rings. Concrete posts are used mainly for fencing purpose. A number of posts are required at regular intervals along barbed wire fencing. Some posts also find application as street light electric posts. Kitchen sinks are an integral part of most urban homes. In view of its convenience, sinks are fast entering rural homes also. Cement well rings, as the name implies, are required for open wells. Apart from forming the firm side walls they also facilitate movement into the well for cleaning purpose.

### **MARKET POTENTIAL**

The demand for concrete posts would be largely linked with the magnitude of barbed wire fencing and rural electrification posts. Barbed fencing is carried out by the Home Department (Border Division), armed Forces, Forest Department and PWD. Generally, the spacing between two posts is about 3 to 3 ½ metre, each post being about 100 mm 100mm, in cross section with height varying from 1.5 to 3 metre. Thus in 1 Km of fencing about 300 posts would be required. Considering the vast borders of the north-eastern region and the massive programme being undertaken to fence the borders as well as regular requirements in forest areas it may be expected that the requirement of fencing would be about 300 to 400 Km per year. the corresponding demand for cement posts would be in the range of 90,000 to 1,20,000 per year. Besides, the demand for posts for rural electrification may be around 75,000 to 1,00,000 per year. Thus, the demand potential for cement posts in the north- eastern region could be of the order of 1.7 lakhs per year. There are a number of tiny units (about 20 to 30) supplying cement posts. Considering that each unit produces about 5000 posts per year on an average, the available market opportunity for new tiny units is placed at about 70,000 posts per year.

Kitchen sinks are being made by 2 to 43 units. It is estimated that in order to meet the housing shortage, about 80,000 dwellings will have to be constructed per year in the urban areas and about 8 lakhs dwellings per year in rural areas. Considering that majority of urban homes would generally opt. for ceramic sinks, the vast rural market is available for concrete sinks. Conservatively assuming that about 6 lakhs rural dwellings and 60,000 urban dwellings would be constructed per year and assuming that 10% of these dwellings and the private construction and replacement demand require RCC sinks, there is demand potential for about 1,60,000 sinks per year. Considering a typical unit to produce 3000 sinks per year there is scope for about 50 such units. However, there may be enough scope initially for setting up 15 units having a product-mix as given in the next paragraph.

### **TARGET PRODUCTION**

Now-a-days, tube-wells have gained prominence over conventional wells. The demand for cement well rings would therefore be in specific areas where tube-wells are not possible /popular, and hence a small quantity of cement will rings is included in the product-mix. The main products would be concrete posts and kitchen sinks. About 300 numbers of well rings are also suggested. The production basis of a typical unit would be as follows:

Sl. No.	Particulars	No. of Posts	No. of Sinks	No. of Rings
1.	Daily production	10	5	1
2.	Working Days/year	300	300	300
3.	Annual Production	3000	1500	300

The products would be manufactured in the following typical sizes.

Concrete Posts 100m 100m 1,500 mm

Kitchen Sinks 600mm long 300 mm wide 450 mm deep

Well rings 2m dia, 1 m ht., 50 mm thickness.

## RAW MATERIALS

The major raw materials required are cement, sand, stone dust, stone chips and iron strips. Cement is manufactured in the north-eastern region in Assam, Meghalaya and Manipur. Bulk of the cement required, however, still comes from outside the region. Cement may be available from local dealers or directly from nearby plants located at Bokajan, Mawmlucherra. Sand and stone chips may be procured locally and iron strips from the market.

## PROCESS

The main process of steps involved are:

- i) Fabrication of suitable moulds.
- ii) Preparation of concrete mix by mixing water in cement, sand and stone chips in suitable proportion.
- iii) Pouring of cement concrete into the moulds and stirring to avoid gaps or honey comb. Suitable reinforcement is to be provided while pouring cement concrete mixture for increasing the durability and strength of the product.
- iv) Curing of the product for 4/5 days. During this period, water is to be poured. After opening from the moulds, water is to be sprinkled for about 6/7 days.

## MACHINERY

The process is essentially manual and no major production equipment is required. The following accessories would suffice for the production:

1. Mould for posts (to be made from Steel plate)
2. Buckets, Shovels & Tools.

## INFRASTRUCTURE

The main infrastructural facilities required are:

Land	...	2000 Sq.ft.
Shed	...	600 Sq. ft.
Power		1 KW
Water		2000 Litre/day

## LOCATIONS

The suggested locations are:

Assam	: Bokajan, Nagaon, Silchar, Goalpara
Meghalaya	: Mawmlucherra, Jowai
Manipur	: Hundung
Sikkim	: Dzungri, Brang

## TOTAL CAPITAL REQUIREMENT

The total capital requirement, including fixed capital and working capital, is estimated at Rs.3.84 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs. 2.05 lakhs.

<b>A. Fixed Capital:</b>	(Rs. in lakh)
Land & Building	On lease
Plant & Machinery	0.80
Miscellaneous fixed assets	0.20
Preliminary and pre-operative expenses	<u>0.10</u>
Total (A)	<u>1.10</u>

<b>B. Working Capital:</b>		
Raw materials	1 month	0.42
Stock of Finished goods	10 Days	0.32
Working expenses	1 month	0.35
Receivables	1½ month	1.65
	Total (B)	<u>2.74</u>
	<b>Total (A) + (B)</b>	<b><u>3.84</u></b>

Note: Working capital may be finance as :		
Bank Finance	...	Rs. 1.79 lakh
Margin Money	...	Rs. 0.95 lakh
		<u>Rs. 2.74 lakh</u>
		=====

### MEANS OF FINANCE

Promoter's Contribution (35%)	..	Rs. 0.72 lakhs
Term Loan(65%)	...	Rs. 1.33 lakhs
		<u>Rs. 2.05 lakhs</u>
		=====

### OPERATING EXPENSES

The annual operating expenses are estimated at Rs.11.02 lakhs as given below:

<b>Raw materials –</b>		
Cement 53 tonnes @ Rs. 5200/tonne		2.76
Sand 61 Cu.m. @ Rs.420/Cu.m.0.26		
Stone chips 89 Cu.m. @ Rs.700/Cu.m.		0.62
Iron Strips 5 tonne @ Rs.2800-/tonne		1.42
Utilities		0.20
Wages &Salaries		4.00
Rent		0.36
Other overheads		0.25
Selling expenses @ 5% on annual sales		0.66
Interest on term loan @12%		0.16
Interest on Bank Finance @ 15% for W.C.		0.27
Depreciation @ 10% on M/c.		0.08
		<u>11.02</u>
		=====

### SALES REALISATION

The annual sales realization is estimated at Rs. 13.20 lakhs as under

Sl. No.	Products	Quantity Nos.	Price Rs./Unit	Sales Rs.lakh/Yr.
1.	Concrete Posts	3000	150	4.50
2.	Kitchen sinks	1500	300	4.50
3.	Well Rings	300	1400	4.20
			<b>Total:</b>	<b>13.20</b>

## **PROFITABILITY**

Based on the sales realization and the operating expenses, the profit at annual production envisaged would be Rs. 2.18 lakhs per year. This works out to a return on investment of 57%. The plant would break-even at about 50% of the targeted annual production.

## **HIGHLIGHTS**

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 3.84 lakhs
Promoter's contribution	Rs. 0.72 lakhs
Annual Sales realization	Rs. 13.20 lakhs
Annual operating expenses	Rs. 11.02 lakhs
Annual profit (pre-tax)	Rs. 2.18lakhs
Pre-tax return on sales	17%
Break-Even Point	50%
No. of persons employed	15

## FUEL (COAL) BRIQUETTING

### Introduction:

With the energy crisis leading to increased cost of oil and natural gas, the focus has again shifted to coal due to the growing curbs on deforestation and use of wood from environmental consideration. In view of conserving oil and gas for more productive purposes, the coal which has considerable reserve in North Eastern Region, can be more usefully exploited for domestic application by way of Fuel/Coal briquettes.

### The Product:

Coal briquettes are made of slack low cost domestic fuels for firing smokeless burning with minimal atmospheric pollution. These briquettes can be made with easy technology and can be transported over long distances.

### Market Potential:

Main consumers of coal briquettes are household, small restaurants and hotels. In the North Eastern Region, only 30 – 40% population in both urban and rural areas uses LPG as energy source and the balance 60 – 70% population uses other sources of energy like Kerosene, firewood, charcoal and coal. Based on a consumption of 1 Kg per day per household, the demand of coal by the people of the region is estimated at almost 5,00,000 tonnes per year as on today. Assuming that initially 10% of the consumers would shift to coal briquettes with the rising population, the demand for this product can be estimated at 6,00,000 tonne per year. Thus, there is scope for about 12 to 15 coal briquette unit in the region.

### Suggested Capacity:

A typical coal briquette unit of 7800 tonne capacity per annum is suggested on the following basis.

Daily production	:	18.2 tonne
Capacity utilization	:	70%
Working hours per day	:	8 (1 shift)
No.of working days/year:		300
Annual production	:	5460 tonne.

### Infrastructure Requirement:

i)	Covered area	:	6000 sq.ft.
ii)	Shed	:	1500 sq.ft.
<u>Utilities:</u>			
i)	Power	:	30 KW
ii)	Water	:	1800 ltrs/day

### Raw Material and availability:

The major raw material is low grade coal and coal fires. Assisting raw materials are binders such as benetonite, molasses, plastic clay, lime and sodium, silicate. The annual requirement of raw materials at 70% capacity utilization is as under –

	<u>Tonne per year</u>
Slack	5900
Binders	160

In the north eastern region, coal is mainly available in Makum Coal Field in Assam, Jaintia Hills and Garo Hills in Meghalaya. Availability of coal for briquettes units on priority basis can be obtained from coal India Ltd and the North Eastern Coal Field, a subsidiary of CIL.

### Suggested Location

Keeping in view of the availability of coal, the preferred locations would be nearer to the sources of coal, viz. –

Assam	:	Margherita, Naharkatia, Ledo Makum, Guwahati
Meghalaya	:	Jowai, Tura,
Sikkim	:	Dzohgri, Brang

### Production Process

The production process involves the following steps –

- a) Crushing/grinding of coal to below 2mm.
- b) Preparation of binders in semi-liquid form.
- c) Mixing of coal with binders.
- d) Briquette making.
- e) Drying.
- f) Carbonization of briquettes in the furnace to remove volatile matter.
- g) Cooling of briquettes by spraying water.
- h) Packing.

### Capital Cost:

		Amount (Rs lakh)
A.	<u>Fixed Capital</u>	
	i) Land & Building	Own
	ii) Plant & Machineries	7.92
	iii) Misc. Fixed Assets	0.50
	iv) Preliminary & Pre-op expenses	2.20
		Total (A) 8.62
B.	Working Capital	7.87
		Total <u>16.49</u>

### Working Capital Requirement:

Raw materials	½ month	2.13
Finished goods	½ month	2.35
Working expenses	1 month	0.44
Receivable	½ month	<u>2.95</u>
		7.87

### Cost of Production and Profitability:

Raw materials and consumables	51.21
Utilities and overheads	2.80
Wages Bill	2.52
Other overheads	0.30
Selling expenses @3% on annual sales	2.13
Interest on Term Loan	1.03
Interest on Working Capital Loan	1.18
Depreciation	<u>0.79</u>
	<u>61.96</u>

### Profitability:

The annual profit is estimated in the first year : Rs 9.02 lakh of operation.

### Turnover:

The sales Realization have been estimated at Rs 70.98 lakh per year @ Rs1300.00 per tonne for 5460 tonnes of production.

### Sources of Finance:

		Amount (Rs lakh)
1.	Bank Finance (75%) (Term loan + Working Capital Loan)	12.36
2.	Promoter's Contribution (25%)	<u>4.13</u>
		16.49

The source of finance has been calculated at 75% as Bank Finance and 25% as promoter's contribution. Financing from any other schemes may be alternated as per specification.



**Plant and Machineries:**

The main equipment required for the briquette unit are –

- (A. Hammer crusher (15 HP motor)
- (B. Mixer (7.5 HP motor)
- (C. Briquette machine (15 HP)
- (D. Carbonizing furnace with 3 chambers, chimney and other accessories.
- (E. Platform weighing scale.
- (F. Misc. tools, dies etc.

**Cost of Raw Materials and Consumables:**

Amount (Rs lakh)

(A. Coal dust – 5900 tonne @ Rs 750/tonne	44.25
(A. Binders - 160 tonne @ Rs 2400/tonne	3.84
Packing materials – 78000 Nos. gunny bags @ Rs 4/- each	<u>3.12</u> <u>5.12</u>

**Cost of Utilities and overheads:**

Amount (Rs lakh)

i) Power	1.60
ii) Water	1.00
iii) Oil, Lubricants etc.	<u>0.20</u>
	<u>2.80</u>

**Manpower Requirement and Wages Bill:**

Sl.No. Category No. Salary per person Per month (Rs) Total Wages Bill (Rs lakh)

1. Manager	1	3000.00	0.36
2. Skilled workers	3	2500.00	0.90
3. Semi-Skilled workers	3	1500.00	0.54
4. Helper	2	1000.00	0.24
5. Salesman	2	2000.00	0.48
			-----
<b>TOTAL</b>	<b>11</b>		<b><u>2.52</u></b>

<b>Profit Sales Ratio</b>	:	<b>12.70%</b>
<b>Profit Investment Ratio</b>	:	<b>54.69%</b>
<b>Break Even Point</b>	:	<b>39.21%</b>

**MACHINERY SUPPLIERS:**

- (A. M/s Amic Industries Pvt. Ltd.,  
10, B.T. Road,  
Kolkata – 700 056
- (A. M/s Hi-Tech Machine Tools,  
5, Khetradas Lane,  
Kolkata – 700 013
- (A. M/s Durgapur Engg. Co. Ltd.,  
33/1, N.S. Road,  
Kolkata – 700 001
- (A. M/s Pauls Engg. Enterprise  
17/711, Nana Singha Dutta Road,  
Kadamtola,  
Howrah – 700 001.

## HOLLOW CONCRETE BLOCK

### Introduction:

Hollow concrete blocks are substitutes for conventional bricks and stones in building construction. They are lighter than bricks, easier to place and also confer economics in foundation cost and consumption of cement. In comparison to conventional bricks, they offer the advantages of uniform quality, faster speed of construction, lower labour involvement and longer durability. In view of these advantages, hollow concrete blocks are being increasingly used in construction activities.

### Market Potential:

Hollow concrete blocks can be used for (a) exterior load bearing walls, (b) interior walls, (c) Panel walls, (d) columns, (e) retaining walls and (f) compound walls. In view of their versatile uses and properties, hollow concrete blocks are in demand by departments/agencies engaged in construction including PWD, Housing Boards and Urban Development Corporations, Road Transport Corporation and Forest Departments.

To mitigate the housing shortage in the north east, construction to the tune of Rs 800 crore per year would be involved. In addition, the other construction activities where hollow concrete blocks can be used include hotels, shops, offices, public buildings etc. The value of hollow concrete blocks may be taken to be about 8 to 10% of the total cost of construction. Assuming that about 20% of the construction activities would use hollow concrete blocks, the demand potential for hollow concrete blocks is estimated at Rs 13 crores per year. Barring Guwahati where there are two units manufacturing hollow concrete blocks at present there are hardly any units in the north east. Keeping this in view and potential demand, there appears to be scope for over 28 units to be set up depending on the capacity and location.

### Plant Capacity:

The standard sizes of hollow concrete blocks are –

- (a) 400mm x 200mm x 200mm
- (b) 400mm x 200mm x 150mm
- (c) 400mm x 200mm x 100mm

A typical unit would have a production rate of 1500 blocks per day of size 400 x 200 x 100mm on a two shifts basis. The annual production would, thus, be about 3.08 lakh blocks as given below (based on 400 x 200 x 100mm size):

Production per hour	:	1500 blocks/day
Capacity utilization	:	70%
Daily production envisaged	:	1050 blocks
Saleable blocks	:	98% of production
Working days/year	:	300
Annual production	:	308700 blocks
		Say: 3.08 lakh blocks

### Raw Materials :

The raw materials required are cement and stone chips. The annual requirement of raw materials for the production of 3.08 lakhs hollow concrete blocks pe year are as follows:

Cement	:	105 tonne per year
Sand	:	210 cu.m
Stone chips	:	1260 cu.m

All these raw materials are locally available in the north eastern region. Crushed stone chips below 12mm size would need to be procured from stone crushing units.

### Process:

The ratio of cement, sand and stone chips (metal) in the raw material mix determines the properties of hollow concrete blocks. A ratio of 1.3:8 (cemnt:sand:metal) confers higher strength, while a ratio of 1.5:6 can be employed for normal load bearing construction. The water to cement ratio is usually 0.4:1.

The major process steps are –

- i) First stone and sand are mixed with water and cement is then poured in the mixer.
- ii) Weighing of aggregate.
- iii) Pouring of cement slurry in moulds place on concrete block making machine.
- iv) Ramming of moulds in machine.
- v) Removal of moulds from machine.
- vi) Curing of cast blocks for 21 days.

**Machinery:**

The major equipment required are –

- i) Concrete block making machine : 1 No.
- ii) Ramming moulds of following sizes
  - (a) Cavity 100 x 200 x 400mm
  - (b) Cavity 150 x 200 x 400mm
  - (c) Solid 200 x 200 x 400mm
- iii) Concrete mixer
- iv) Tipping barrows

**Infrastructure:**

The main infrastructure required are –

Shed (thatched)	:	2000 sq.ft.
Open storage area	:	400 sq.ft.
Power	:	10 KW
Water	:	120 ltr/day

**Location:**

The suggested locations are –

Assam	:	Bongaigaon, Tezpur
Meghalaya	:	Shillong
Manipur	:	Imphal
Mizoram	:	Aizawl, Kolasib
Sikkim	:	Dzongri, Brang

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 9.00 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 5.98 lakhs. (Amount Rs lakh)

A. <u>Fixed Capital:</u>		
Land and building		On rent
Machinery		3.46
Misc. Fixed Assets		0.60
Preliminary & pre-op. expenses		<u>0.30</u>
	Total (A)	4.36
B. <u>Working Capital:</u>		
Raw materials	½ month	0.76
Working progress & Finished goods	1 month	1.68
Working expenses	1 month	0.41
Receivable	1 month	<u>1.79</u>
	Total (B)	4.64
	Total (A + B)	9.00

Note: Working capital may be financed as –

Bank Finance	:	3.02
Margin money	:	1.62

**Means of Finance:**

(Rs lakh)

Promoter's contribution(35%)	:	3.15
Term loan(65%)	:	<u>5.85</u>
		9.00

**Operating Expenses:**

The annual operating expenses are estimated at Rs 23.53 lakhs as below:

	Amount (Rs lakh)
Raw materials	
Cement 103 MT @ Rs 5200/MT	: 5.36
Sand 210 cu.m @ Rs 500/cu.m	: 1.05
Stone chips 1260 cu.m @ Rs 700/cu.m	: 8.82
Utilities	: 0.77
Wages & salaries	: 3.68
Rent	: 0.24
Other overheads	: 0.25
Selling expenses @ 10% on annual sales	: 2.16
Interest on Term Loan	: 0.34
Interest on bank finance for working capital	: 0.45
Depreciation	: <u>0.41</u>
	<u>23.53</u>

**Sales Realization:**

Based on a net ex-factory price of Rs 5.50 per block, the annual sales realization is estimated at Rs 24.64 lakhs.

**Profitability:**

Based on the sales realization and the operating expenses, the profit at 70% capacity would be Rs 1.95 lakhs per year. This works out to a return on investment of 62%. The plant would break even at about 45% of the rated capacity.

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs. 9.00 lakhs
Promoter's contribution	Rs 1.53 lakhs
Annual Sales realization	Rs. 24.64 lakhs
Annual Operating Expenses	Rs. 23.53 lakhs
Annual Profit (pre-tax)	Rs. 1.11 lakhs
Pre-tax return on sales	45%
Break-even point	58%
No. of person employed (direct)	18 Nos.

**Machinery Suppliers:**

M/s Minato Shirke Concrete Machinery Pvt. Ltd.,  
72-76 Industrial Estate,  
Mundhwa,  
Pune – 411 036.

## BLEACHING POWDER

### Introduction:

Bleaching powder also known as chlorinated lime is a yellowish-white powder easily soluble in water. The chlorine content of bleaching powder varies from 35 – 40%. If temperature of lime kept between 30°C – 40°C bleaching powder with available chlorine upto 40% is obtained. It is not hygroscopic, if kept under 40°C. It is mainly used as a bleaching agent and as a disinfectant. The major use of bleaching powder is in paper industry, textile industry and oil industry. It is also used in all chemical industry where bleaching is required.

### Market Potential:

The principal consumers of bleaching powder are paper industries, textile industries, oil installation, fertilizer units, tea gardens, PHE, railway, hospitals and municipal corporations. It has been estimated that the requirement of bleaching powder in entire N.E. Region is around 3500 MT per annum.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	:300
Annual Production capacity	: 300 MT bleaching powder.

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The two main raw materials required for the manufacture of bleaching powder are high grade lime and chlorine. Chlorine is available as a by product during the electrolysis of brine. When lime is processed with chlorine it has to be free from hydrogen to avoid explosions in the reaction chamber. The lime quality used is utmost importance. Generally lime which has a CaO content of around 95 % which slakes readily to yield a large volume of slaked lime (over 3 times the volume of CaO used) is employed. It should contain less than 2% of carbonate, 0.5% of iron oxide and no cobalt or manganese. The lime after slaking should be stored for some time before use and its moisture content may be 4%. The raw materials required for the unit are as follows:

Lime	: 400 MT/Yr.
Chlorine	:200T/Yr

### Process:

The process of manufacture of bleaching powder is as per Hasen Clever Process of manufacturing Bleaching Powder.

In this process there are cast iron cylinders operating in series with hydrated lime and chlorine being fed counter current to each other. The cylinders are provided with rotating blades and are arranged horizontally one above the other the rotating blades act both as mixed and conveyors of the inside mass. Hydrated lime is charged at one end of the top most cylinder while chlorine is introduced at the other end of bottom most cylinder with the rotation of the blades there is an intimate mixing of chlorine and lime with simultaneous movement of slaked lime counter current to chlorine gas. The chlorinated lime is discharged from the bottom cylinder and the un-reacted chlorine is recovered from the top cylinder and recycled along with the fresh chlorine. The bleaching powder discharged is stored in cast iron drums and wood barrels. To increase the storage life it is mixed with quick lime to yield tropical bleach containing 25% of available chlorine.

### Machinery:

The major equipment required by the unit for manufacturing bleaching powder are as follows:

Chlorinator with separator, agitator	:	2 Nos.
Reduction gear box	:	2 Nos.
Slip ring motor	:	2 Nos.
Chain & pulley block	:	1 No.
Laboratory equipment:		
Lime storage tank	:	1 No.
Water pump	:	2 Nos.
Vacuum pump with motor	:	2 Nos.

**Location:**

The suitable locations for the project may be –

1. Guwahati, Tinsukia, Tezpur in Assam.
2. Dimapur in Nagaland.
3. Barapani in Meghalaya.
4. Kolasib in Mizoram
5. Agartala in Tripura
6. Naharlagun in Arunachal Pradesh.
7. Gangtok, Pakyong, Mangan, Penlang, Lachung in Sikkim.

**Infrastructure:**

The basic infrastructure required are:

Land	:	3,000 sq.ft.
Building	:	1,500 sq.ft
Power	:	20 KW
Water	:	5,000 Ltr. Per day.
Manpower	:	11 Nos. (Administrative (4), Factory Staff (7),

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 21.10 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 18.30 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		1.00
Building		5.50
Machinery		6.50
Miscellaneous fixed assets		2.00
Preliminary and pre-operative expenses		<u>1.50</u>
	<b>Total (A)</b>	<b>16.50</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	1.75
Finished goods	2 weeks	1.50
Working expenses	1 month	0.60
Receivables	1 week	<u>0.75</u>
	<b>Total (B)</b>	<b>4.60</b>
		=====
	<b>Total (A)+(B)</b>	<b>21.10</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 2.80 lakhs
Margin Money	.....	<u>Rs 1.80 lakhs</u>
		<b>Rs 4.60 lakhs</b>
		=====

**Means of Finance:**

The project cost of Rs 18.30 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs. 6.40 lakhs
Term Loan (65%)	....	<u>Rs 11.90. lakhs</u>
		<b>Rs 18.30 lakhs</b>

**Operating Expenses:**

The annual operating expenses are estimated at Rs 21.45 lakhs (70% capacity utilization) as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials	12.50
2.	Utilities	0.50
3.	Wages & Salaries	4.80
4.	Overheads	0.40
5.	Selling expenses @ 2.5% on annual sales	0.70
6.	Interest on term loan(13.50%)	1.60
7.	Interest on Bank Finance for Working Capital(12.75)	0.40
8.	Depreciation @10%	<u>0.65</u>
		<b><u>21.45</u></b>

**Sales Realization:**

The basis on which average ex-factory sales realization from the sale of bleaching powder at 100% capacity utilization is as follows:

Items	Qty.	Unit Sales Price (Rs)	Annual Sales Price (Rs)
Bleaching Powder	300 MT	12,000/MT	36,00,000

Based on this the annual sales realization is estimated to be Rs 36.00 lakhs and at 70% capacity utilization the same is Rs 25.20 lakhs.

**Profitability :**

Based on the sales realization and the operating expenses, the profit would be Rs 3.75 lakhs per year (70% capacity utilization). This works out to a return on investment of 26%. The plant will break even at 44% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	Rs 21.10 lakhs
Promoter's contribution	Rs 6.40 lakhs
Annual sales realization (70% cap.)	Rs 25.20 lakhs
Annual operating expenses (70% cap.)	Rs 21.45 lakhs
Annual profit (pre-tax)	Rs 3.75 lakhs
Pre-tax Return on Sales	17%
Break Even Point	44%
No.of persons employed	11

**List of Machinery Suppliers:**

1. M/s (Alum.) Mars Design Pvt.Ltd.  
P-142, Lake Road,  
Kolkata – 700 029
2. M/s The Dharamsi Morarji Chemicals Co.Ltd.  
Regent Chamber, (8<sup>th</sup> Floor)  
208, Nariman Point,  
Mumbai – 400 021

**List of Raw Materials Suppliers:**

1. M/s Indo Chem. Pharma Inc.  
Subhash Chambers,  
2<sup>nd</sup> Floor, Kumpta Street,  
Baliard Este,  
Mumbai – 400 001
2. M/s Kotak Chemicals Pvt. Ltd.  
240 Dr. D.N. Road,  
Mumbai – 400 001
3. M/s DCm Chemicals Works,  
P.B. No. 1211, Najafgarh Road,  
New Delhi – 110 015.

## FIRE WORKS/CRACKERS

### Introduction:

Fireworks are very popular in our country. These are extensively used during celebration of various festivals. Fireworks provide a grand finale to most of the functions. Fireworks industry is labour intensive and it involves a degree of skill and specialization. This industry is concentrated in Sivakasi, Ramanand District, Tamil Nadu.

The fireworks industry is governed by the Indian Explosives Act and Rules 1940 and the unit has to comply with all the regulations. A no objection certificate from the District Magistrate for the establishment of such industry has to be obtained and approval for establishment of the factory has to be obtained from the Inspector of Explosives of the region.

Further the entrepreneur has to obtain a license from the District Magistrate for possession and use of sulphur, a license under the Factories Act from the Chief Inspector of the Factories of the State is required. A Municipal License from the Municipal Commissioner for running the factory and a License under the Industries (Development & Regulation) Act 1951 from the Ministry of Industry, Govt. of India, New Delhi, is also required if 50 or more workers are employed with power and 100 or more workers are employed without power.

### Market Potential:

Corresponding with the present economic development and increase in social activities the demand for fireworks items e.g. crackers, sparklers, coloured matches, magnesium pencil, pin-wheels, etc. is continuously growing. Except a few such units in and around Barpeta there is no such manufacturing units existing the N.E. Region. The required fireworks supply for the region mostly comes from Sivakasi in Tamil Nadu. However, Sivakasi being located at a large distance, the supply of fireworks involves additional burden transport costs which resulted in increase of price of fireworks in the region. Besides, too often the supply of fireworks to the region remains irregular. Therefore, a few fireworks manufacturing units can come up particularly in the states of Assam & Tripura in the region.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	:	8 (1 shift)
Working days in a year	:	30
Annual Production capacity	:	Rocket (15,000 Nos.), Letter tree (12,000 Nos.), Cherki (2,700 Nos.), Mater gash (1,500 Nos. with colour with sound 1,800 Nos., white 1,200 Nos.), Phuljari (6,000 Nos.).

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw materials required for manufacturing the above mentioned fireworks items are provided below:

Salt petry	:	4,050 Kg.
Sulphur	:	4,200 Kg.
Carbon	:	1,425 Kg.
Aluminium powder	:	600 Kg.
Berata	:	750 Kg.
Bussa	:	450 Kg.
Nichiya	:	150 Kg.
Gun-powder	:	60 Kg.
Blasting powder	:	30 Kg.
Potash	:	60 Kg.
Cast iron	:	600 Kg.
Phuljari Box	:	6,000 Nos.



In addition to the raw materials, consumables like Bamboo, Jute, Polyethylene paper, cover paper, cover paper, colour paper etc. will be required.

**Process:**

The chemicals which form 'explosive mixtures' have to be properly mixed. The mixture will then be filled in suitable containers which will be closed after inserting the fuse. There are also other processes such as coating, dipping, etc. depending upon the products manufactured. Later the articles are wrapped and packed in cartons. The process of manufacture depends upon the nature of article produced. In case of different products, the manufacturing process is briefly mentioned below:

1. **Rocket:** For preparation of Rocket, initially bamboo cases or boxes are made, which are then covered by jute. Thereafter crushed sulphur and salt petry are put into the cases. A stick also is placed into it.
2. **Letter Tree:** The letter of the letter tree is made of Halpata which is covered by some pieces of cloth. Then sulphur is applied followed by black gun powder.
3. **Cherki:** The cases or boxes of Cherki are made of bamboo, which is then covered by jute. Thereafter crushed sulphur and salt petry are poured into the cases with the help of a stick.
4. **Mater Gash:** Mater gash cases are made of paper. Sulphur and salt petry are crushed separately. These crushed substances are taken mixed with aluminium powder etc. Lastly the mixture is poured into the cases and fully covered.
5. **Phuljari:** The cases of phuljari are made of clay. Salphur, salt petry and carbon are separately crushed. The mixture is then put into the Phuljari case with the help of a stick.

**Machinery:**

The major equipment required by the unit for producing the aforesaid fireworks items are as follows:

Paper cutting machine 32" complete with motor:	No.
Disintegrator 12" complete with 20 HP motor:	No.
Flour Mills 12" complete with 7.5 HP motor:	1 No.
Conical grinders complete with 3 HP motor:	1 No.
Wire straightening & cutting machine:	No.
Strapping operation tools (manual):	3 sets.

**Location:**

The suitable locations for the project may be –

- Guwahati, Tinsukia, Karimganj, Dhubri in Assam.
- Agartala, Dhamanagar in Tripura

The fireworks industry will have to be located on the outskirts of the town or city due to the hazards involved in the manufacture of the goods. The units should therefore posses a van to gather raw materials from the railway station as also to transport finished products.

**Infrastructure:**

The basic infrastructure required are :

Land	:	50,000 sq.ft.
Building	:	18,000 sq.ft.
Power	:	30 KW
Water	:	1,000 Ltr. Per day.
Manpower	:	60 Nos. (Administrative (5), Factory Staff (55),

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 21.60 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 20.50 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		2.00
Building		9.50
Machinery		2.50
Miscellaneous fixed assets		3.50
Preliminary and pre-operative expenses		<u>1.50</u>
	<b>Total (A)</b>	<b><u>19.50</u></b>
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	0.50
Finished goods	weeks	0.60
Working expenses	1 month	1.00
Receivables	1 week	<u>0.50</u>
	<b>Total (B)</b>	<b><u>2.60</u></b>
		=====
	<b>Total (A)+(B)</b>	<b>21.60</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 1.10 lakhs
Margin Money	.....	<u>Rs 1.50 lakhs</u>
		Rs 2.60 lakhs
		=====

#### Means of Finance:

The project cost of Rs 20.50 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	.	Rs 7.20 lakhs
Term Loan (65%)	....	<u>Rs 13.30 lakhs</u>
		<b>Rs 20.50 lakhs</b>
		=====

#### Operating Expenses:

The annual operating expenses are estimated at Rs 18.50 lakhs (70% capacity utilization) as given below:

		<b>(Rs in Lakhs)</b>
1. Raw materials		6.50
2. Utilities		0.70
3. Wages & Salaries		8.50
4. Overheads		0.60
5. Selling expenses @ 1% on annual sales		0.20
6. Interest on term loan (13.50%)		1.80
7. Interest on Bank Finance for working capital (12.50%)		0.15
8. Depreciation @10%		<u>0.25</u>
		<b>18.50</b>
		=====

#### Sales Realization:

The basis on which average ex-factory sales realization from the sale of various fireworks items are based is provided below:

Items	Nos.	Unit Sales Price (Rs)	Annual Sales Price (Rs)
Rocket	15,000	50/-	7,50,000
Latter Tree	12,000	40/-	4,80,000
Cherki	2,700	250/-	6,75,000
Mater Gash:			
i) with colour	1,500	300/-	4,50,000
ii) with sound	1,800	250/-	4,50,000
iii) white	1,200	220/-	2,64,000
Phuljari	6,000	50/-	3,00,000
<b>TOTAL</b>			<b>33,69,000</b>

Based on this the annual sales realization is estimated to be Rs 33.69 lakhs and at 70% capacity utilization the same is Rs 23.60 lakhs.

**Profitability :**

Based on the sales realization and the operating expenses, the profit would be Rs 5.10 lakhs per year (70% capacity utilization). This works out to a return on investment of 25%. The plant will break even at 51% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 21.60 lakhs
Promoter's contribution	:	Rs 7.20 lakhs
Annual sales realization (70% cap.)	:	Rs 23.60 lakhs
Annual operating expenses (70% cap.)	:	Rs 18.50 lakhs
Annual profit (pre-tax)	:	Rs 5.10 lakhs
Pre-tax Return on Sales	:	22%
Break Even Point	:	51%
No.of persons employed	:	60

**List of Machinery Suppliers:**

1. M/s Standard Printing Machinery, Shanti Building, 9, Mount Road, Chennai – 600 002
2. M/s Indo European Trading Co., 10 Sunkurama Chetty Street, Chennai - 600 001
3. M/s Corporated Engineers, 7, Chittaranjan Avenue, Kolkara – 700 013
4. M/s Singhasani Engineering Corpn., 82/25 Factory Area, Kanpur (UP)

**List of Raw Materials Suppliers:**

1. M/s Indian Metal Powder Industries, 5/50 Tardeo A/C Market, Mumbai – 34
2. M/s Bengal Chemical & Pharmaceutical works, 8, Ganesh Chandra Avenue, Kolkata – 700 013
3. M/s Anil Starch Products Ltd., P.B. No. 1062, Anil Road, Ahmedabad – 380 002
4. M/s Metal Powder Co. Ltd., Maravankualam, Pudunagar, P.O: 626709, Thirumangalam, Madurai Dt.

## **GOLD PLATING ON METALLIC OPTICAL FRAMES AND JEWELLERY.**

### **INTRODUCTION**

Gold is extremely corrosion resistant but it may be dissolved by aqua-regia, Potassium cyanide solution and in aqueous solution of the halogens. The metal does not form a coherent oxide film on its surface even at very high temperature and therefore, it has a very low contact resistant.

### **MARKET POTENTIAL**

A number of applications are available for electroplating units. These are :

### **DECORATIVE**

The important uses are in the Jewellery, Cutlery and allied trades, fancy goods such as hand bags, optical frames, power compacts and costumes jewellery. Thin deposit of pure gold may be applied over bright nickel and this can be more economic where wear resistant is required such as in watch cases, pen cases, plumbing fixtures.

### **INDUSTRIAL USES**

The most important industrial use of electroplated gold is in the electronic industries which has grown in the last few years. Because of its unique properties it has become valuable element in the fabrication of micro-electronic and electronic devices such as calculators, transistors and diodes. Larger items such as heat sinks, heater, springs, wires connectors, printed circuits often use gold to protect the tract.

Gold electroplating is mostly carried out to obtain long lasting decorative finishes and in some cases to improve electric contact and conductivity. It is deposited from alkaline or acidic solution. The metal concentration in the bath is low because of the high price of gold. The electrolytes are heated to 50° to 70°C to obtain a reasonable speed of deposition. The cathode efficiency depends upon the metal concentration and the temperature.

The colour of gold deposits depends upon the operating temperature, current density and metal concentration and also on the composition of the electrolyte. Light yellowish coatings are obtained at low current density, low temperature and high metal concentration. A light colour is also obtained by adding nickel salts while red gold is deposited from baths containing copper. The anodes are composed of very pure sheet gold or some times insoluble carbon. In the later case the concentration must be maintained by adding metal salt.

### **PLANT CAPACITY**

<i>Capacity Utilisation</i>	: 70%
Working days/year	: 25 days in a month and 300 days in a year.
Annual production	: 1. Optical Frame - 2 lakh.
1. Gold Jewellery – 600 Sq.mtr.	

### **RAW MATERIALS**

<b>Sl.No.</b>	<b>Particulars</b>	<b>Qty.</b>	<b>Rate(Rs)</b>	<b>Value (Rs)</b>
1.	Pure Gold (24 Carat)	2.400 Kg.	10,00,000/kg.	24,00,000
2.	Potassium Cyanide	72 Kg.	500/Kg.	36,000
3.	Caustic Potash	120 Kg.	100/Kg.	12,000
4.	Potassium Sulphite	60 Kg.	10 /Kg	600
5.	Misc. chemicals		L.S.	71,400
			<b>Total</b>	<b>25,20,000</b>

**Raw material requirement per month : Rs 2,10,000.**

SUGGESTED LOCATION : District H. Q. of NER

## TECHNICAL ASPECTS

### Process of Manufacture :

The gold is mainly electro deposited from gold Potassium Cyanide (GPC) solution which contains a certain quantity of gold.

The articles which are to be plated are cleaned in a suitable hot alkaline soak cleaner and rinsed well. Then the article is pickled and etching is done in the chromic/sulphuric acid for 1 to 2 minutes at 60<sup>o</sup> to 70<sup>o</sup>C.

After etching, the articles are transferred to plating bath where the gold is deposited from the bath. The following sequence of operation is usually followed in gold plating :

Article-Hot clean or degrease-swill-pickle-Swill-Dry-Polished-Aqueous cleaning-Hot clean cathodic-swill-Acid dip, if required – Swill-Final clean cathodic/Anodic-swill-Cyanide dip-swill-Bright Nickle Plating-Washing-Gold Plating-drying.

The articles are hanged in the cathode bar of the plating bath where the plating is done. Anode is made up of the pure gold metal(Electrode). Then DC current is passed between anode and cathode and gold is deposited on the job. The thickness of deposit depends on the time of deposit and current density.

### Preparation of the Bath :

To prepare the gold plating bath, first clean the PVC lined plating tank with hot dilute acid and wash it out and again fill it to one third of its capacity with distilled water. The temperature of the water is raised to 60<sup>o</sup>C and the required weight of potassium gold cyanide and other chemicals are added. The mixture being agitated well until all the salts are dissolved. Now the bath can be filled up to the required final level and the solution must be purified to remove the traces of the metallic impurities.

Many formulations have been prepared so far for the gold plating. However, typical formulation and operating, conditions are given below :

Potassium Cyanide	12 Gms.
Potassium Gold Cyanide	18 Gms.
Caustic Potash	12 Gms.
Potassium Sulphite	5 Gms.
Distilled Water	1 Ltr.
Temperature	120 <sup>o</sup> F. To 180 <sup>o</sup> F.
Current Density	2 – 6 amp/Sq.ft.
Volt	1.5-2 Volts.

Now a days a readymade gold plating salt is available in the market in which the required proportion of the chemicals are mixed which can also be utilized for the purpose.

The unit has been identified as the polluting industry. Hence, 'no objection certificate' has to be taken from the State Pollution Control Board before starting the unit.

## MACHINERY

The major machinery and equipment required are :

Description	Qty. (Nos)
Rectifier single phase DC. Output, 200 Amp. 6 Volts Complete with Meter panel etc.	1

Cleaning/swilling tank	2
MS Cap. 2' x 2' x 2'	
Nickel Plating tank size	
3'x3'x3' MS, PVC Lined	1
with electrode Pipe and immersion heater.	
Etching tank 2'x 2'x 2' MS	
Rubber Lined with lip duct	1
And Blower arrangement.	
Gold plating tank 3' x 3'x 3' MS	
PVC, Lined with lip duct and	1
Blower Arrangement.	
Buffing machine single Phase	
220 to 240 volts RPM 1440 with	1
other accessories.	
Misc. machineres PP	L.S.
Tubes, Jigs etc.	
Pollution Control Equipment	L.S.
Exhaust System etc.	
Enery Conservaytion.	L.S.
Testing Equipment.	L.S.

### INFRASTRUCTURE

The major infrastructural requirement are :

Covered Area	--	75 Sq.mt.
Power	--	7 KW.

### TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs 15.59 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 9.72 lakhs.

			(Rs. in lakh)
<b>A.</b>	<b>Fixed Capital :</b>		
	Land and building.	:	2.00
	Plant and Machinery	:	3.70
	Misc. Fixed Assets.	:	0.60
	Preliminary & Pre-operative expenses	:	<u>0.25</u>
	<b>Total(A) :</b>		<b><u>6.55</u></b>
<b>B.</b>	<b>Working Capital :</b>		
	Raw materials & Packing materials	15 days	1.05
	Finished goods	15 days	1.54
	Working Expenses	1 month	4.50
	Receivables	15 days.	<u>1.95</u>
	<b>Total (B) :</b>		<b><u>9.04</u></b>
	<b>Total(A) + (B) :</b>		<b><u>15.59</u></b>

**Note :** Working capital may be financed as :

Bank Finance (65%)	Rs. 5.87 lakh
Margin Money (35%)	<u>Rs. 3.17 lakh.</u>

**Total :** **Rs.9.04 lakh.**

**B. Capital Cost of Project :**

Fixed Cost	:	Rs. 6.55 lakh
Margin Money for Working Capital.	:	<u>Rs. 3.17 lakh</u>

**Total :** **Rs. 9.72 lakh.**

**MEANS OF FINANCE**

Promoter's contribution (35%)	:	3.40 lakh
Term Loan (65%)	:	<u>6.32 lakh.</u>

**Total :** **9.72 lakh**

**OPERATING EXPENSES**

The annual operating expenses are estimated at Rs 33.86 lakhs as given below :

(Rs. in lakhs)

1.	Raw materials	:	25.20
2.	Packing materials.	:	0.60
3.	Utilities	:	1.50
4.	Wages & Salaries	:	3.00
5.	Rent, Insurance etc.	:	0.30
6.	Other overheads.	:	0.50
7.	Selling expenses @ 2% on annual Sales.	:	0.78
8.	Interest on term loan @ 13.50%	:	0.85
9.	Interest on bank finance for working capital @13%.	:	0.76
10.	Depreciation 10% on M/c.	:	<u>0.37</u>

**Total :** **33.86**

**SALES REALISATION**

Sl. No.	Items	Qty.	Rates(Rs)	Value (Rs)
1.	Optical Frame	2 lakh No.	12/-	24.00
2..	Gold Jewellery	600 Sq.Mtr.	2500	15.00
			<b>Total</b>	<b>39.00</b>

**PROFITABILITY**

Based on the sales realization of Rs 39 lakhs and the operating expenses of Rs 33.86 lakhs, the profit at rated capacity utilization would be Rs 5.14 lakhs per year. This works out to be return on investment of 33%. The unit will break even at about 56% of the targeted annual production.

## HIGHLIGHTS

The major highlights of the project are as follows :

Total capital requirement	Rs. 15.59 lakhs.
Promoter's contribution	Rs. 3.40 lakhs.
Annual Sales realization	Rs. 39.00 lakhs.
Annual operating expenses	Rs. 33.86 lakhs.
Annual Profit (Pre-tax)	Rs. 5.14 lakhs.
Pre-tax return on sales	13%.
Break-Even Point.	56%.
No. of persons employed.	8 Nos.

## SUPPLIERS OF MACHINERY

Addresses of Machinery and Raw Material Suppliers :

1. M/s Bhavi Shilp Industries,  
5/C, Bajaan Industrial Estate,  
Mumbai-400099.  
M/s Komal Agencies,  
4, Shivagi Colony,  
Nr. Darpan Cinema,  
Andheri (East),  
Mumbai-400099
2. M/s Mahavir Chemical Industries,  
Mahavir Estate,  
Behind Shah Chambers,  
Nr. CTM Cross Lane,  
Amraiwadi,  
Ahmedabad.
3. M/s Delta Chemicals,  
6, Delta House,  
J-I, Camazone,  
Goregaon (E),  
Mumbai-400063.
4. M/s Manish Sales Corpn,  
178, Chetan Cloth Market,  
Sarangpur Gate,  
Ahmedabad-380001.
5. M/s Canning Mitra Phoenix Ltd.  
Eucharstic Congress Bldg. III,  
5, Convent Street Mumbai-400039.
6. M/s Grauer & Weel(India) Ltd.,  
Sukh Sagar,  
6<sup>th</sup> Floor, N.S.Patkar Marg,  
Choupati, Mumbai-400007.



## PHENYL MAKING

### INTRODUCTION:

The unit propose to manufacture "Phenyl" which is a fluid disinfectant that destroys pathogenic organism.

### THE PRODUCT:

Phenyl is a strong deodorant and germicide for disinfecting areas covering places like hospital, nursing homes, drains, lavatory, toilets, cowsheds and is extensively used for sanitation purpose. It is notified as a "Drug" under the Drug Act and as such, prior permission and License from Drug Control Authority is necessary for its production.

### MARKET POTENTIAL:

The demand for phenyl is rapidly increasing due to the propagation and awareness regarding importance of hygiene. The market segment of this product can be classified as follows:

- (A. Rural & Urban Household
- (B. Govt. health Sector
- (C. Private health Sector
- (D. Others.

All the above sectors are rapidly increasing in terms of numbers of units in today's time. But there are hardly sufficient number of units manufacturing phenyl covering the demand. Hence, there is a scope of about 10 – 12 units to be set up in north-eastern region.

### SUGGESTED CAPACITY:

A production of 180 Kilolitre per annum is suggested on the following basis –

No. of shift per day	:	1 shift
No. of working hours per shift	:	8 hours
Daily production	:	600 litres.
Operating days/year	:	300 days
Annual production	:	180 Kilolitre.

### INFRASTRUCTURE:

The main infrastructure requirements are –

A. Covered area	:	500 sq.ft.
B. Utilities		
Power	:	1.5 KW
Water	:	300 ltrs/day.

### RAW MATERIALS:

The major raw materials required are cresylic creosote and cresol which are phenol bearing liquids. A typical raw materials composition is furnished below:

	[Weight (%)]
Cresylic cresole (27% phenol)	68.0
Cresol (99% phenol)	7.0
W.W. Rosin	9.0
Soyabean oil	4.0
Caustic soda	2.5
Water	4.5
Castor oil	<u>5.0</u>
	100%

Since none of the raw materials are manufactured in the region, but most of them are available in the local market in Guwahati.

**SUGGESTED LOCATION:**

Suggested locations are –

Assam	:	Guwahati, Nagaon, Jorhat, Tezpur, Dibrugarh Bongaigaon.
Meghalaya	:	Shillong, Tura, Jowai.
Manipur	:	Imphal
Arunachal Pradesh	:	Itanagar, Naharlagun.
Tripura	:	Agartala.
Sikkim	:	Gangtok, Pakyong, Mangan, Penlang, Lachung

**PRODUCTION PROCESS:**

The process of manufacturing phenyl are as follows in step-wise –

- (A. Specification of fatty oils & rosin
- (B. Preparation of soft soap by adding boiling solution of caustic soda to the mixture of fatty oils & rosin.
- (C. Dissolving soft soap in hot water and adding cresol & cresol.
- (D. Filling in bottles.

**FIXED CAPITAL**

		(Rs lakh)
Land and Building		On rent
Plant & Machinery		0.90
Misc. Fixed Assets		0.30
Preliminary & Pre-operative expenses		<u>0.25</u>
	Total	1.75

**CAPITAL COST OF PROJECT:**

A.	Fixed capital	1.75
B.	Working Capital	<u>5.57</u>
	Total	7.32

**WORKING CAPITAL REQUIREMENT:**

		(Rs. Lakh)
1.	Raw materials & consumables ½ month	1.50
2.	Finished goods ½ month	1.60
3.	Receivable ½ month	<u>2.47</u>
	Total	5.57

**COST OF PRODUCTION & PROFITABILITY:**

		(Rs Lakh)
1.	Raw materials & consumables	35.91
2.	Utilities & overheads	0.46
3.	Wages bill	1.89
4.	Other overheads	0.60
5.	Depreciation	0.12
6.	Selling expenses (@ 15% of annual sales)	7.56
7.	Interest on Term Loan	0.16
8.	Interest on Working Capital Loan	<u>0.63</u>
	Total	47.33

**PROFITABILITY:**

Based on the sales realization and the cost of production, the profit at target production would be Rs 3.07 lakh per year. This works out to be a return on sales at 6.09% and the return on investment at 41.93%.

**SALES REALIZATION (Turnover):**

<u>Item</u>	<u>Qty./Annum</u>	<u>Price/Litre (Rs)</u>	<u>Total Realization (Rs Lakh)</u>
Phenyl	1,80,000ltrs/ 180 Kilolitre	28/-	Rs 50.40

**NOTE:** The north east market for phenyl is shared by a few local products and producers located at Kolkata like Kolkata Chemical & others. The detail price per litre ranges from Rs 35/- to Rs 40/- . At ex-factory price of Rs 28/- per litre, the annual sales turn over 180 Kilolitres of Phenyl is estimated at Rs 50.40 Lakh.

**SOURCE OF FINANCE:**

A.	<u>On Fixed Capital:</u>		
	Term Loan	:	Rs 0.44 lakh
	Promoter's contribution	:	<u>Rs 1.31 lakh</u>
	Total		Rs 1.75 lakh
B.	<u>On Working Capital</u>		
	Bank Finance	:	Rs 4.17 lakh
	Promoter's Contribution	:	<u>Rs 1.70 lakh</u>
	Total	:	Rs 5.57 lakh
C.	<u>Total (Term Loan + Working Capital Loan)</u>		
	i) Loan amount(75%)		Rs 5.48 lakh
	ii) Promoter's contribution(25%)		<u>Rs 1.84 lakh</u>
	Total		Rs 7.32 lakh

**Note:** The source of finance has been calculated at 75% as Bank Finance and 25% as promoter's equity.

**MACHINERY:**

The equipment required are –

- (A. Karahi – 500 Litre capacity.
- (B. Bottle washing machine 0.5 HP fitted on M.S. tank.
- (C. Pilfer proof cap. Sealing machine.
- (D. Weighing scale platform type of 300 Kg. capacity.

**COST OF RAW MATERIALS & CONSUMABLES:**

Sl.No.	Materials	Qty. tonne/KL	Price Tonne/KL	Amount (Rs Lakh)
1.	Cresylic cresole	100.80	18,000	18.14
2.	Cresol (99% Phenol)	12.20	44,000	5.37
3.	W.W. Rosin	15.40	29,000	4.47
4.	Castor Oil (Second presence)	9.00	15,500	1.39
5.	Soyabean Oil	6.40	36,000	2.30
6.	Caustic soda	4.5	16,500	0.74
7.	Packing Materials (Bottles, labels etc.)		L.S	3.50

**COST OF UTILITIES & OVERHEADS:**

- |    |  |   |               |
|----|--|---|---------------|
| 1. | Power - 1.5 KW   | : | Rs. 0.16 Lakh |
| 2. | Other overheads<br>(Water – 300 ltrs./day<br>@ Rs 100/day) | : | Rs 0.30 Lakh  |

**MANPOWER REQUIREMENT & WAGES BILL:**

Sl.No.	Category	No.	Salary per person per month (Rs)	Amount (Rs Lakh)
1.	Manager	1	4,000/-	0.48
2.	Salesman	1	3,000/-	0.36
3.	Skilled labour	2	2,500/-	0.60
4.	Semi-skilled labour	2	1,500/-	0.36
5.	Helper	1	700/-	0.09
	TOTAL			1.89

**FINANCIAL RATIOS:**

- |    |                           |   |        |
|----|---------------------------|---|--------|
| 1. | Profit + sales ratio      | : | 6.09%  |
| 2. | Profit + investment ratio | : | 41.93% |
| 3. | Break-Even Point          |   |        |
|    | a) at 100% utilization    | : | 52.55% |
|    | b) at 70% utilization     | : | 36.76% |

**MACHINERY SUPPLIERS:**

1. M/s Oriental Machinery (1919) Pvt. Ltd.  
25, R.N. Mukherjee Road,  
Kolkata – 700 001.
2. M/s Gee Gee Co (P) Ltd.,  
B – 188/2, Savitri Nagar (Malaviya Nagar),  
New Delhi – 17
3. M/s Archana Machinery  
A.T. Road,  
Guwahati (Assam)
4. M/s Kamrup Machinery,  
A.T. Road,  
Guwahai (Assam).

## UTENSILS WASHING POWDER

### Introduction:

Utensils washing powder is used to clean utensils. Previously ash and clay was used for the same purpose but for cleanliness and safety of hands, utensils washing powders growing demand is justified. Utensils washing powder is used not only in cities but in semi-urban and rural areas as well. Apart from established names in this field such as of *Vim*, *Odopic* etc. there are popular local brands as well like *Saibaba*, *Sunny*, *Shivshakti* etc.

### Market Potential:

The use of utensils washing powder is steadily increasing now-a-days all over the country. This increase has been necessitated by extensive use of modern and sophisticated kitchenware like stainless steel utensils, pressure cookers, crockery etc. in many homes in the country. These costly wares are required to be cleaned hygienically and properly without any detrimental effect to the wares. The old conventional methods mostly spoil the wares, which are very costly and difficult to be replaced frequently. The standard of living of the people is increasing, so the use of costly and modern kitchenware will also invariably increase. This is not restricted to metropolitan cities but also to other big towns where the use of costly kitchenware has of late, increased tremendously. The utensils washing powder has good demand both for household and industrial use.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	:	8 (1 shift)
Working days in a year	:	300
Annual Production capacity	:	150 MT Utensils washing powder.

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw material and packing materials required are –

Dolomite powder	:	51,000 Kg.
Acid slurry	:	1,560 Kg.
Soda ash	:	3,000 Kg.
Trisodium phosphate(TSP)	:	2,400 Kg.
Salt	:	1,900 Kg.
Polythene bags	:	144 Kg.
Perfume/Aromatic material	:	L.S.
Jute bags (old)	:	L.S.

### Process:

The technology used in the manufacture of cleaning powder is very simple and the investment is also very low. The ingredients mentioned in the formula given below are just weighed and put in the horizontal powder operated mixer where the raw materials thoroughly mixed for 20 – 30 minutes. The time of mixing can be raised, if necessary. Thoroughly mixed product is weighed and packed in polythene bags.

#### Typical Formula:

Dolomite	:	75%
Acid slurry	:	5%
Soda ash	:	15%
Trisodium phosphate	:	5%

**Machinery:**

The major equipment required by the unit for manufacturing utensils washing powder are as follows:

Horizontal mixer (with motor)	:	1 No.
Socket and chain guard	:	1 No.
Sealing machine for jute bags	:	1 No.
Sealing machine for Polybags	:	1 No.
Weighing balances	:	1 No.

**Location:**

The suitable locations for the project may be –

- Guwahati, Jorhat, Dibrugarh, Silchar in Assam.
- Dimapur in Nagaland.
- Shillong in Meghalaya.
- Agartala in Tripura
- Naharlagun in Arunachal Pradesh.
- Gangtok, Pakyong, Mangan, Penlang, Lachung in Sikkim

**Infrastructure:**

The basic infrastructure required are:

Land	:	2,000 sq.ft.
Building	:	1,000 sq.ft.
Power	:	2 KW
Water	:	1,000 Ltr. Per day.
Manpower	:	8 Nos. (Administrative (3), Factory Staff (5),

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 9.80 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 9.15 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		0.75
Building		4.50
Machinery		0.60
Miscellaneous fixed assets		1.50
Preliminary and pre-operative expenses		<u>1.00</u>
	<b>Total (A)</b>	<b>8.35</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	0.30
Finished goods	2 weeks	0.35
Working expenses	1 month	0.40
Receivables	1 week	<u>0.40</u>
	<b>Total (B)</b>	<b>1.45</b>
		=====
	<b>Total (A)+(B)</b>	<b>9.80</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 0.65 lakhs
Margin Money	.....	<u>Rs 0.80 lakhs</u>
		<b>Rs 1.45 lakhs</b>

**Means of Finance:**

The project cost of Rs 9.15 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 3.20 lakhs
Term Loan (65%)	....	<u>Rs 5.95 lakhs</u>
		<b>Rs 9.15 lakhs</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 9.15 lakhs (100% capacity utilization) as given below:

	<b>(Rs in lakhs)</b>
1. Raw materials	3.60
2. Utilities	0.15
3. Wages & Salaries	3.80
4. Overheads	0.40
5. Selling expenses @ 2.5% on annual sales	0.20
6. Interest on term loan (1.350)	0.80
7. Interest on Bank Finance for Working Capital (12%)	0.10
8. Depreciation @10%	0.10
	<b>9.15</b>
	====

**Sales Realization:**

The basis on which average ex-factory sales realization from the sale of bleaching powder at 100% capacity utilization is as follows:

Items	Qty.	Unit Sales Price (Rs)	Annual Sales Price (Rs)
Utensils washing Powder	150 MT	8,000/MT	12,00,000

Based on this the annual sales realization is estimated to be Rs 12.00 lakhs and at 70% capacity utilization the same is Rs 8,40 lakhs.

**Profitability :**

Based on the sales realization and the operating expenses, the profit would be Rs 2.85 lakhs per year (100% capacity utilization). This works out to a return on investment of 33%. The plant will break even at 60% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 9.80 lakhs
Promoter's contribution	:	Rs 3.20 lakhs
Annual sales realization (100% cap.)	:	Rs 12.00 lakhs
Annual operating expenses (100% cap.)	:	Rs 9.15 lakhs
Annual profit (pre-tax)	:	Rs 2.85 lakhs
Pre-tax Return on Sales	:	26%
Break Even Point	:	60%
No.of persons employed	:	8

**List of Machinery Suppliers:****List of Raw Materials Suppliers:**

1.	M/s Dhopeswar & Sons, A/16-19, Coop. Indl. Estate, Balanagar, Hyderabad – 500 037	1.	M/s Silver Chem Corporation, 2-2-86/87 Joshi Sadan (Telekota), Pan Bazar, Secunderabad -3
2.	M/s Mega Magnitech Engineers (P) Ltd., 6-1-102/3 Padmarao Nagar, Secunderabad – 500 025.	2.	M/s Kripa Chemicals (P)Ltd., 8/9/10 Royal Chambers, S.No.47 Paul Road, Pune – 411 038
3.	M/s Chemi Plants Engg.Co., 53-Guru Govind Indl. Estate, Western Express Highway, Goregaron (East) Mumbai – 400 063	3.	M/s Sanyo Chemicals, 9/22 Garibdas Street, Mumbai - 400003

## WASHING SOAP

### INTRODUCTION

Soap is the traditional washing compound made from oil fats and caustic alkali. One can say a detergent is the one that cleans any surface. Synthetic detergent is quite different from other kinds of detergent. More foam is produced with such kind of detergents, moreover, there is less tension created on the dirty surface yet emulsification takes places and the detergent niters the surface much faster. This is the reason why the cleaning process is fast.

Soap is surfactant used in conjunction with water for washing and cleaning that historically comes in solid bars but also in the form of a thick liquid, especially from soap dispensers in public washrooms. Soap are useful for cleaning because soap molecules.

Hand made soap differs from industrial soap in that, usually, an excess of fat is used to consume the alkali (super fatting), and in that the glycerin is not removed.

### ABOUT THE PRODUCT

Soap is an item of daily necessity as cleaning agent. It is mass consumer item in both rural and urban areas. Soap may be divided into toilet soap and washing soap. In the toilet soap market, new product innovation such as liquid soap, soap-free synthetic detergents and no-wash soap have taken an increasing share of the market from traditional soap bars. While there are large companies manufacturing soap including toilet and washing soap, it is an ideal product to manufacture in SSI sector.

### MARKET POTENTIAL

The soap market is divided into true soaps (a combination of fat and caustic materials) and non-soapy detergents (largely petroleum by-products). The market for soap products largely mature in developed markets and display stagnant growth. The growth potential in developing countries is huge. The per capita consumption of soap in India is about 1.75 kg. per year On this basis, the demand for laundry washing soap in north-eastern region is estimated at 6825 tonne per year. Keeping in view the demand potential and a number of established brand, as well as local manufacturer in the market, there is still shortfall in the existing market. The market for washing soap is encouraging even in remote areas People can now willing to use washing soap as they are recognizing importance of cleaning. A number of soap making unit may come up to meet the shortage in the regional market.

### SUGGESTED CAPACITY

To assessing the proposed plant capacity due consideration is given on availability of raw materials, availability of electricity and market. The annual production of 330 MT is suggested, the production at different capacity utilization per annum will be as follows:

Installed Capacity	1 <sup>st</sup> yr. production @80%	2 <sup>nd</sup> yr. onwards production @90%
Production Capacity 330 Kg per day	880 kg per day	990 kg per day
Production Capacity 330 MT per yr.	264 MT per year	297 MT per year

### Basis:-

No. of working days	=	25 days per month
	=	300 days per year
No. of shifts	=	1 per day.
One shift	=	8 hours
Effective working hours/day	=	6 hours



## INFRASTRUCTURE REQUIREMENT

The main Infrastructural facilities required are:

Covered shed area (processing hall/storages/office)	700 sq. ft.
Power requirement	5 kw.
Water Requirement	1500 ltrs/day

## RAW MATERIALS

The main raw materials required are hard or non-edible oils/fats, caustic soda and sodium silicate. Packing materials/paper wrappers/cartoons are required for packaging. Hard oils includes unrefined rice bran oil, neem oil, cotton seed oil, castor oil, sal seed oil, niger seed oil and minor oils of tree origin. There is some production of sal seed, niger seed and cotton seed in north-east but there is no significant production of their oils. However the hard oils caustic soda, sodium silicates and other consumables are easily available from the local dealer.

## SUGGESTED LOCATION

Washing soap projects should be located near urban or semi urban areas of NEr including sikkim surrounded by available market for raw materials, skilled manpower and as well as market for end product, location for setting up of washing soap making unit should be based on well developed road connectivity.

## RODUCTION PROCESS (STEP WISE)

The major process steps for manufacture of washing soap are:

Heating of oil/fat in a pan at approximately 70<sup>0</sup> C.

Adding of caustic soda solution of required concentration in oil in small quantities at a Time Saponification of the mixture for 1 to 2 hours under hours under controlled heat by gradually thickening and finally assuming the shiny translucent surface, free from froth.

Completion of saponification and boiling.

Addition of builders and fillers like sodium silicate, soap stone, colours and perfumes etc.

Cooling of soap charge and transferring to the cooling frames for setting.

Cutting the bars, stamping and packing.

## PROJECT ECONOMICS

### Total Capital Requirement;

The total capital requirement including fixed capital and working capital is estimated at Rs 14.02 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs.10.92 lakhs.

A.	Fixed Capital	(Rs. in lakhs)
	Land	on rent
	Land Development Cost	1.00
	<u>Building /Civil works:</u>	
	i) Work shed 400 sq.ft	2.40
	ii) Office/Store 300 sq.ft.	1.80
	iii) Toilet/Bathroom/Cemented open space, Drainage facilities etc.	0.80
	Plant & Machinery	1.50
	Misc. Fixed Assets	1.00
	(Water arrangement/Overhead reservoir/pump set/power line connection/water & electrical fittings/office equipment)	
	Preliminary & Pre-operative Expenses	0.50
	Contingency provision	<u>0.40</u>
	Total	<u>9.40</u>

**B. Working Capital:**

Raw materials/consumables & Packing materials	15 days	1.60
Working expenses	1 month	0.50
Finished goods	10 days	1.35
Receivable	7 days	<u>1.17</u>
		<u>4.62</u>

Note: Working capital to be financed as –

Margin Money	:	1.52
Bank Finance	:	<u>3.10</u>
		<u>4.62</u>

**Means of Finance:**

The project cost of Rs.10.92 lakhs may be financed as under:

Promoter's Equity(25%)	:	2.72 Lakhs
Term Loan(75%)	:	<u>8.20 Lakhs</u>
		<u>10.92 Lakhs</u>

**Operating Expenses**

The annual operating expenses are estimated as under:

(Rs. in Lakhs)

Raw materials/consumables	32.00
Packing materials & Printed levels	
Wages & Salaries	5.41
Utilities	0.40
Repair & Maintenance	0.10
Administrative Overhead	0.20
Selling expenses 10% on sales	5.28
Depreciation	0.45
Interest	1.48
	-----
	45.32
	-----

**Sales Turn Over**

The average ex-factory selling price of washing soap is in range of Rs. 20,000 to 21,000 per tonne. Assuming a net ex-factory price of Rs. 20,000 per tonne, the annual sales realization for 264 MT of soap is estimated to be Rs.52.80.

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs. 7.48 lakhs per year. This works out to a return on capital investment of 53 %. The unit would break-even at about 40% of the capacity.

**Break Even Analysis**

<b>A. Variable Cost:</b>	(Rs. in Lakhs)
Raw Materials/Consumables & Packing Materials	32.00
Utilities	0.40
Selling Expenses	5.28
	-----
	37.68
	-----
<b>B. Semi-Variable Cost:</b>	(Rs. in Lakhs)
Wages & Salaries	5.41
Repair & Maintenance	0.10
Administrative Overhead	0.20
Depreciation	0.45
Interest	<u>1.48</u>
	<u>7.64</u>

C.	Sales Realisation:	Rs. 52.80 Lakhs
D.	Contribution	Rs. 15.12 Lakhs
E.	Break Even Point (B/D X 80% (capacity Utilization)	40%

#### Machinery & Equipment:

The main equipment required are –

i)	Soap making pan	:	2 Nos.
ii)	Soap cooling frames	:	4 Nos.
iii)	Cutting machine with table	:	1 No.
iv)	Stamping press with one set block	:	1 No.
v)	Stirrer	:	4 Nos.
vi)	Storage drums, buckets, weighing scales etc.	:	set.

#### Raw Materials/Consumable/Packaging materials (Annually):

Item	Quantity	Rates	Annual (Rs in lakh)
1. Rice Brand Oil	100 MT	19,000/MT	19.00
2. Caustic Soda	50 MT	15,000/MT	7.50
3. Sodium Silicate	100 MT	4,000/MT	4.00
4. Packing materials/ Other consumables	L.S.	--	1.50
<b>TOTAL</b>			<b>32.00</b>

#### Manpower:

Category	No.of person	Salary per person per month(Rs)	Monthly Requirement (Rs )
Supervisor/Accountant	1	6000	6000
Skilled worker	1	6000	6000
Semi-Skilled workers	2	5000	10000
Unskilled workers	3	3000	9000
Sales personnel	2	5000	10000
<b>Total Manpower Cost</b>			<b>41,000</b>

Salary Bill Rs 4.92 Lakhs + Benefits @ 10% annually i.e. Rs 0.49  
Total Annual Salary Bill : Rs 5.41 Lakh.

#### Highlights:

The major highlights of the project are as follows:

Total Capital requirement	Rs.	14.02 lakhs
Promoter's contribution	Rs.	2.72 lakhs
Annual Sales realization	Rs.	52.80 lakhs
Annual Operating Expenses	Rs.	45.32 lakhs
Annual Profit	Rs.	7.48 lakhs
Return on sales		14%
Break-even point		40%
No. of person employed		9

**Address of Plant of Machineries suppliers**

M/S Corporated Engineers,  
7, Chittaranjan Avenue,  
Kolkata

M/S Jai Bharat Engineering works,  
Lal Kuan,  
Delhi.

M/S Munshi & Co Pvt. Ltd.  
181-183 Bapu Khote Street,  
Pydhonie,  
Mumbai-400003

**Supplier of chemicals/consumables**

M/S Assam Essence Supply & Co.  
Laising Mansion (2<sup>nd</sup> Floor)  
A.T. Road,  
Guwahati-781 001

## CATTLE AND POULTRY FEED

### Introduction:

Cattle and poultry feed are mixtures of various ingredients like maize, rice bran, groundnut cake, molasses, soyabean cake, fish meal etc. The composition of cattle/poultry feed can be varied depending on the availability of various raw materials. Balanced feed is essential for proper growth of cattle and chicks and consequently to increase the output of milk, broiler/eggs. The per capita consumption of milk and poultry products is very low in the north eastern region and there is great need to increase the production. Development of dairy and poultry farms is receiving increasing attention considering the nutritional requirements of the population as well as large employment opportunities generated by these activities.

### Market Potential:

The population of cattle in Assam is reported to be about 80 lakhs. Of this, about 10% are stall feed. Based on an average daily requirement of about 2.5 kg of cattle feed per cattle the annual demand for cattle feed for the stall-fed cattle population in Assam is estimated at 7,30,000 tonne (say 7.3 lakhs tonne). Besides, keeping in view the feed requirement for poultry, the total demand for cattle/poultry feed is estimated at about 8 lakh tonne per year.

There is about 10 to 12 cattle/poultry feed units in Guwahati. In addition, there are about 20 units in other parts of the north eastern region. The total installed capacity of cattle/poultry feed unit may be around 1.5 lakh tonne (75% cattle feed and 25% poultry feed) per year. There is, thus, untapped potential in the cattle/poultry feed sector and a number of tiny units can be set up.

### Plant Capacity:

The suggested unit would have a capacity of 900 TPA and produce 630 TPA on the following basis.

Production per hour	:	1/2 tonne
No. of shifts	:	1
Working days per year	:	300
Production capacity	:	900 tonne per annum
– Cattle feed	:	800 tonne per annum
– Poultry feed	:	100 tonne per annum
Capacity utilization:		
Annual production at 70% capacity utilization	:	630 tonne
– Cattle feed	:	560 tonne
– Poultry feed	:	70 tonne

### Raw Materials:

Based on a typical composition of cattle feed and poultry feed, the annual requirement of raw materials will be as follows:

Item	Cattle feed (tonne)	Poultry feed (tonne)	Total (tonne)
Groundnut cake	168	10	178
Wheat bran	56	--	56
Rice bran/extraction/cotton seed bran	140	7	147
Rice polish	--	7	7
Maize	56	20	76
Damaged wheat	56	14	70
Molasses	49	3.5	52.5
Fish meal/bone meal	--	3.5	3.5
Others	36	4	40

Most of the above raw materials are available in the north eastern region. However, their availability is limited. Some of the constituents of the feed such as groundnut cake, wheat bran etc. would need to be procured from outside the region.

**Process:**

The process steps involved in production of cattle feed and poultry feed are –

- i) Grinding of raw materials
- ii) Compounding the powders and mixing with molasses
- iii) Packing.

**Machinery:**

The major equipment required are –

- i) Feed grinder capacity 500 kg/hr. 3 HP motor
- ii) Mixer capacity 500 kg/hr 5 HP motor
- iii) Weighing machine.

**Infrastructure:**

The main infrastructure required are –

Shed	:	600 sq.ft.
Power	:	5 KW
Water	:	300 ltr/day

**Location:**

Keeping in view the demand, the following locations are suggested –

Assam	:	Biswanath Chariali, Tezpur, Tinsukia
Manipur	:	Ukhrul
Arunachal Pradesh	:	Pasighat
Tripura	:	Agartala
Sikkim	:	District headquarters.

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 2.54 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 4.10 lakhs.

		(Amount Rs lakh)	
A.	<u>Fixed Capital:</u>		
	Land and building		On rent
	Machinery		3.50
	Misc. Fixed Assets		0.35
	Preliminary & pre-op. expenses		<u>0.25</u>
		Total (A)	4.10
B.	<u>Working Capital:</u>		
	Raw materials	½ month	0.82
	Packing materials	1 month	0.10
	Finished goods	1 week	0.58
	Working expenses	1 month	0.19
	Receivable	1 month	<u>1.85</u>
		Total (B)	2.54
		Total (A + B )	6.64
Note: Working capital may be financed as –			
	Bank Finance	:	1.90
	Margin money	:	0.64

**Means of Finance:**

The project cost of Rs 6.64 lakhs including margin money for working capital may be financed as under (merely indicative and subject to change by SGFCs/banks).

		(Rs lakh)
Promoter's contribution(25%)	:	1.66
Term loan(75%)	:	<u>4.98</u>
<b>Total</b>		<b><u>6.64</u></b>

**Operating Expenses:**

The annual operating expenses are estimated at Rs 24.33 lakhs as below:

		Amount (Rs lakh)
Raw materials (Refer Annexure)	:	19.47
Packing materials		
12,600 gunny bags @ Rs 10/ each	:	1.26
Utilities	:	0.40
Wages & salaries	:	1.00
Rent	:	0.30
Other overheads	:	0.10
Selling expenses @ 2% on annual sales	:	0.51
Interest on Term Loan	:	0.60
Interest on bank finance for working capital	:	0.29
Depreciation	:	<u>0.30</u>
		<b><u>24.33</u></b>

**Sales Realization:**

Based on the prevailing prices, the annual sales realization is estimated at Rs 25.48 lakhs as follows:

Cattle feed 560 tonne @ Rs 3800/tonne	:	Rs 21.28 lakh
Poultry feed 70 tonne @ Rs 6000/tonne	:	<u>Rs 4.20 lakh</u>
		Rs 25.48 lakh

**Profitability:**

Based on the sales realization and the operating expenses, the profit (before tax) will be Rs 1.15 lakhs per year. This works out to a return on investment of 18%. The plant would break even at about 54% of the rated capacity.

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs. 6.64 lakhs
Promoter's contribution	Rs 1.66 lakhs
Annual Sales realization	Rs. 25.48 lakhs
Annual Operating Expenses	Rs. 24.33 lakhs
Annual Profit (pre-tax)	Rs. 1.15 lakhs
Pre-tax return on sales	45%
Break-even point	54%
No. of person employed (direct)	5 Nos.

**Machinery Suppliers:**

M/s Amic Industries (P) LTd.,  
86 – D, Dr. Suresh Sarkar Road,  
Kolkata

M/s Chotani Electric & Engineering Co. (P) Ltd.  
57, Bombay Samachar Marg,  
Fort,  
Mumbai – 400 023

M/s Hardcase Engineering Works (P) Ltd.,  
Mahatma Gandhi Road,  
Secunderabad – 500 003

M/s James Engineering Co.Ltd.,  
22, Brabourne Road,  
Kolkata -700 001

M/s Metro India,  
Giriza Das Lane,  
Paltan Bazar  
Guwahati – 781 001

M/s Spectoms Engineering Pvt.Ltd.,  
8-A, Symaprosad Mukherjee Road,  
Kolkata – 700 025

## ANNEXURE

### COST OF RAW MATERIALS

Item	Quantity	Rate/tonne (Rs).	Amount (Rs. lakh)
Groundnut cake	178	4500	8.01
Wheat bran	56	1500	0.84
Rice bran extraction	147	1500	2.20
Rice polish	7	1600	0.11
Maize	76	3300	2.51
Damaged wheat	70	1000	0.70
Molasses	52.5	6500	3.41
Fish meal/bone meal	3.5	5400	0.19
Other materials	4.0	L.S.	1.50
TOTAL			19.47



## DISPOSABLE PLASTIC SYRINGES

### INTRODUCTION

Syringe is an instrument which is used for injecting any liquid into the body of human beings or of animals. It consists of a cylinder and an air tight piston. These syringes are used for injecting the medicine into the body or into the nerve of the body which are not possible to take in through mouth or takes much time in mixing with blood.

These syringes are available in sizes varying from 2 C.C. to 100 C.C. Most popular and commonly used sizes are 2 C.C., and 5 C.C. Other sizes are also frequently used but upto lesser extent.

Previously glass was used for making these syringes, the most commonly used glass is Pyrex glass. This glass is shock-resistant, temperature-resistant and has low thermal co-efficient of expansion. But with the development of plastic technology, this glass has been substituted by high grade plastics. Plastic can be used in place of glass for making syringes without any problem.

Plastic syringes are becoming more popular in the medical world due to its lower cost and higher accuracy. To test the efficiency of a syringe, close the tip with a finger and attempt to withdraw the plunger or piston. If the plunger and barrel fit perfectly, the vacuum created in the cylinder will prevent withdrawal of the plunger. The plunger should not be pulled to return rapidly due to the vacuum created or the barrel may be cracked.

With the development of pharmaceutical industries the use of syringes has also developed. About 70% pharmaceutical industries are in small scale sector. The output of the small scale sector covers a wide spectrum of formulations, which includes antibiotics vitamins, anti T.B. drugs, anti-dysentery drugs, anti-rheumatics, haematinies, hormonal preparations, tranquilizers, analgesics and anti-phyreties. Indeed this is a very wider range of product mix. About 50 percent of the above listed drugs are injectable and for that purpose syringes are required.

### SCOPE OF MARKET

Although there are many units in the country engaged in the manufacture of syringes, there are few units in organized sector, who are manufacturing all glass syringes in India. They all are using pyrex glass for the manufacture of syringes. Earlier there were very few units engaged in the manufacture of plastic syringes but with the rapid increase in demand for syringes, the plastic syringes making units are also growing. The main factors governing the demand of plastic syringes are given below:

- a) Expansion in medical facilities resulting in an increase in the number of hospitals, dispensaries etc.
- b) Increased turnover of medical personnel on account of expansion in medical institutes, colleges, training programmes.
- c) Performance for injection treatment to oral treatment because of its greater effectiveness and quicker results.

The use of plastic syringes is becoming more popular due to following advantages.

- i) Plastic syringes have been lower co-efficient of thermal expansion and hence greater accuracy.
- ii) It is unbreakable.
- iii) It is cheaper than any other material syringes.

In India there are several manufacturers of plastic syringes on small scale. Their installed capacity has been described below:

Sizes of Syringes	Installed Capacity (Annual)
2 C.C.	3.3 lacs dozens
5 C.C.	3.0 lacs dozens
10 C.C.	1.9 lacs dozens

The above size of syringes are in general use. There is not any specific installed capacity for other sizes because the manufacturer can produce any size of syringes according to market demand.

The export of Indian make plastic syringes is possible in middle east and other countries. The efforts are also being made by the manufacturers to export their plastic syringes and the favourable response is being received. It indicates that there is good export potential of this product.

Due to the above salient features of plastic syringes, there is a good scope for this industry.

It is technically feasible to manufacture these plastic syringes on small scale basis. The minimum viable capacity of such a unit is 500 syringes per day. The return on the total capacity investment is about 35%. All the raw material and machineries are available indigenously. No foreign collaboration is required for such unit.

**SUGGESTED LOCATION** : Major Centres in NER.

### PLANT CAPACITY

1. 90,000 Nos. Syringes 5 C.C. capacity per annum.
2. 50,400 Nos. syringes of 2 C.C. capacity per annum.
3. 10,600 No.s of syringes of 1 C.C. capacity per annum.

### PROCESS

- i) Plastic materials in the form of granules (Raw materials) is subjected to heat and pressure in an extruder.
- ii) Semi-molten plastic in extruder passed through the nozzle known as parison. Adjustments have to be made in the machine to vary the wall thickness of the parison.
- iii) Suitable parison is then inserted in a female mould and air is blown into parison to force the molten plastic against the sides of the mould.
- iv) The material is then cooled before removal from the mould.
- v) The article is then trimmed to remove flashes.

### MACHINERY

Sl.No.	Particulars	Nos.
1.	Bareel moulding machine	1
2.	Nozzle plate and Cap making machine	2
3.	Piston making machine	1
4.	Blender	1
5.	Grinder	1
6.	Universal printing machine	1
7.	Welding machine	1
8.	Steriliser	1
9.	Other assembling machine	1
10.	Automatic packing machine	1
11.	Moulds and other miscellaneous equipments	
<b>Total amount would be Rs. 6.30 lakhs</b>		

## INFRASTRUCTURE

The main infrastructural facilities required are:

Shed	...	1000 Sq.ft.
Power	...	20 KW
Water	...	1000 Ltr. Per day

## TOTAL CAPITAL REQUIREMENT

The project cost comprising fixed capital and margin money on working capital is Rs 19.43 lakhs.

( Rs. In lakh)		
<b>A. Fixed Capital:</b>		
Land (1000 M <sup>2</sup> )		4.00
Building (Factory, office etc.)		6.00
Machinery		6.30
Miscellaneous fixed assets		1.50
Preliminary and pre-operative expenses		1.20
	<b>Total (A) :</b>	<b>19.00</b>
<b>B. Working Capital:</b>		
Raw materials & packing materials	3 month	1.05
Finished goods	7 days	0.21
Working expenses	1 month	0.18
Receivables	7 Days	0.28
	<b>Total (B)</b>	<b>1.72</b>

Note: Working capital may be financed as:

Bank Finance	...	Rs 1.29 lakh
Margin Money	...	Rs 0.43.lakh
		<b>Rs 1.72 lakh</b>

## MEANS OF FINANCE

The project cost of Rs. 19.43 lakhs including margin money for working capital may be financed as under:

Promoter's Contribution (35%)	...	Rs. 6.80 lakhs
Term Loan (65%)	...	Rs. 12.63 lakhs
		<b>Rs. 19.43 lakhs</b>

## OPERATING EXPENSES

The annual operating expenses are estimated at Rs.8.99 lakhs as given below:

		(Rs. In lakhs)
1.	Raw materials	4.20
2.	Utilities	0.45
3.	Wages & Salaries	1.50
4.	Overheads	0.10
5.	Selling expenses @4% of annual sales	0.47
7.	Interest	1.67
9.	Depreciation @ 10%	0.60
	<b>Total:</b>	<b>8.99</b>

## SALES REALISATION

Sl. No.	Particulars	Annual Sales Realisation (Rs. in lakhs)
1.	Receipt through sale of 90,000 Syringes 5 C.C. capacity @ Rs.9/-each	8.10
2.	50,400 Syringes of 2 C.C. capacity @ Rs.6/- each	3.02
3.	10,600 Syringes of 1 C.C. capacity @ Rs.5/- each	0.53
	<b>Total:</b>	<b>11.65</b>

## PROFITABILITY

Based on the sales realization and the operating expenses, the profit at 100% capacity utilization would be Rs. 2.66 lakhs per year. This works out to a return on investment of 14%. The unit will break even 57% of the rated capacity.

## HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 19.43 lakhs
Promoter's contribution	Rs. 6.80 lakhs
Annual Sales realization	Rs. 11.65 lakhs
Annual operating expenses	Rs. 8.99 lakhs
Annual profit (pre-tax)	Rs. 2.66 lakhs
Pre-tax return on sales	23%
Break-Even Point	57%
No. of persons employed	6

## MACHINERY SUPPLIERS:

1. M/s. Boolani Engineering Corporation,  
402, Prabhadevi Industrial Estate,  
Savarkar road,  
Mumbai- 400 018
2. M/s. Brimco Plastic Machinery Corporation,  
Plot 55, Govt. Kandivli Industrial Estate,  
Kandivli (West),  
Mumbai – 400 067

## FILE COVER AND FILE BOARD

### Introduction:

Stationery includes a host of items like file cover, file board, letter pad, gem clip, alpin. With the increasing need to classify and preserve documents in proper form as well as transfer of papers from one desk to another especially in government offices, the demand for stationery is constantly increasing. Most stationery items are not manufactured in the north east although one or two tiny units manufacturing file board and file cover do exist.

### Market Potential:

There are more than 5000 offices of varying sizes in Assam. Besides, the state governments in the other 7 states are large buyers of stationery. There are several other institutional buyers apart from schools and colleges. Small business establishments also need file cover and file board for preserving official documents.

The government of Assam buys stationery items worth Rs 10 crore every year for its different departments. Assuming that 5% of this is constituted by file boards, file covers and envelopes, the total volume of purchase would be around Rs 50 lakhs. Apart from a few binders who also make file boards and file covers whose volume of production is very low, bulk of the demand is being met by purchases from Kolkata.

Considering a capacity of about 3 lakh pieces per unit, and assuming that 30% of the demand would be met by these units in tiny sector, there is scope for 5 units in the region.

### Plant Capacity:

A typical unit would make file covers, file boards, envelopes and letter pads. File covers will be of two types namely, paper based and plastic based. The suggested product-mix is –

<u>Item</u>	<u>Production Nos/year</u>
File cover (paper)	84,000
File board (paper)	84,000
File cover (plastic)	42,000
Envelopes (assorted type and size)	2,10,000
Letter pad (assorted size)	2,10,000

### Raw Materials:

The raw materials required are mill board sheets, grey board sheets, white and coloured plastic sheets, gumming tape, plastic clips and holders which are available from the open market. The annual requirements are –

Mill board	:	4.3 tonne.
Grey board	:	14,000 sheets
White paper	:	350 kg.
Plastic sheets	:	35,000 sheets
Plan paper	:	175 kg.
Tap	:	700 Nos.

### Process:

The main process steps involved in making file covers, file boards are –

- i) Cutting boards and paper to required size
- ii) Printing of file cover sheet
- iii) Greasing and binding
- iv) Attaching clips and hooks
- v) Packaging in bundles

**Machinery:**

The main equipment required are –

- i) Foot operated board cutter
- ii) Vertical bending machine
- iii) Platform size printing machine
- iv) Gumming machine
- v) Corner cutting machine

**Infrastructure:**

The main infrastructure require are –

Shed	:	750 sq.ft.
Power	:	1 KW
Water	:	Nominal

**Location:**

The suggested locations are –

Assam	:	Guwahati, Tinsukia, Jorhat, Sibsagar, Silchar, Tezpur.
Manipur	:	Imphal,
Nagaland	:	Kohima
Meghalaya	:	Shillong
Arunachal Pradesh	:	Itanagar,
Mizoram	:	Aizawl,
Tripura	:	Agartala
Sikkim	:	Dist. H.Q

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 4.01 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 2.46 lakhs.

			(Amount Rs lakh)
A.	<u>Fixed Capital:</u>		
	Land and building		On rent
	Machinery		1.04
	Misc. Fixed Assets		0.50
	Preliminary & pre-op. expenses		<u>0.30</u>
	Total (A)		1.84
B.	<u>Working Capital:</u>		
	Raw materials and packing materials	1 month	0.61
	Stock of finished goods	1 week	0.21
	Working expenses	1 month	0.10
	Receivable	1 month	<u>1.25</u>
		Total (B)	2.17
		Total (A + B )	4.01
	Note: Working capital may be financed as –		
	Bank Finance	:	1.55
	Margin money	:	<u>0.62</u>
			2.17
<b>Means of Finance:</b>			
	Promoter's contribution(35%)	:	0.86
	Term loan(35%)	:	<u>1.60</u>
			2.46

**Operating Expenses:**

The annual operating expenses are estimated at Rs 11.87 lakhs as below:

	Amount (Rs lakh)
Raw materials	
Mill board 4.20 tonne @ Rs 30,800 per sheet	: 1.29
Card board 14,000 sheets @ Rs 4/- per sheet.	: 0.56
White paper 350 kg. @ Rs 36,400 per tonne.	: 0.13
Plastic sheets 3500 Nos. @ Rs 90/- per sheets	: 3.15
Plain thin paper for envelope 175 kg @ Rs 25/kg.	: 0.04
Fitting @ Rs 1.00 per file for 1,68,000 files	: 1.68
Misc. Tape, gum, ink etc.	: 0.30
Warping paper	: 0.14
Utilities	: 0.12
Wages & salaries	: 1.12
Rent	: 0.24
Other overheads	: 0.29
Selling expenses @ 10% on annual sales	: 2.24
Interest on Term Loan	: 0.19
Interest on bank finance for working capital	: 0.23
Depreciation	: <u>0.15</u>
	<u>11.87</u>

**Sales Realization:**

The ex-factory annual sales realization will be Rs 14.95 lakh as follows:

<u>Item</u>	<u>Annual Production.</u>	<u>Units Price (Rs)</u>	<u>Total Sales (Rs lakhs)</u>
File cover (paper)	84,000	6.00	5.04
File board (paper)	84,000	3.00	2.52
File cover (plastic)	42,000	12.00	5.04
Envelop	2,10,000	60 per 100 pcs	1.26
Letter pad	84,000	100 per 100 pcs	<u>1.09</u>
			14.95

**Profitability:**

Based on the sales realization and the operating expenses, the pre-tax profit at working capacity (70% of rated capacity) would be Rs 3.08 lakhs per year. This works out to a return on investment of 77%. The plant would break even at about 29% of the rated capacity.

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs. 4.01 lakhs
Promoter's contribution	Rs 0.86 lakhs
Annual Sales realization	Rs. 14.95 lakhs
Annual Operating Expenses	Rs. 11.87 lakhs
Annual Profit (pre-tax)	Rs. 3.08 lakhs
Pre-tax return on sales	21%
Break-even point	28%
No. of person employed (direct)	6 Nos.

**Machinery Suppliers:**

M/s Akemo Paper Machiners,  
D-23, NDSE Part-I,  
New Delhi – 110 001

M/s Gunvantrai & Co.,  
41, Tamarind Lane,  
Fort,  
Mumbai – 400 001

M/s Indo –Europe Trading Co. Pvt. Ltd.,  
9, Dalal Street,  
Fort,  
Mumbai – 400 023

M/s Shri Krishna Engineering Works,  
Begumpura Kinkabawali Wadi,  
Near Vanker Road,  
Siang, SURAT

M/s Nagpal Industries  
Bartan Market,  
Sadar Bazar,  
Delhi – 110 006



## GENERAL ENGINEERING WORKSHOP

### INTRODUCTION

General Engineering workshop plays a key role in rural and backward areas. With the stress more on development of rural and backward areas and on agricultural industries, the general engineering workshop will be very useful to undertake maintenance and servicing works and other general and repairing jobs.

It may be noted that as per this scheme, specific products are envisaged. Only job works will be undertaken.

### MARKET POTENTIAL

Most of the general engineering repairing and servicing workshops are established in urban centers and there are few units along highways. Due to industrialization, there has been tremendous growth of various machines/tools etc. For servicing and repairing of these tools, equipment, a general engineering workshop will be very useful. A few such units can be set up in semi-urban areas.

### PROCESS

General machinery work such as turning, drilling, strapping, boring etc.

#### Equipment

Centre lathe height of centres 170 mm and distance

Between centers 1000mm with accessories 1.5 HP

Motor

Welding transformer 300 amps capacity 10 KVA

Pillar drilling machine 20 mm capacity with 1 HP Motor

Power hacksaw 200 mm capacity with 1 HP motor

Double ended bench grinder 200 mm wheel size 0.5 HP Motor

Fitters workbench with vices

Tools, instruments

Erection and electrification

Misc. equipments

#### Raw Materials/Annum

Raw materials and consumables such as oil, grease,

Cotton waste, tools etc.

Rs. 0.50 lakh

Miscellaneous spare parts etc.

Rs. 5.00 lakh

Rs. 5.50 lakh

#### SUGGESTED LOCATION :

Major Centres in NER including Sikkim

#### INFRASTRUCTURE

The infrastructure facilities required are:

Building 1500 Sq. ft.

Power 15 KW

Water 500 ltr./day

## TOTAL CAPITAL REQUIREMENT

The project cost comprising fixed capital and margin money on working capital is Rs. 10.34 lakhs.

		<b>Rs. Lakhs</b>
<b>A. Fixed Capital</b>		
Land		On lease
Building		4.50
Plant and Machinery		3.75
Miscellaneous fixed assets		1.40
Preliminary and pre-operative expenses		<u>0.70</u>
<b>Total (A)</b>		<u>9.85</u>
<b>B. Working Capital</b>		
Raw materials	3 months	1.38
Working expenses	1 month	0.24
Receivables	10 days	<u>0.33</u>
		<u>1.95</u>

### Note:

Working capital may be financed as :

Bank finance	Rs. 1.45 lakh
Margin Money	Rs. 0.49 lakh

### MEANS OF FINANCING

The project cost of Rs. 10.34 lakhs including margin money for working capital may be financed as under (merely indicative and subject to change by SFCs/banks):

Promoter's Contribution (35%)	Rs. 3.62 lakh
Term Loan(65%)	<u>Rs. 6.72 lakh</u>
<u>Rs. 10.34 lakh</u>	

### OPERATING EXPENSES

The annual operating expenses are estimated at Rs. 8.70 lakh as given below:

	<b>Rs. Lakhs</b>
Raw materials and consumable stores	5.50
Utilities	0.50
Wages and salaries	1.50
Other overheads (including business development)	0.30
Selling expenses @ 5% of annual sales	0.50
Interest	0.98
Depreciation	<u>0.40</u>
<u>8.70</u>	

## **ANNUAL RECEIPTS**

Based on prevailing market rates, the annual income is estimated at Rs 10.00 lakhs.

By doing different works, servicing, repairing etc.

1) @ Rs. 4,000/- for 200 days	= Rs. 8,00,000 lakh
2) @ Rs. 2,000/- for 100 days	= <u>Rs. 2,00,000 lakh</u>
	<u>Rs. 10,00,000 lakh</u>

## **PROFITABILITY**

Based on the annual receipts and the estimated operating expenses, the profit before tax is estimated at Rs. 1.30lakh per year. This works out to a pre-tax return on investment of 12%. The unit would break-even at about 57% of the targeted annual output.

## **HIGHLIGHTS**

The major highlights of the project are as follows:

Total capital requirement	Rs. 10.34 lakhs
Equity capital	Rs. 3.62 lakhs
Annual sales realization	Rs. 10.00 lakhs
Annual operating expenses	Rs. 8.70 lakhs
Annual profit (pre-tax)	Rs. 1.30 lakhs
Pre-tax return on sales	13%
Break-even point	57%
No. of persons employed	7

## **Machinery Suppliers**

1. M/s. Jayems Engg.Co., 138,. Thambu Chetty Street, Chennai-600 001.
2. M/s.Armstrog Smith Ltd., 45,Armenian Street, Chennai-600 001.
3. M/s. Shiv Machine Tools, 67, Armenian Street, Chennai-600 001.
4. M/s. Raga & Machine Tools, 91,Thambu Chetty Street, Chennai-600 001.
5. M/s. Vishnu Chakkara Machine Tools, 15, Rances Joseph Street,Chennai-600 001

## HOSIERY ITEMS (COTTON KNITTED GARMENTS)

### Introduction:

Cotton knitted garments are very much in demand especially during the summer seasons, but the demand persist throughout the year in the rural as well as urban sector. The unit proposes to produce men's under garments and vests.

### Market Potential:

Although the production of cotton knitted garments are done by the bigger companies, but due to their higher overhead the prices of the items goes up and becomes out of reach for the lower middle and lower level class of the society. Therefore scope exist for local production unit to cater to this level by carefully planning the production and maintaining the quality. Such unit can come up in the state capitals locating the unit nearer to the market.

### Plant capacity:

Production per day at rated capacity	:	180 Vests, 140 briefs.
Working days/year	:	300
Annual production	:	4500 doz. vests 3500 doz. briefs

### Raw materials:

SI.No.	Items	Qty	Rate(Rs)	Total cost (Rs)
1.	Bleached Knitted cotton cloth of different quality for vest	4350 Kgs.	140/-	6,09,000
2.	Bleached knitted cotton cloth for briefs	2400 Kgs.	120/-	2,88,000
3.	Cotton thread, elastic thread, elastic tape, needles, labels etc.	--	--	60,000
4.	Packing materials	--	--	60,000
	<b>TOTAL</b>			<b>10,17,000</b>

### Process:

The cotton knitted cloth will be purchased in kgs from the mills and brought to the factory. The cloth will be cut to various sizes as per requirement and will be stitched, labeled and packed. It will be sent to various markets.

### Machinery:

The major equipment required are –

SI.No.	Items	NO.	Rate(Rs)	Total cost (Rs)
1.	Over-lock machine	2	3500	7,000
2.	Flat lock sewing machine (of 5 thread)	1	12,500	12,500
3.	Flat lock sewing machine (of 4 thread with folder elastic)	1	8,500	8,500
4.	Flat double chain (of 8 thread)	1	15,000	15,000
5.	Flat lock sewing machine (of 3 thread with folder)	1	9,000	9,000
6.	Colerates cutting machine (Rib cutting machine)	1	6,000	6,000
7.	Take stand integral clutch motor (250 watts)	2	8,000	16,000
8.	Take stand 500 watts single phase integral clutch motor	5	10,000	50,000
9.	Misc. tools and parts	L.S.	5,000	5,000
10.	Sales tax, Transportation & packaging	L.S.	25,000	25,000
	<b>TOTAL</b>			<b>1,54,000</b>

**Infrastructure:**

The major infrastructural requirement are –

Covered area	:	750 sq.ft.
Power	:	3 KW
Water	:	500 ltrs/day

**Location:**

The suggested locations :

Guwahati and other state capitals are ideal locations. So that raw materials and finished products could be easily transported.

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 4,76,140 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 3,12,249.

<b>A. Fixed Capital:</b>			<b>(Rs)</b>
Land & building			Rented
Plant & Machinery			1,54,000
Miscellaneous fixed assets			50,000
Preliminary and pre-operative expenses			<u>20,000</u>
		<b>Total (A)</b>	<b>2,24,000</b>
			=====
<b>B. Working Capital:</b>			
Raw materials & Packing material	15 days	50,850	
Finished goods	15 days	1,05,270	
Working expenses	1 month		16,820
Receivables	15 days		<u>79,200</u>
		<b>Total (B)</b>	<b>2,52,140</b>
			=====
		<b>Total (A)+(B)</b>	<b>4,76,140</b>
Note: Working capital may be financed as:			
Bank Finance	.....		Rs 1,63,891
Margin Money	.....		<u>Rs 88,249</u>
			<b>Rs 2,52,140</b>
			=====
<b>Means of Finance:</b>			
Promoter's contribution (35%)			Rs 1,09,287
Term Loan (65%)			<u>Rs 2,02,962</u>
			<b>Rs 3,12,249</b>
			=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 13,47,129 as given below:

		<b>(Rs in lakhs)</b>
1. Raw materials:		9,57,000
2. Packing materials		60,000
3. Utilities		23,040
4. Wages & Salaries		1,78,800
5. Rent, Insurance		24,000
6. Other overheads		24,000
7. Interest on term loan@ 12.75%		39,812
8. Interest on Bank Finance for Working Capital@12.25%		20,077
9. Depreciation @10% on machinery		<u>20,400</u>
		<b>13,47,129</b>
		=====

**Operating Profit: Rs 2,36,871/-**

**Sales Realization:**

Sl.No.	Particulars	No.	Rate (Rs)	Value (Rs)
1.	Vests of different sizes	4500 doz.	240/doz.	10,80,000
2.	Brief of different sizes	3500 doz.	144/doz.	5,04,000
	TOTAL			15,84,000

**Profitability :**

Based on the sales realization of Rs 15,84,000 and the operating expenses, of Rs 13,47,129 the profit at rated capacity utilization would be Rs 2,36,871 per year. This works out to a return on investment of 14.95%. The plant will break even at 67.54% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 4,76,140
Promoter's contribution	:	Rs 1,09,287
Annual sales realization (70% cap.)	:	Rs 15,84,000
Annual operating expenses (70% cap.)	:	Rs 13,47,129
Annual profit (pre-tax)	:	Rs 2,36,871
Pre-tax Return on Sales	:	14.95%
Break Even Point	:	67.54%
No.of persons employed	:	12

**Suppliers of Machinery**For Cotton Knitted Cloth

- 1) M/s Filaments India Ltd.  
S-66, Greater Kailash,  
New Delhi – 110 005
- 2) M/s Tirupathi Texnit Ltd,  
880 – East Park Road,  
Infront of Ajmal Khan Park,  
Karol Bagh,  
New Delhi – 110 005
- 3) M/s Surya Knitwears Ltd.,  
408, Industrial Area A,  
Ludhiana – 141 003

For Elastic Tapes:

1. M/s United Trading Co.  
Rai Bahadur Road,  
Ludhiana
2. M/s MDR Tapes Pvt. Ltd.,  
4218, Gali Ahiran, Pahadi Dheeraj,  
Sadar Bazar,  
Delhi

## HOT WATER BAGS / ICE BAGS

### Introduction:

Rubber moulded products find wide usage both in industrial applications and also as consumer items. Hot water bags and ice bags are the consumer items required in every day life. The raw materials are available indigenously. The BIS specification for hot water bags is IS -1867-1975 and that of ice bags is IS-3867-1966.

### Market Potential:

At present health sector in the country has been experiencing speedy development. With more and more emphasis on medicine and opening of hospitals/clinics both in urban as well as rural areas, the demand for hot water bags and ice bags is increasing many folds. In addition to the hospital/clinic requirements these items have become essential households' items as a safe guard to diseases that may occur. However, the market for hot water bags and ice bags is quality conscious and "Duck Bags" and "Hicks" are the reputed national brands producing these items. Therefore, it is important that the new units producing hot water bags and ice bags should immediately acquire quality trade mark for these items to enable them make healthy competition in the market.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 300
Annual Production capacity	: Hot water bags: 40,000 Nos. Ice bags: 40,000 Nos.

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The major raw materials and consumables required per month for production of hot water bags & ice bags are as follows. The procurement costs of these materials are to be considered at the prevailing market price.

1. Smoked sheet	:	1,200 kg.
2. Renacit 7	:	6 kg.
3. Precipitated calcium carbonate	:	1,000 kg.
4. Zinc oxide	:	125 kg.
5. Paraffin oil	:	35 kg.
6. Stearic acid	:	12 kg.
7. HSL Beads	:	20 kg.
8. Paraffin wax	:	12 kg.
9. Vulcavit F	:	15 kg.
10. Vulcavit thiuram	:	2 kg.
11. Sulphur	:	15 kg.
12. Colour	:	6 kg.
13. Mould releasing agents silicon emulsions etc.	:	1 kg.
14. Packing materials viz bags and Paper cartons.	:	L.S.

### Process:

A typical composition of rubber compound used for the manufacture of hot water bags/ice bags is as given below:

- |                                    |   |           |  |
|------------------------------------|---|-----------|--|
| 15. Smoked sheet                   | : | 100.0 kg. |  |
| 16. Renacit 7                      | : | 0.5 kg.   |  |
| 17. Precipitated calcium carbonate | : | 80.0 kg.  |  |
| 18. Zinc oxide                     | : | 10.0 kg.  |  |
| 19. Paraffin oil                   | : | 3.0 kg.   |  |
| 20. Stearic acid                   | : | 1.0 kg.   |  |
| 21. HSL Beads                      | : | 1.5 kg.   |  |
| 22. Paraffin wax                   | : | 1.0 kg.   |  |
| 23. Vulcacit F                     | : | 1.2 kg.   |  |
| 24. Vulcacit thiuram               | : | 0.12 kg.  |  |
| 25. Sulphur                        | : | 1.2 kg.   |  |
| 26. Colour                         | : | 0.5 kg.   |  |
27. Curing at 150<sup>0</sup>C for 10 minutes
28. The major process steps involved are as follows:
29. Smoked sheet and Renacit 7 are masticated on mixing mill and left for maturation for a period of 24 hours.
30. Zinc oxide and stearic acid are then mixed to the above compound mix.
31. Then Precipitated Calcium Carbonate, Paraffin oil HSL beads and Paraffin Wax are mixed.
32. Vulcacit F and thiuram are mixed with the compound mix.
33. Lastly sulphur and colour are added and the mass is left to mature for 8 hours.
34. The rubber compound sheets are then prepared and transferred to working table. According to pre-determined size bags, pieces are cut from the sheet with the help of pattern. The two sides of the bags are joined together and cured in a hydraulic press.
- 35. Machinery:**
36. The major equipment required by the unit for producing hot water bags and ice bags are as follows:
- |  |       |        |
|--|-------|--------|
| 37. Rubber mixing mill with chilled cast iron rolls, 12" x 30" fitted with 30 HP motor reduction gear box, complete with all accessories             | 38. : | 1 No.  |
| 39. Hydraulic press 17" x 17" 4 day light, steam heated 30 tonnes max. pressing power, ram stroke 11' hydraulic arrangement operated with 1 HP motor | 40. : | 2 Nos. |
| 41. Hydraulic press 14" x 14" 4 day light, steam heated 20 tonnes max. pressing power, hydraulic arrangement with 1 HP motor                         | 42. : | 1 No.  |
| 43. Steam heated press, hand operated size 14" x 14"   | 44. : | 1 No.  |
| 45. Boiler cross-tube, vertical capacity 300 lbs. per hour   | 46. : | 1 No.  |
| 47. Weighing machine   | 48. : | 1 No.  |
| 49. Testing & quality control equipment  | 50. : | 1 Set  |
| 51. Moulds and hand tools  | 52.   |        |

**Location:**

The suitable locations for the project may be –

- Guwahati in Assam.
- Agartala in Tripura

**Infrastructure:**

The basic infrastructure required are:

Land	:	2,500 sq.ft.
Building	:	1,200 sq.ft.
Power	:	110 Kwh/day
Water	:	2,000 KL. Per day.
Manpower	:	12 Nos. (Administrative (4), Factory Staff (8),



**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 26.70 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 23.60 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		Rented
Building		Rented
Machinery		15.00
Miscellaneous fixed assets		5.00
Preliminary and pre-operative expenses		<u>1.50</u>
	<b>Total (A)</b>	<b>21.50</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Consumables	1 month	1.40
Finished goods	2 weeks	1.00
Working expenses	1 month	0.80
Receivables	2 weeks	<u>2.00</u>
	<b>Total (B)</b>	<b>5.20</b>
		=====
	<b>Total (A)+(B)</b>	<b>26.70</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 3.10 lakhs
Margin Money	.....	<u>Rs 2.10 lakhs</u>
		<b>Rs 5.20 lakhs</b>
		=====

**Means of Finance:**

The project cost of Rs 23.60 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 8.30 lakhs
Term Loan (65%)	....	<u>Rs 15.30 lakhs</u>
		<b>Rs 23.60 lakhs</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 30.60 lakhs (100% capacity utilization) as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials & consumable	15.00
2.	Utilities	0.90
3.	Wages & Salaries	7.00
4.	Overheads	1.20
5.	Selling expenses @ 5% on annual sales	2.50
6.	Interest on term loan (13.50%)	2.10
7.	Interest on Bank Finance for working capital (12.75%)	0.40
8.	Depreciation @10%	<u>1.50</u>
		<b>30.60</b>
		=====

**Sales Realisation:**

The basis on which average ex-factory sales realization from the sale of hot water bags and ice bags at 100% capacity utilization is as follows:

Items	Qty./annum (Nos.)	Unit Sales Price (Rs)	Total Sales Per annum (Rs)
Hot water bags	40,000	50/bag	20,00,000
Ice bags	40,000	40/kg	16,00,000
<b>TOTAL</b>			<b>36,00,000</b>

**Profitability :**

Based on the sales realization and the operating expenses, the profit would be Rs 5.40 lakhs per year (100% capacity utilization). This works out to a return on investment of 25%. The plant will break even at 60% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 26.70 lakhs
Promoter's contribution	:	Rs 8.30 lakhs
Annual sales realization (100% cap.)	:	Rs 36.00 lakhs
Annual operating expenses (100% cap.)	:	Rs 30.60 lakhs
Annual profit (pre-tax)	:	Rs 5.40 lakhs
Pre-tax Return on Sales	:	17%
Break Even Point	:	60%
No.of persons employed	:	12

**List of Machinery Suppliers:**

1. M/S Indian Expeller Works,  
A- Naroda Industrial Estate,  
Naroda,  
Ahmedabad -2
2. M/s West Coast Industries,  
Karithimanahalli,  
Mysore Road, Cross,  
Bangalore- 26
3. M/s Santosh Industries,  
A-1, Sone Udyog.  
Parsi Panchayat Marg,  
Andheri (East)  
Mumbai – 69
4. M/s Modern Engineering Works,  
310, Jogani Industrial Estate,  
541, Senapti Bapat Marg,  
Dadar,  
Mumbai – 28

**List of Support Organization:**

1. M/s ICI India Pvt. Ltd.  
P.O Box No. 310, Crescent House,  
Ballard Este,  
Mumbai
2. M/s Kamani Metallic Oxide Pvt. Ltd.  
Nicols Road, Kamani Chambers,  
Mumbai -1.

## PAPER MADE CARRY BAG

### Introduction:

Paper carry bags are common packaging materials being used by the textiles and cloth merchants, dry cleaners, bakers, grocers, stationers, sweet sellers etc.

### Market Potential:

Establishment of shopping complexes and consumer stores in the rural, semi-urban and urban areas, the demand for paper bags has increased. Due to ban on polythene carry bags the demand has been growing very fast.

### Production Target:

- i) Quantity : 15,00,000 Nos.
- ii) Value : Rs 45.00 lakhs

### Raw materials:

<u>Sl.No.</u>	<u>Particulars</u>	<u>Qty.</u>	<u>Rate</u>	<u>Value (Rs akhs)</u>
i)	Paper in roll	: 1,00,000 Kg.	@ Rs 30/kg	30.00
ii)	Gum	: 300 Kg.	@ Rs 25/kg	0.08
iii)	Printing Ink	: 100 Kg	@ Rs 200/kg	0.20
iv)	Eyelet	: 750 Pkt	@ Rs 50/Pkt.	0.38
v)	Lace	: 75 kg	@ Rs 100/kg	0.07
			<b>Total</b>	<b><u>30.73</u></b>

### Process:

The major process steps are:

- i) Cutting paper into proper size by cutting machine.
- ii) Printing the paper as per need.
- iii) Making bags by automatic bag making machine.  
by folding, pasting, & shearing.
- iv) Punching
- v) Eyelet fitting
- vi) Lace fitting.

### Machinery:

The major machineries & equipment required are –

- i) Automatic paper bag making machine.
- ii) Creasing machine.
- iii) Cutting machine.
- iv) Misc. tools and equipments.

### Infrastructure:

The major infrastructure required are –

Covered Area	:	400 sq.mt.
Power	:	10 HP

### Location:

The suggested locations are –

Assam	:	Guwahati, Jorhat, Tinsuki
Arunachal Pradesh	:	Itanagar,
Meghalaya	:	Shillong,
Nagaland	:	Dimapur,
Tripura	:	Agartala,
Manipur	:	Imphal,
Sikkim	:	Gangtok & other Dist. H. Q.

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 14.73 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 10.88 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land building		Rented
Plant & Machinery		8.00
Miscellaneous fixed assets		0.50
Preliminary and pre-operative expenses		<u>0.30</u>
	<b>Total (A)</b>	<b>8.80</b>
		=====
<b>B. Working Capital:</b>		
Raw materials	15 days	1.54
Finished goods	15 days	1.82
Working expenses	1 month	0.32
Receivables	15 days	<u>2.25</u>
	<b>Total (B)</b>	<b>5.93</b>
		=====
	<b>Total (A)+(B)</b>	<b>14.73</b>

Note: Working capital may be financed as:

Bank Finance (65%)	..	Rs 3,85 Lakhs
Margin Money (35%)	..	<u>Rs 2.08 Lakhs</u>
		<b>Rs 5.93 lakhs</b>
		=====

**Capital Cost of Project:**

1. Fixed Cost	..	Rs 8.80 Lakhs
2. Margin money for W.C.	..	<u>Rs 2.08 Lakhs</u>
		<b>Rs. 10.88 Lakhs</b>
		=====

**Means of Finance:**

Promoter's contribution (35%)		Rs 3.81 lakhs
Term Loan (65%)		<u>Rs 7.07 lakhs</u>
		<b>Rs 10.88 lakhs</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 40.75 lakhs as given below:

		<b>(Rs. lakhs)</b>
1. Raw materials:		30.73
2. Packaging materials		0.35
3. Utilities		0.85
4. Wages & Salaries		3.00
5. Rent, Insurance		0.75
6. Other overheads		0.50
7. Selling expenses @ 5% on annual sales		2.25
8. Interest on term loan @ 13.50%		0.95
9. Interest on Bank Finance for Working Capital @12.75%		0.49
10. Depreciation @10% on m/c		<u>0.88</u>
	<b>Grand Total</b>	<b>40.75</b>
		=====

**Sales Realization:**

Sl.No.	Particulars	Qty.	Rate (Rs)	Value (Rs Lakhs)
1..	Paper Carry Bags	15,00,000	3/-	45.00
	<b>TOTAL</b>			<b>45.00</b>

**Profitability :**

Based on the sales realization of Rs 45.00 lakhs and the operating expenses of Rs. 40.75 lakhs the profit would be Rs 4.25 lakhs per year. This works out to a return on investment of 29%. The plant will break even at 47% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 14.73 Lakhs
Promoter's contribution	:	Rs 3.81 "
Annual sales realization (70% cap.)	:	Rs 45.00 "
Annual operating expenses (70% cap.)	:	Rs 40.75 "
Annual profit (pre-tax)	:	Rs 4.25 "
Pre-tax Return on Sales	:	9%
Break Even Point	:	47%
No.of persons employed	:	6 Nos.

**1. Suppliers of Machinery****2. Suppliers of Raw Materials.**

1.	M/s Industrial Paper Machine (P) Ltd., A-32, Phase-I, Naraina Indl. Area, New Delhi	1.	M/s Punalur Paper Mills, Punalur, Kerala
2.	M/s. Sandhu Mechanical Engg. Works, Industrial Area-A, Plot No. 32, Ludhiana	2.	M/s Star Paper Mills Ltd., Saharanpur UP
3.	M/s Rupal Industries (Regd.), 728, Industrial Area-B, Ludhiana	3.	M/s Rohtas Industries Ltd., Dalmianagar Bihar
4.	M/s. Indo Europe Trading Co., 1980, Chandni Chowk, Delhi- 6	4.	M/s Paper & Pulp Conversion Ltd. 376, Shukrawar Peth, Bihar.
5.	M/s Kohli Industries, 29, Sona Udyog Indl. Estate, Parsi Panchayat Road, Andheri (E), Mumbair	5.	M/s Ballarpur Paper Mills Ltd. Ballarpur, Dist: Chanda, Maharastra.
		6.	M/s Sirpur Paper Mills Ltd. Sirpur, Kaghaznagar Andhra Prades.

## SURGICAL BANDAGE

### INTRODUCTION

Surgical Bandage is the products manufactured from white bleached cotton gauge cloth of suitable quality. Absorbent cotton also known as surgical cotton is used mainly for medical purposes. Raw cotton is purified by a series of processed and rendered hydrophile in character besides rendering it free from other external organic impurities. Purified cotton is made from superior grade cotton fibers. It is bleached to pure white colour, softened and freed from pieces of thread, leaf, shell, fiber, dust and other organic matters. The absorbent cotton when impregnated with capsicum celnrsin and methyl salicylate gives capsicum cotton/wool which can be used as counter irritant and in the treatment of rheumatic producing heat on undamaged skin.

With the establishment of large number of primary hospitals and rural health centers, the demand for surgical bandages has increased considerably. This item is regulated under the drugs Control Act and a manufacturing license under the provision of the act, will have to be obtained. There is good scope for new investment. New entrepreneur may venture in to this field keeping in mind to face the marketing competition.

### ABOUT THE PRODUCT

Surgical bandage are the products manufactured from white bleached cotton gauge cloth of suitable quality. Surgical bandage come in roll form in length of 3 to 4 meter. Surgical Cotton also known as absorbent cotton wool or purified cotton is used at large in surgery as a dressing material for burns & wounds as a cotton bedding for maintaining a uniform temperature in inflamed parts and therefore finds applications in hospitals, dispensaries, nursing homes, etc. Good quality absorbent cotton is characterized by its uniform quality.

### MARKET POTENTIAL

Surgical cotton industry is mainly limited to small and cottage scale units. Bengal Chemical & Pharmaceutical Works Ltd. is the key manufacturer of surgical cotton and bandages. Absorbent cotton also known as surgical cotton is used mainly for medical purposes. There is an increasing demand for this item in India and has good market possibilities. Absorbent cotton or medical cotton is used by Doctor, Dentists, and Industrial safety organizations in Hospitals and for individuals for first aid and home kits. At present the industry consist of around 136 units in the organized sector hence there is a good scope for new investment.

### SUGGESTED CAPACITY

To assessing the proposed plant capacity due consideration is given on availability of raw materials, availability of electricity and market. The annual production of 2000 metre is suggested, the production at different capacity utilization per annum will be as follows:

Installed Capacity	1 <sup>st</sup> yr. production @80%	2 <sup>nd</sup> yr. onwards production @90%
Production Capacity 6 lakh metre per yr.	4.8 lakh metre per yr.	5.4 lakh metre per yr.
Production Capacity 2000 metre per day	1600 metre per day	1800 metre per day

#### Basis:-

No. of working days	=	25 days per month
	=	300 days per year
No. of shifts	=	1 per day.
One shift	=	8 hours
Effective working hours/day	=	7 hours

### INFRASTRUCTURE REQUIREMENT

The main Infrastructural facilities required are:

Covered shed area (processing hall/storages/office)	1000 sq. ft.
Power requirement	10 kw.

## RAW MATERIALS

The main raw material required is bleached cotton gauge cloth of suitable quality, conforming to IS-758/1925. The width of cloth ranges from 2.5 to 15 cm and length from 3 to 4 metre. This type of cloth is not being made in the north eastern region and would need to be procured from the Calcutta market. The annual requirement is estimated at 20 lakh metre for 100 per cent capacity utilization (assuming a loss of 10 per cent due to cutting and rejection). The consumables required are brown paper for packing to the extent of about 15,000 metre per year. The brown paper would be available from local market.

## SUGGESTED LOCATION

In view the market the unit may be set up near by Guwahati surrounded by available market for raw materials, skilled manpower and as well as market for end product, location for setting up surgical cotton bandage making unit should be based in well developed road connectivity. In sikkim, Dist. H. Q. may be considered.

## PRODUCTION PROCESS (STEP WISE)

The process of making bandage cloth involves:-

- Feed bandage cloth into a rolling machine,
- Rolling of cloth,
- Cutting into suitable width,
- Sterilization, and
- Packing.

## PROJECT ECONOMICS

### Total Capital Requirement

The total capital requirement including fixed capital and working capital is estimated at Rs 12.18 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs.10.58 lakhs.

<b>A. Fixed Capital</b>		(Rs. in lakhs)
Land	Own/Lease	
Land Development Cost		0.80
<u>Building /Civil works:</u>		
i)	Work shed 400 sq.ft	2.40
ii)	Office/Store 200 sq.ft.	1.60
iii)	Toilet/Bathroom/Cemented open space, Drainage facilities etc.	0.80
Plant & Machinery		1.98
Misc. Fixed Assets		1.00
	(Water arrangement/Overhead reservoir/pump set/power line connection/water & electrical fittings/office equipment)	
Preliminary & Pre-operative Expenses		0.60
Contingency provision		<u>0.40</u>
		<u>9.58</u>
<b>B. Working Capital:</b>		
Raw materials/ Packing materials	1 month	0.80
Working expenses	1 month	0.42
Finished goods	15 days	0.80
Receivable	7 days	<u>0.56</u>
		<u>2.60</u>

Note: Working capital to be financed as –

Margin Money	:	1.00
Bank Finance	:	<u>1.60</u>
		<u>2.60</u>

**Means of Finance:**

Promoter's Equity(25%)	:	2.58
Term Loan(75%)	:	<u>8.00</u>
		10.58

**Cost of Production & Profitability:**

(Rs in lakh)

Raw material/ packing materials& printed levels: 9.82		
Wages & Salaries	:	4.88
Utilities	:	0.30
Repair & Maintenance	:	0.15
Administrative overhead	:	0.25
Selling expenses 10% on sales		2.40
Depreciation	:	0.58
Interest	:	<u>1.20</u>
		<u>19.58</u>

**Sales Turnover:**

Taking an ex-factory price of Rs.5.00 per metre the annual sales realization for 4.80 lakhs metre would be Rs. 24.00 lakhs.

**Break Even Analysis:**

A.	<u>Variable Cost:</u>	(Rs in lakh)
	Raw material/ packing materials& printed levels	9.82
	Utilities	0.30
	Selling expenses	<u>2.40</u>
		<u>12.52</u>
B.	<u>Semi-Variable Cost:</u>	
	Wages & Salaries	4.88
	Repair & Maintenance	0.15
	Administrative overhead	0.25
	Depreciation	0.58
	Interest	<u>1.20</u>
		<u>7.06</u>
C.	Sales Realization	Rs. 24.00 lakhs
D.	Contribution	Rs. 11.48 lakhs
E.	Break-Even Point B/D x 80%	49%

**Machinery & Equipment:**

The main equipment required are –

Name of the M/C	No. of M/C required	Power required for each M/C	Value (Rs. in lakhs)
Cloth winding M/C	2	1 H.P	0.52
Roll & Bandage making M/C	2	Hand operated	0.12
Bandage Printing M/C	1	1 H.P.	0.40
Baby Electric Boiler	1	1 H.P.	0.48
Autoclave	1	-	0.18
Accessories/other items	-	-	0.10
Sub-total			1.80
Add. : Taxes, Insurance, Transport ,loading/ unloading etc			0.18
<b>Total</b>			<b>1.98</b>



**Raw Materials/packing materials (Annually):**

Item	Quantity	Rates(Rs)	Annual Requirement (Rs in lakh)
1. Bleached Gauge cloth	5.20 lakhs Mtrs.	1.85 /mtr.	9.62
2. Brown/white paper for Packaging	L.S.	-	0.20
<b>TOTAL</b>			<b>9.82</b>

**Manpower:**

Category	No.of person	Salary per person per month(Rs)	Monthly Salary Bill (Rs)
Chemist/Manager	1	8000	8000
Skilled worker	1	6000	6000
Semi-Skilled workers	1	5000	5000
Unskilled workers	2	3000	6000
Sales personnel	2	6000	12000
<b>Total Manpower Cost</b>			<b>37,000</b>

Salary Bill Rs 4.44 Lakhs + Benefits @ 10% annually i.e. Rs 0.44

Total Annual Salary Bill : Rs 4.88 Lakh.

**Utilities:**

Power for Machinery            5 H.P.  
 General Lighting                10 H.P.  
**15 H.P**

**Electricity Bill (annual):**

15H.P X 0.746 Kw X 6 hrs. X 300 days X Rs. 5.50

= Rs. 28,400

Water charges 1000 ltrs. per day (L.S.)

= Rs. 2,000

**Rs. 30,400**

**Say Rs. 0.30 lakhs**

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs.	12.18 lakhs
Promoter's contribution	Rs.	2.58 lakhs
Annual Sales realization	Rs.	24.00 lakhs
Annual Operating Expenses	Rs.	19.58 lakhs
Annual Profit	Rs.	4.42 lakhs
Return on sales		18%
Break-even point		49%
No. of person employed (Direct)		7

**Addresses of Machinery suppliers/manufacturers**

M/s Dadiwala Engg. Works,  
 18, Industrial Area(D.L.F)  
 Najafgarh Road,  
 New Delhi

M/s Reliance Engg. Works.  
 Municipal Industrial Estate  
 2<sup>nd</sup> Floor, Gate no. 60,  
 West Baptist Road  
 Mumbai-400 008.

M/S Honest Machinery Works,  
 Beri-Wali Gali  
 Bara Hindu Road, Delhi.

## FORMAT

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C Market Potential

D Suggested Capacity

E Infrastructure requirement

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J Production process(step wise)

K Project Economics

Capital Cost.

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Sources of Finance

Plant & Machineries

Cost of Raw Materials & Consumables

Cost of Utilities & Overhead

Manpower requirement & wage bill

Profit Sales ratio

Rate of Returns

Break Even Point

Addresses of machinery suppliers/manufacturers

## SYNTHETIC DETERGENT POWDER

### Introduction:

The detergent powder is the most essential commodity being produced all over the country. Starting from low cost variety, the high quality detergent powders are being manufactured and marketed in the country. Main raw material of the powder is vegetable oil which is produced domestically.

### Market Potential:

Due to change in the consumer habit for washing materials, the demand for detergent powder is increasing very fast. People of all income groups can afford to buy the detergent powder because the packing of the material start from Re 1/- to upward. With the rise in rural living standard its market potential is still enormous, as this continues to be the washing material of all sections of the society.

### Manufacturing Process:

The main steps involved in the manufacture of detergent powders are:

a) Neutralization of acid slurry, b) Addition of builders and c) Drying.

The required soda ash and sodium bicarbonate as per formulation is added in the blender and mixing is started by switching on the motor. Acid slurry is slowly added through the opening on the lid of the blender. As the neutralization of the slurry and soda ash progresses the mass becomes brownish in colour and subsequently yellowish. At this point slight water is sprinkled so that the mass becomes nearly white. Other ingredients as per formulations like sodium tripoly phosphate borax, trisodium phosphate carboxy methyl, cellulose, sodium sulphate optical brightner colour etc. are added. Finally the perfume, if required is added and the mass is sieved. Sieved powder is collected on GI tray, mass is spread and kept for drying/ageing. After ageing the powder is packed in polythene bags. For guidance some formulations are tabulated below:

Some general formulations of Detergent Powder:

Sl.No.	Raw Materaisl	Household		Others	
		Premium Gr.	Popular Gr.	Premium Gr.	Popular Gr.
1.	Acid slurry	18	15	16.5	10.0
2.	Soda ash	35	32	55.0	56.0
3.	Sodium meta-silicate	2			
4.	Alkaline Sodium Silicate		7		
5.	Sodium Bicarbonate	10	10		
6.	Sodium sulphate	20	25	6.0	20.0
7.	Sodium tripoly phosphate	10	7	10.0	
8.	Colour	0.10	0.10	0.25	0.15
9.	Perfume	0.10	0.10	0.15	0.15
10.	Optical brightner	0.30	0.20	0.30	0.30
11.	Water	3	2.6	9.8	13.0

### Production Target (Per annum):

Quantity : 30,000 kg.  
Value : Rs 12.00 lakhs

### Raw materials:

As per formulation selected 30,000 kg. @ Rs 20/- per kg.:Rs. 6.00 Lakhs.

### Machinery & Equipment:

The major equipment required are –

- i) Ribbon Blender
- ii) Misc. equipments like sieves, weighing machine, sealing machine, drums, acid slurry etc.

**Infrastructure:**

The major infrastructure requirement are –

Covered Area	:	200 sq.mt.
Power	:	5 KW

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 2.82 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 1.84 lakhs.

<b>A. Fixed Capital:</b>					<b>(Rs in lakh)</b>
Land building					Rented
Plant & Machinery					0.80
Miscellaneous fixed assets					0.40
Preliminary and pre-operative expenses					<u>0.10</u>
				<b>Total (A)</b>	<b>1.30</b>
					=====
<b>B. Working Capital:</b>					
Raw materials & Packing material	15 days	0.30	Finished goods		
	15 days	0.46			
Working expenses	1 month				0.16
Receivables	15 days				<u>0.60</u>
				<b>Total (B)</b>	<b>1.52</b>
					=====
				<b>Total (A)+(B)</b>	<b>Rs. 2.82 Lakhs</b>

Note: Working capital may be financed as:

Bank Finance(65%)	..	Rs 0.98 Lakhs
Margin Money (35%)	..	<u>Rs 0.54 Lakhs</u>
		<b>Rs 1.52 lakhs</b>
		=====

**Capital Cost of Project:**

1. Fixed Cost	..	Rs 1.30 Lakhs
2. Margin money for W.C.	..	<u>Rs 0.53 Lakhs</u>
		<b>Rs. 1.84 Lakhs</b>
		=====

**Means of Finance:**

Promoter's contribution (35%)		Rs 0.64 lakhs
Term Loan (65%)		<u>Rs 1.20 lakhs</u>
		<b>Rs 1.84 lakhs</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 10.44 lakhs as given below:

				<b>(Rs. lakhs)</b>
1. Raw materials:				6.00
2. Packaging materials				0.60
3. Utilities				0.50
4. Wages & Salaries				1.44
5. Rent, Insurance				0.50
6. Other overheads				0.40
7. Selling expenses @ 5% on annual sales				0.60
8. Interest on term loan@ 12.50%				0.15
9. Interest on Bank Finance for Working Capital @12%				0.12
10. Depreciation @10% on m/c				<u>0.13</u>
			<b>Grand Total</b>	<b>10.44</b>
				=====

**Sales Realization:**

Sl.No.	Particulars	Qty.	Rate (Rs)	Value (Rs Lakhs)
1.	Synthetic Detergent Powder	30,000 kg..	40/kg	12.00
	TOTAL			12.00

**Profitability :**

Based on the sales realization of Rs 12.00 lakhs and the operating expenses of Rs. 10.44 lakhs the profit would be Rs 1.56 lakhs per year. This works out to a return on investment of 55%. The plant will break even at 32% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs	2.82 Lakhs
Promoter's contribution	:	Rs	0.64 "
Annual sales realization (70% cap.)	:	Rs	12.00 "
Annual operating expenses (70% cap.)	:	Rs	10.44 "
Annual profit (pre-tax)	:	Rs	1.56 "
Pre-tax Return on Sales	:		13%
Break Even Point	:		32%
No.of persons employed	:		3 Nos

**1. Suppliers of Machinery****2. Suppliers of Raw Materials.**

1.	M/s Ahsan Trading Co., Tilak Road, Ramakrishna Building, Hyderabad-1	1.	M/s Sh Kelkar & Co. Pvt Ltd., Agra Road, Mullund, Mumbai
2.	M/s. Dhopeshwarker Coop. Indl. Estate, Balangar, Hyderabad – 500 037	2.	M/s Indian Turpentine & Rosin Co. Cutter-Back Gunj, Bareilly District U.P
3.	M/s Metal Engineers, CIE Balanagar, Hyderabad -37	3.	M/s MAK Industries, 4-1-7/C, Tilak Road, Opp" Wesley Church Beside SBH, Hyderabad

## TARPAULIN

### Product and Its Uses:

The cotton canvas common proofed Tarpaulins are generally required by D.G.S. & D. & Railways & other government undertakings. This is an essential store for the protection against rains. There is also a good demand for this item in local markets. For trucks & transport vehicles and with the industrialization of the country, its demand is ever increasing. The machinery involved in the manufacture of the item is available indigenously although the Paraffin Wax, the main proofing agent is a bit in short supply.

### Market Potential:

The use of Tarpaulin during rainy season is must for transport vehicles, godowns, shops etc. There is ample market for this store throughout the country. The raw material i.e. canvas cloth and machinery are available from indigenous sources. The water proofing chemicals are also available locally. The demand of the tarpaulin is increasing day by day due to the rising standard of living of the people. There is a good scope of this industry to be developed in SSI Sector.

### Suggested capacity:

A production capacity of 10,00,000 Mtrs. of Tarpaulin per annum has been suggested.

### Process of Manufacture:

All the chemical agents are first mixed and dissolved in the Melting Pan. This melted solution is then transferred in the proofing machine where the Canvas is dipped into it and passed through rollers of the machine for extraction of excess material. After drying of the proofed material, it is cut according to the required sizes of Tarpaulins, stitched and eyelets are fixed before marketing.

### Quality control Standards:

For supply to the government Departments, Tarpaulins must follow the IS: Standard No. 2089/1962, 1972 and 1977. For general use attention must be paid to the proper proofing and stitching of the articles.

### Machinery & Equipment:

Sl.No.	Description	Imp/Ind.	Quantity (Nos.)
1.	Proofing Machine (60"x8" dia)	Ind.	1
2.	Baby boiler 125 lbs. Pressure	Ind.	1
3.	Melting Vessels (6'x3')	Ind.	1
4.	Sewing Machines (45/K/15) Model type	Ind.	25
5.	Hand Ball Press ( ½ ")	Ind.	2
6.	Installation including light points	Ind.	-
7.	Erection of machinery	Ind.	-
8.	Contingency	Ind.	-
9.	Cutting Knife	Ind.	2

### Raw Materials:

Sl.No.	Description	Rate (Rs.)	Value (Rs.in lakh)
1.	83,500 Mtr. of Grey Canvas	@ 25/mtr.	20.88
2.	Sewing Thread 25 Kg (Flax) 5/10	@ 50/Kg	0.01
3.	Paraffin Wax 34 MT	@ 18,000/MT	6.12
4.	Stearate (A.C.) 855 Kg.	@ 30/Kg	0.26
5.	Copper Napthenate 308 Kg.	@ 25/Kg	0.07
6.	Pigment 5.60 MT	@ 2000/MT	0.11
7.	Coal & Fuels	L.S.	0.10
8.	Brass Sheet (for Eyelets) 79,000 Nos.		0.15
9.	Packing materials		1.00
	Total:		28.70
Cost of Raw materials per annum is Rs. 334.40 lakh (Rs 28.70 x 12)			

**Staff & Labour****(a) Administrative & Supervisory:**

Sl.No.	Category	Nos.	Salary/month (Rs.)	Total Wage & Salary (Rs.)
1.	Manager	1	8000	8000
2.	Accountant/Typist	1	4000	4000
3.	Eon cum Watchman	1	3000	3000
	<b>Total (A)</b>			<b>15,000</b>

**(b) Technical (Skilled/Unskilled) :**

Sl.No.	Category	Nos.	Salary/month (Rs.)	Total Wage & Salary (Rs.)
1.	Skilled Workers	15	800/-	12,000
2.	Un-skilled workers	5	600/-	3,000
	Total (B)			15,000
	<b>Total (A) + (B)</b>			<b>30,000</b>
	<b>Total Annual Salary (30,000 x 12)</b>			<b>3,60,000</b>

**Infrastructure:**

The main infrastructural requirements are :

Total Area	: 4000 Sq.ft.
Shed	: 3000 Sq.ft.
Power	: 2 KW
Water	: 500 Ltr./Day

**Location:**

The preferred locations are :

Assam	: Guwahati, Silchar, Tinsukia
Meghalaya	: Shillong
Nagaland	: Dimapur
Manipur	: Imphal

**TOTAL CAPITAL REQUIREMENT**

The total capital requirement including fixed capital and margin money for working capital is estimated at Rs. 27.10 lakhs as follows:

		( Rs. In lakh)	
<b>A.</b>	<b>Fixed Capital:</b>		
	Land 4000 Sq.ft.		5.00
	Shed		6.00
	Machinery		4.80
	Miscellaneous fixed assets		1.85
	Preliminary and pre-operative expenses		1.25
	<b>Total (A) :</b>		<b>18.90</b>
			=====
<b>B.</b>	<b>Working Capital:</b>		
	Raw materials & packing materials	15 Days	14.35
	Finished goods	7 Days	8.70
	Working expenses	7 Days	0.43
	Receivables	7 Days	9.32
	<b>Total (B)</b>		<b>32.80</b>
			=====

Note: Working capital may be financed as:

Bank Finance	...	Rs.24.60 lakh
Margin Money	...	Rs. 8.20 lakh

**Rs. 32.80 lakh**

### MEANS OF FINANCE

The project cost of Rs. 27.10 lakhs including margin money for working capital may be financed as under:

Promoter's Contribution(25%)	...	Rs. 6.78 lakh
Term Loan(75%)	...	Rs. 20.32 lakh

**Rs. 27.10 lakh**

### OPERATING EXPENSES

The annual operating expenses are estimated at Rs. 382.26 lakhs as given below:

	(Rs. In lakhs)
1. Raw materials and packing materials	334.40
3. Utilities	2.20
4. Wages & Salaries	3.60
6. Other overheads	3.80
7. Selling expenses @ 8% on annual sales	32.00
8. Interest	5.20
9. Depreciation	1.06

**382.26**

### SALES REALISATION

By sale of proofer canvas for Tarpaulin of 10,00,000 Mtrs. @ Rs.40/- per mtr. the annual sales realization is estimated at Rs. 400.00.

### PROFITABILITY

Based on the sales realization and the operating expenses, the profit at rated capacity utilization would be Rs. 17.74 lakhs per year. This works out to a return on investment of 65%. The unit will break even at about 51% of the rated capacity.

### HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 27.10 lakhs
Promoter's contribution	Rs. 6.78 lakh
Annual Sales realization	Rs. 400.00 lakhs
Annual operating expenses	Rs. 382.26 lakhs
Annual profit (pre-tax)	Rs. 17.74 lakhs
Annual Pre-tax return on sales	4.5%
Break-Even Point	51%
No. of persons employed	23

### MANUFACTURER/SUPPLIER OF MACHINERY

1. M/s. Ganges Waterproof Works (P) Ltd.  
Bechulal Road,  
Kolkata
2. M/s. Industrial Machinery Corporation,  
1/2 B.T. Road,  
Kolkata
3. M/s. Fancy Engineering Co.,  
5, Bireswar Dhole Lane,  
Kolkata – 35



### **SEWING MACHINE SUPPLIER**

1. M/s. Singer Sewing Machine Co. Ltd.,  
29, Waterloo Street,  
Kolkata-1
2. M/s. Jay Engineering Works Ltd.,  
Acharva Jagadish Bose Road,  
Kolkata – 1
3. M/s. Rita Mechanical Works,  
Industrial Area “B”  
Ludhiana

### **RAW MATERIALS SUPPLIER**

1. Parafin Wax - M/s. Balmer Lawrie I Co.,  
21 N.S. Road,  
Kolkata

#### **Cotton Duck Canvas**

1. M/s. Madura Mills Co. Ltd.,  
Madurai  
Tamilnadu
2. M/s. Swadeshi Cotton Mills Co. Ltd.,  
Kanpur,  
U.P.
3. M/s. Simplex Mills Co. Ltd.,  
30, Clerk Road,  
Jacob Circle,  
Mumbai - 11

#### **Sewing Thread**

1. M/s. J.P. Coats (India) Pvt. Ltd.,  
Korrati,  
District Trichur,  
Kerala.
2. M/s. Modi Spinning & Weaving Co. Ltd.,  
Modinagar,  
U.P.

## WOVEN SACKS FOR FERTILIZERS

### Introduction:

High density polyethylene of HDPE woven sacks have become a versatile commodity in the packaging industry. Introduced for the first time in India during the year 1969 it has over the years replaced the conventional jute bags to a large extent. HDPE sacks have an edge over the conventional jute sacks in the sense that the former are light in weight, strong and attractive. These sacks are immune to the effect of corrosion, decay, moisture, atmosphere, rats, rodents, moths and insects. Being superior in quality and economic to the traditional jute material, these modern sacks have gradually captured a large market for packing fertilizers, chemicals, food stuffs, animal foods, oil cakes etc. Sacks made of HDPE are laminated with low density polyethylene inside it. This gives protection against moisture, air and the material packed cannot penetrate out of the sack.

### Market Potential:

The primary requirement of sacking in India is for packaging of fertilizers, pesticides, chemicals, oil seeds and good grains. The total demand at present is estimated to be around 3000 million sacks per annum. The current sales of HDPE resins for woven sacks is around 20,000 M.T.A. or approximately 154 million sacks. For jute sacking the sales is around 12 lakh tones per annum or 2460million sacks. This still leaves a deficit of about 400 million sacks. Therefore, HDPE sacks rather than competing with jute sacks would on the contrary supplement the existing deficit in sacks.

The main consumer for HDPE woven sacks in the N.E. Region at present is the Hindustan Fertilizer Corporation Ltd., (HFC), Namrup. The HFC (Stage-I, II & III) has at present an installed capacity of around 10,00,000 tonnes of Urea and Ammonia Sulphate per annum. On an average the actual production works out to about 80% of the installed capacity or to about 8,00,000 tonnes of Ammoniam Sulphate and Urea per annum. The fertilizer produce is packed in bags or sacks in the quantity of 50 Kgs. or 0.05 tonnes per bag or sack. On this basis the total requirement of bags or sacks is 160,00,000 Nos. per annum. Out of this requirement more than 50% (80,00,000 Nos.) is HDPE woven sacks.

At present there is no unit manufacturing laminated HDPE woven sacks in Assam or in any part of the N.E. Region. As a result the full requirement of laminated HDPE woven sacks are supplied by manufacturer's from outside the state and region. Thus 2 - 3 Nos. of laminated HDPE woven sacks manufacturing units can come up preferably in the states of Assam and Nagaland.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 300
Annual Production capacity	: 7,00,000 Nos.of laminated HDPE woven sacks.

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw material required for manufacturing laminated HDPE woven sacks is HDPE of GF – 7745 F grades. The other chemicals required are LDPE (18 LA 060 grade) and colour for printing. LDPE is used in the laminating process or in the extraction coating process in providing a lining of LDPE to the woven material. The colour is utilized in printing the name of the unit etc. whose product is to be packed. The annual requirement of HDPE, LDPE and colour at 100% capacity utilization is as follows:

HDPE	:	80,000 Kg.
LDPE	:	23,000 Kg.
Colour	:	Rs. 0.50 per Kg. HDPE requirement.

The major manufacturer of HDPE in the country is M/s Polyolefins Industries Ltd. (PIL), Neville House, Graham Road, Mumbai – 400 001. At present Hoechst Dyes & Chemicals Ltd., Hoechst House, Nariman Point, Mumbai – 400 021 is marketing HDPE, throughout the country through their branch offices at Kolkata, Ahmedabad, Mumbai and New Delhi. LDPE is currently being marketed by the Indian Petrochemicals Corporation Ltd. (IPCL), Baroda through its distributors or authorized agents at Guwahati. Colour is available in major towns of the region.

**Process:**

The process of manufacture of laminated HDPE woven sacks involves four major operations which maintain continuity from the raw material or HDPE granules stage to the finished product stage. These operations or processes are as follows:

- Production of mono-axially oriented high density polyethylene tapes in the extruder and auxiliary equipment.
- Processing of the tapes thus produced in textile equipment and machinery to obtain the woven material or fabric.
- Extrusion coating/laminating the outgoing woven material with low density polyethylene in the extrusion coating/laminating plant.
- Cutting and stitching the laminated woven material into the required sizes and finally printing the name, trade mark etc. of the agency whose product is to be packed on the sack to obtain the final or finished product.

**Machinery:**

The major equipment required by the unit for producing the aforesaid HDPE woven sacks are as follows:

Sl.No.	Particulars
1.	One complete extruder with following accessories: (a) die set (b) air cooling rings (c) air compressor (d) air blower (e) vertical take off tower (f) side slitting unit (g) one septa stands (h) stretching oven (i) stabilizing oven (j) trio stand (k) scrap drum unit (l) equipment control cabinet and (m) 40 station cheese winder.
2.	One extrusion lamination plant with the following accessories: (a) Extruder and control cabinet, (b) Die and die adopter (c) Coating laminating unit and (d) Chilling plant.
3.	Textile equipment consisting of the following: (a) One firm winder (b) one wrapping machine (c) 12 Automatic loom (56" reed space) (d) 1200 bobbins and (e) spares.
4.	Stitching & Printing Equipment consisting of the following: (a) three bag making machines (b) one printing machine (c) one treating machine and (d) one cutting and sealing machine.

**Location:**

The suitable locations for the project may be –

- Guwahati, Dibrugarh in Assam.
- Dimapur in Nagaland.
- Dist. H. Q in Sikkim

**Infrastructure:**

The basic infrastructure required are :

Land	:	20,000 sq.ft.
Building	:	10,000 sq.ft.
Power	:	200 KW
Water	:	5,000 Ltr. Per day.
Manpower	:	35 Nos. (Administrative (5), Factory Staff (30),

### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 46.10 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 42.70 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		1.50
Building		6.50
Machinery		26.00
Miscellaneous fixed assets		4.50
Preliminary and pre-operative expenses		<u>2.00</u>
	<b>Total (A)</b>	<b>40.50</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	2.20
Finished goods	2 weeks	1.75
Working expenses	1 month	0.60
Receivables	1 week	<u>1.10</u>
	<b>Total (B)</b>	<b>5.65</b>
		=====
	<b>Total (A)+(B)</b>	<b>46.10</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 3.45 lakhs
Margin Money	.....	<u>Rs 2.20 lakhs</u>
		<b>Rs 5.65 lakhs</b>
		=====

### Means of Finance:

The project cost of Rs 42.70 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 15.00 lakhs
Term Loan (65%)	....	<u>Rs 27.70 lakhs</u>
		<b>Rs 42.70 lakhs</b>
		=====

### Operating Expenses:

The annual operating expenses are estimated at Rs 39.45 lakhs (70% capacity utilization) as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials	26.40
2.	Utilities	1.00
3.	Wages & Salaries	4.25
4.	Overheads	0.60
5.	Selling expenses @ 2.5% on annual sales	0.80
6.	Interest on term loan (14%)	3.90
7.	Interest on Bank Finance for Working Capital (12.75%)	0.40
8.	Depreciation @10%	<u>2.60</u>
		<b>39.45</b>
		=====

### Sales Realization:

The basis on which average ex-factory sales realization from the sale of Laminated HDPE woven sacks (7.00,000 Nos.) at 100% capacity utilization is as follows:

Items	Unit Sales Price (Rs)	Annual Sales Price (Rs)
Laminated HDPE woven sacks	10/-	70,00,000

Based on this the annual sales realization is estimated to be Rs 70.00 lakhs and at 70% capacity utilization the same is Rs 49.00 lakhs.

**Profitability :**

Based on the sales realization and the operating expenses, the profit would be Rs 9.55 lakhs per year (70% capacity utilization). This works out to a return on investment of 23%. The plant will break even at 43% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 46.10 lakhs
Promoter's contribution	:	Rs 15.00 lakhs
Annual sales realization (70% cap.)	:	Rs 49.00 lakhs
Annual operating expenses (70% cap.)	:	Rs 39.45 lakhs
Annual profit (pre-tax)	:	Rs 9.55 lakhs
Pre-tax Return on Sales	:	21%
Break Even Point	:	43%
No.of persons employed	:	35

**List of Machinery Suppliers:****List of Raw Materials Suppliers:**

1.	M/s Brimco Plastic Machinery Pvt. Ltd., "Brimco House", 55, Govt. Industrial Estate, Charkop, Kandivili (West), Mumbai- 400067: for Extruders.	1.	M/s Hoechst Dues and Chemicals Ltd., Hoechst House, 193, Backbay Reclamation, Nariman Point, Mumbai-400021: for HDPE.
2.	M/s Sunrise Industries, 5 <sup>th</sup> Main Road, Post Box No. 2105, Srirampuram, Bangalore -560021 for Firm Winder machinery.	2.	M/s Indian Petrochemical Corporation Ltd., Badodara, Gujrat: for LDPE
3.	M/s Technopack Engg.Co., C-105m Industrial Estate, Rajajinagar, Bangalore- 560044 for printing, cutting & sealing machine.		
4.	M/s. Shah & Co., Chria Bazaar, Girgaum Road, Mumbai – 400002 for Stitching machine.		

## BAKERY

### INTRODUCTION

Bakery is a traditional activity and occupies an important place in food processing sector. Despite the advent of semi-automatic and automatic bread lines as well as biscuit plant, a fairly sizeable cross-section of the population still prefers fresh bread from bakery. With growing population and nutritional standards as well as demand for fresh, ready-to-eat convenience foods, the demand for bakery items has also increased considerably. Bakery items include bread, biscuit, cakes and pastries and these are consumed both as breakfast and snacks food.

### MARKET POTENTIAL

A bakery unit can be set up in urban, semi-urban as well as in rural areas. Considering a semi-urban centre with a population of one lakh (about 12 such centres in the region) it may be conservatively assumed that about 40% i.e. 40,000 would consume bread and other bakery items regularly. Taking the average family size as 5, the number of such households is estimated at 8,000. Assuming each household to consume on an average  $\frac{1}{2}$  bread loaf of 400 gram per day and 2 biscuit packets (50 pieces) per month, the demand potential for a population of 1 lakh is estimated at 4,000 breads a day and 16,000 biscuit packets per month. Considering a typical unit to produce 600 breads per day and 100 biscuit packets per day there would be scope for about 6 units in a semi-urban area with a population of 1 lakh. Keeping in view the population in the area, entrepreneurs could suitably decide on the locations.

### PLANT CAPACITY

The production basis for a typical unit would be as under:

#### Bread –

Average weight	400 gm
Daily production	600 breads
Working days	300 days
Annual production capacity	1,80,000 loaves i.e. 72 tonne
Capacity utilization	70%
Annual output	50 tonne

#### Biscuit –

Average weight of packet	50 pcs 250 gm
Daily production	100 packets
Working Days	300 Days
Annual production capacity	30,000 packets i.e. 7.5 tonne
Capacity utilization	70%
Annual output	5.25 tonne

### RAW MATERIAL

The major raw materials required are wheat flour, yeast, vanaspati, sugar, milk powder, Yeast is required for bread and not for biscuits. The annual requirement of raw materials is as under:

Wheat flour	36 tonne
Dried yeast	560 Kg
Sugar	2.30 tonne
Ghee	1.75 tonne
Milk powder	126 Kg.
Salt	840 Kg.
Edible colour, flavour, chemical etc.	

### SUGGESTED LOCATION :

Urban & semi urban areas in NER. Rumitek, Dentam, Brang, Somgochoo in Sikkim.

## PROCESS

The main process steps are:

### Bread –

- i) Sifting of flour
- ii) Preparation of suspension
- iii) Preparation of dough by kneading all the ingredients.
- iv) Fermentation of mixed dough
- v) Dividing the dough as per size of loaf to be manufactured.
- vi) Baking
- vii) Cooling, slicing and packing.

### Biscuit –

- i) Mixing of ingredients except *maida* in required proportion in paste form.
- ii) Preparation of dough by mixing with *maida*.
- iii) Placing in biscuit moulding and cutting machine.
- iv) Baking
- v) Cooling and packing.

## MACHINERY

The major equipment required are:

- i) Dough kneader (capacity 50 Kg/charge)
- ii) Flour sifter
- iii) Hand divider (capacity 400 gm. 500 – 800 loaves/hr.)
- iv) Moulding machine (capacity 500 loaves/hr.)
- v) Country type baking oven
- vi) Bread slicer
- vii) Platform weighing scale (100 Kg) and counter scale (2 Kg.)
- viii) Dies (different sizes).
- ix) Vessels, knives, etc.

## INFRASTRUCTURE

The main infrastructural requirement are :

Shed	500 Sq. ft.
Power	1 K.W.
Water	1500 litre/day

## TOTAL CAPITAL REQUIREMENT

The total capital requirement, including fixed capital and working capital is estimated at Rs.4.83 lakhs as follows. Of this, the project cost comprising fixed capital and margin money for working capital is Rs. 4.28 lakhs.

<b>A. Fixed Capital:</b>		(Rs. in lakh)
Land & Building (200 Sq.m.)		On Rent
Plant & Machinery		2.34
Miscellaneous fixed assets		1.50
Preliminary and pre-operative expenses		0.15
	<b>Total (A)</b>	<b>3.99</b>
		=====
<b>B. Working Capital:</b>		
Raw materials	1 Week	0.18
Packing materials	1 month	0.13
Working expenses	1 month	0.16
Receivables	1 Week	0.37
	<b>Total (B)</b>	<b>0.84</b>
		=====
	<b>Total (A) + (B)</b>	<b>4.83</b>

Note: Working capital may be financed as :

Bank Finance	...	Rs. 0.55 lakh
Margin Money	...	Rs. 0.29 lakh
		Rs. 0.84 lakh
		=====

## MEANS OF FINANCE

Promoter's Contribution(35%)	..	Rs. 1.50 lakhs
Term Loan(65%)	...	<u>Rs. 2.78 lakhs</u>
		Rs. 4.28 lakhs
		=====

## OPERATING EXPENSES

The annual operating expenses are estimated at Rs.12.06 lakhs as given below:

### Raw materials –

Wheat flour 36 tonne @ Rs. 14000/tonne	5.04
Milk powder 126 Kg @ Rs.130/Kg	0.16
Sugar 2.30 tonne @ Rs.17/-per Kg.	0.39
Salt 840 Kg @ Rs..4/- per Kg.	0.34
Ghee 1.75 tonne @ Rs. 55/Kg.	0.96
Yeast 560 Kg. @ Rs.40/Kg	0.22
Edible colour, flavour, chemical etc.	0.50
Packing materials & Wrapping paper & Carton(L.S.)	1.50
Utilities (Power &Fuel)	0.60
Wages &Salaries	0.84
Rent	0.48
Other overheads	0.24
Selling expenses @ 5% on annual sales	0.08
Interest on term loan @12%	0.33
Interest on Bank Finance @ 15% for W.C.	0.08
Depreciation @ 10% on M/c.	<u>0.30</u>
	12.06
	=====

## SALES REALISATION

The current market price of a 400 gram bread is Rs. 13.00 while the market price of biscuits is in the range of Rs.45 to Rs.55 per Kg. Providing for margins of distributors/retailers a net price of Rs. 11.00 per 400 gram bread and Rs. 42 per kg of biscuit is considered.

On the above basis, the annual sales realization is estimated at Rs. 15.95 lakhs as under:

Sl. No.	Products	Annual Production	Price (Rs.)	Annual Sales ( in lakhs)
1.	Bread	1,25,000 Nos.	Rs.11/bread	13.75
2.	Biscuits	5.25 tonne	42,000/ tonne	2.20
			<b>Total:</b>	<b>15.95</b>

## PROFITABILITY

Based on the sales realization and the operating expenses, the profit would be Rs. 3.89 lakhs per year. This works out to a return on investment of 81%. The plant would break-even at about 26% of the rated capacity.

## HIGHLIGHTS

The major highlights of the project are as follows:

Capital Requirement	Rs. 4.83 lakhs
Promoter's contribution	Rs. 1.50 lakhs
Annual Sales realization	Rs. 15.95 lakhs
Annual operating expenses	Rs. 12.06 lakhs
Annual profit (pre-tax)	Rs. 3.89 lakhs
Pre-tax return on sales	24%
Break-Even Point	26%
No. of persons employed	4



## **MACHINERY SUPPLIERS**

1. M/s. B.Sen Barry & Co.,  
65/11, Rohtak Road,  
Karol Bagh,  
New Delhi – 110 005
2. M/s. J.C. Das & Brothers,  
33/8, Ananth Nath Dev Lane,  
Belgachia,  
Kolkata – 700 003
3. M/s. Nagpal Brothers,  
2789, Hamilton Road,  
Delhi – 110 006
4. M/s. Oriental Machinery (1919) Pvt. Ltd.,  
25, R.N. Mukherjee Road,  
Kolkata – 700 001
5. M/s. Raylons Metal works,  
J.B. Nagar,  
Kondivitta Lane,  
Andheri,  
Mumbai – 400 059
6. M/s. Gee Gee (Foods & Packaging) Co. (P) Ltd.,  
B – 188/2 Savitri Nagar (Malviya Nagar),  
New Delhi – 110 017

## BEATEN RICE (CHIRA)

### INTRODUCTION:

Beaten rice popularly known as "Chira" in Assam and other States in the north-eastern region is a staple breakfast diet of the rural population. It is a low cost wholesome food and has good nutritional value. Chira can be taken in different forms viz. raw, fried, with curd and therefore has mass appeal.

### MARKET POTENTIAL:

In the north-eastern region, Chira is popular mainly in Assam and Manipur. Of the total estimated population of 385 lakhs in the north-eastern region about 80% i.e. 208 lakhs reside in rural areas. Of this, about 250 lakhs may be considered to be living in Assam and Manipur. Assuming an average per capita consumption of 2 Kg, the total demand for Chira is estimated at 50,000 tonne per year. There are few units making Chira and their production is not adequate to meet the demand of the local population. Bulk of the requirement of Chira is being met from Bihar and West Bengal. Considering the capacity of a typical tiny unit to be 240 tonne per year, there is scope for over 100 such units in Assam and Manipur.

### TARGET PRODUCTION:

An annual production of 240 tonne per year is suggested on the following basis.

Hourly hulling envisaged	:	100 Kg.
Working hours per day	:	8 per shift
Working days per year	:	300 days
Annual production	:	240 Tonnes.

### RAW MATERIALS:

The only raw material required is paddy. Considering a yield of 60% from paddy to beaten rice, the annual requirement of paddy is estimated at 400 tonnes.

### PROCESS

The main process steps are:

- i) Soaking of paddy in water for 2 to 3 days.
- ii) Drying of soaked paddy in heated "Karahi"
- iii) Milling and shelling of dried paddy to rice flakes (Chira)
- iv) Cleaning.

### MACHINERY

The machineries required are a Chira making machine, pans (karahi) shelling machine, trolleys, weighing scale, oven etc. are required.

### INFRASTRUCTURE

The main infrastructural requirement are :

Shed	1000 Sq. ft.
Power	6 K.W.
Water	500 litre/day

### LOCATION:

This unit may be set up in areas where paddy is grown in abundance such as –

- Assam : Nalbari, Tamulpur, Hojai, Nagaon,  
Barpeta, Silchar, Mongoldoi, Dibrugarh  
Manipur : Bishnupur, Churachandpur, Imphal

### TOTAL CAPITAL REQUIREMENT

The total capital requirement, including fixed capital and working capital is estimated at Rs 17.92 lakhs as shown below:

A.	Fixed Capital:	(Rs. in lakh)
	Land : 1000 sq.ft.	Own
	Site Development	0.45
	Building	6.80
	(Working shed 500 sq.ft., raw materials/ Finished product godown, office room 500 sq.ft.)	

Plant & Machinery		2.15
Miscellaneous fixed assets		1.50
Preliminary and pre-operative expenses		<u>0.80</u>
	<b>Total (A)</b>	<b>11.70</b>
=====		
<b>B. Working Capital:</b>		
Raw materials & Packing	1 Week	2.38
Materials		
Finished goods	7 days	0.84
Working expenses	1 month	<u>0.32</u>
	<b>Total (B)</b>	<b>3.54</b>
=====		
	<b>Total (A) + (B)</b>	<b>15.24</b>
=====		
<b>Note:</b>	Working capital may be financed as :	
Bank Finance	...	Rs. 2.65 lakh
Margin Money	...	Rs. 0.89 lakh
		Rs. 3.54 lakh
=====		

#### MEANS OF FINANCE

The capital cost of the project i.e. Rs 15.24 lakhs maybe financed on the following basis.

Term Loan (75%)	...	Rs. 11.43 lakhs
Promoter's Contribution (25%)	..	<u>Rs. 3.81 lakhs</u>
		Rs. 15.24 lakhs
=====		

#### COST OF PRODUCTION:

The cost of production are estimated at Rs 35.77 lakhs as given below:

<b>Raw materials –</b>		
i) Paddy 400 tons @ Rs 7000/per ton		28.00
Packing materials		0.50
(gunny sacks 2500 Nos. (5% wastage)		
Of 100 kg. eafch @ Rs 20/each		
Utilities (Power &Fuel)		1.74
Wages &Salaries		1.92
Administrative overheads		0.25
Selling expenses @ 2% on annual sales0.77		
Interest		1.77
Depreciation @ 10% on M/c.		<u>0.82</u>
		<b>35.77</b>
=====		

#### SALES REALISATION

The prevailing market price for beaten rice (Chira) varies from Rs 17/- to Rs 18/- per kg. An ex-works price of Rs 16/- per kg. has been considered. On this basis the annual sales realization for 240 tons of chira is estimated to be Rs 38.40 lakhs.

#### PROFITABILITY:

Based on the sales realization and the cost of production, the profit at 100% capacity utilization would be = Rs 38.40 – Rs 35.77) = Rs 2.63 lakhs. This works out to a return on investment of 17.25%. The plant would break even at 57% of the annual production envisaged.

#### PLANT & MACHINERY:

Sl.No.	Items	Amount (Rs in lakhs)
1.	Complete set of 100 kg/hr. chira making machine 36" including 20 HP motor, starter, capacitor, ms shaft, V belt etc.	1.45
2.	Boiler, containers for boiling and roasting chiera, etc.	0.15
3.	Weighing Sale	0.12
	Sub-total	1.72
	Packing, forwarding , insurance, taxes extra @ 25%	0.43
	<b>Total</b>	<b>2.15</b>

## UTILITIES:

- i) Power:
- |                    |                  |
|--------------------|------------------|
| Power Load - 20 HP | : 14.92 KW       |
| General lighting   | : <u>5.00 KW</u> |
|                    | 19.92 KW         |
- Say: 20.00 KW
- Daily power requirement = 20.00 x 0.8 x 8 : 128 Kwh  
Therefore annual requirement is 128 x 300 : 38400 Kwh  
The annual cost of power is 38,400 x 4.00/unit : Rs. 1.53 lakh

## ii) Fuel:

Fire woods will be required for heating the boiler. The waste husk which will come out as by product after dehusking the chira can be used as fuel for heating the water required for soaking paddy and also for heating the roaster. A lump sum amount of Rs. 15,000/- has been assumed for this.

## iii) Water :

Water will be required for boiling chira and also for general purpose. Approx. 200 ltr. Water will be required per day. For this a bore well provision should jbe made. The cost will be around Rs.5,000/-annum.

The total annual cost of utilities is –  
= (i) + (ii) + (iii) = Rs. 1,53,400/- + Rs.15,000/- + Rs.25,000/-  
= Rs. 1,73,600/-  
Say Rs. 1,74,000/-

## WAGE & SALAREIES

Sl. No.	Category	Nos.	Salary/Month (Rs.)
1.	Supervisor	1	4,500/-
2.	Workers	5 @ Rs.2000/-	10,000/-
3.	Chowkidar	1	1,500/-
	Total:		16,000/-

Annual Salary Bill = 12 x Rs.16,000/- = Rs.1,92,000/-

## HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	: Rs. 15.24 lakh
Promoter's Contribution	: Rs. 3.81 lakh
Annual Sales Realization	: Rs. 38.40 lakh
Annual operating expenses	: Rs.35.77 lakh
Annual profit (pre-tax)	: Rs. 2.60 lakh
Return on sales	6.85%
Break-Even Point	57%
No. of persons employed	7

## MACHINERY SUPPLIER

1. M/s. Gardener's Corporation,  
6, Doctlor's Lane,  
New Delhi – 110 001
2. M/s. B. Sen Barry,  
65/11, Rohtak Road,  
New Delhi-110 005

- 3 M/s. Batliboi & Co.(P) Ltd.,  
Fort,  
Mumbai-400 001
4. M/s. Raylons Metal Works,  
Ramkrishna Mandir Road,  
J.B. Nagar,  
Mumbai – 400 059
5. M/s. Hindustan Engineering Co.,  
Aban House,  
Rampart Row,  
Fort,  
Mumbai – 400 023
6. M/s. Archana Machinery,  
A.T. Road,  
Guwahati

## CARBONATED SOFT DRINK

### INTRODUCTION:

Carbonated soft drinks constitute the major category in "Aerated Soft Drinks", the other two categories being juice based soft drinks and squash, sharbat and syrup. Various types of soft drinks including orange, lime and lemon based drinks as well as soda water fall in the category of aerated soft drinks. These water drinks consist of water, carbon-di-oxide, colour, additives and preservative. In a tropical country like India, which has oppressive summers, there is substantial market for aerated soft drinks.

### MARKET POTENTIAL:

The all India production of aerated soft drinks is about 900 crore bottles per year, of which the production of carbonated soft drinks is about 70% i.e. 630 crore bottles. The per capita consumption of carbonated drinks is about 4 bottles per year, which is low compared to other developing countries such as Pakistan -13, Bangladesh – 8, Egypt – 3, and extremely low compared to USA where it is 350 bottles. Hence there is considerable potential for consumption to grow. Based on the average per capita consumption of 4 bottles and considering the population of 385 lakhs in the north-eastern region, the demand for aerated water drinks is estimated at 15.40 crore bottles per year. The market is dominated by brands of leading all India companies such as Parle (46%), Pure Drinks (23%), McDowel (7%). Every State has its own local brands which have their own market. There are one or two local brands, which have a limited production. Assuming that local units can get 5% of the market, i.e. 77 lakh bottles and considering the capacity of typical tiny unit of about 15 lakh bottles per year. there appears to be scope for 2 or 3 units to be set up.

### PLANT CAPACITY:

The production basis would be as under :

No.of bottles per crate	.....	24 bottles
Daily production	.....	200 crates
Annual working days	.....	300
Average capacity utilization	.....	60%
Annual production at 60% capacity utilization:		
* Crates	.....	36,000
* Bottles	.....	8.64 lakh.

It is proposed to produce orange, cola, lime/lemon and soda based drinks as given below:

		<b>Crates/Yr.</b>
Orange	.....	18,000
Cola	.....	7,200
Lime/Lemon	.....	7,200
Soda	.....	3,600
		36,000
		=====

### RAW MATERIALS:

The main raw materials required are sugar, citric acid, essence, activated carbon, caustic soda, glucose & carbon-di-oxide and the annual requirements are as under:

Sl.No.	Items	Per year
1.	Sugar	8.4 tonne
2.	Citric Acid	360 kg.
3.	Essence	81 kg
4.	Activated carbon	64.8 kg
5.	Caustic Soda	0.72 tonne
6.	Liquid Glucose	7.2 kg.
7.	Carbon-di-oxide	1432.8 kg.

All the above materials would be available from the open market in Guwahati.

## PROCESS:

The main process steps are:

- i) Making concentrate of sugar, glucose, citric acid, essence and preservatives.
- ii) Feeding the concentrate into dosing machine.
- iii) Releasing the concentrate in each bottle in a required proportion.
- iv) Filling the bottle with treated water.
- v) Placing crown-cork on the bottle and passing through a shaker for proper mixing.

## MACHINERY:

The major equipment required for the production of carbonated soft drinks are:

1.	Automatic bottle filling machine	1 no.
2.	Automatic bottle washing machine	1 no.
3.	Carbonation unit	1 set
4.	Bottle collection & revolving table	1 no.
5.	Steam jacket tank	1 no.
6.	Water treatment plant	1 no.
7.	Baby boiler	1 no.
8.	Refrigeration unit	1 no.
9.	Chain conveyor	1 no.
10.	Other accessories	
11.	Crown corking machine	1 no.

## INFRASTRUCTURE

The main infrastructure facilities required are –

Land	.....	2000 sq.ft.
Shed	.....	1000 sq.ft
Power	.....	20 KW
Water	.....	2000 ltr. Per day.

## LOCATION:

The suggested locations are –

Assam	:	Tinsukia, Silchar and Tezpur
Tripura	:	Agartala.

## TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs 25.07 lakhs as follows:

<b>A.</b>	<b>Fixed Capital:</b>		<b>(Rs in lakh)</b>
	Land		2.00
	Building		6.00
	Machinery		10.20
	Miscellaneous fixed assets		1.25
	Preliminary and pre-operative expenses		<u>1.80</u>
	<b>Total (A)</b>		<b>21.25</b>
			=====
<b>B.</b>	<b>Working Capital:</b>		
	Raw materials & packing materials (Including bottle crates)	1 month	1.18
	Finished goods	1 week	0.73
	Working expenses	1 month	0.93
	Receivables	1 week	<u>0.98</u>
	<b>Total (B)</b>		<b>3.82</b>
			=====
	<b>Total (A)+(B)</b>		<b>25.07</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 2.86 lakhs
Margin Money	.....	<u>Rs 0.96 lakhs</u>
		Rs 3.82 lakhs
		=====

#### MEANS OF FINANCE:

The project cost of Rs 25.07 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (25%)	Rs 6.27 lakhs
Term Loan (75%)	<u>Rs 18.80 lakhs</u>
	Rs 25.07 lakhs
	=====

#### OPERATING EXPENSES

The annual operating expenses are estimated at Rs 34.00 lakhs as given below:

	<b>(Rs in lakhs)</b>
1. Raw materials (refer annexure)	14.15
2. Utilities and packing materials	3.00
3. Wages & Salaries	5.50
4. Overheads	2.70
5. Selling expenses @10% on annual sales	4.21
6. Interest on term loan	2.26
7. Interest on Bank Finance for working capital	0.43
8. Depreciation @10%	<u>1.75</u>
	34.00
	=====

#### SALES REALISATION:

The market price of a Gold Spot, Thumps Up etc. is in the range of Rs 15.00 to 16.00 per bottle. Providing for distributors/dealers commission, sales tax etc. the ex-factory realization would be about Rs 10.00 to 10.50 per bottle. Considering that a tiny unit would have to face competition from premier brands, a market penetration price of Rs 5/- per bottle i.e. Rs 120/- per crate is considered for orange, lime, lemon drinks and Rs 96/- per crate for soda water. On this basis, the annual sales realization is estimated at Rs 42.12 lakhs as under:

Name	No.of Crates	Rs. per Crate	Amount (Rs in lakhs)
Orange	18,000	120/-	21.60
Cola	7,200	120/-	8.64
Lime/Lemon	7,200	120/-	8.64
Soda Water	3,600	90/-	3.24
Total			42.12

#### PROFITABILITY:

Based on the sales realization and the operating expenses, the profit at 60% capacity utilization would be Rs 8.12 lakhs per year. This works out to a return on investment of 32%. The plant will break even at 55% of the rated capacity.

#### HIGHLIGHTS

The major highlights of the project are as follows:

Total capital requirement	:	Rs 25.07 lakhs
Promoter's contribution	:	Rs 6.27 lakhs
Annual sales realization	:	Rs 42.12 lakhs
Annual operating expenses	:	Rs 34.00 lakhs
Annual profit (pre-tax)	:	Rs 8.12 lakhs
Pre-tax Return on Sales	:	19%
Break Even Point	:	55%
No.of persons employed	:	15



**MACHINERY SUPPLIERS:**

1. M/s Larsen & Tourbro Ltd.,  
Ballard Estate,  
P.B. No. 278,  
Duggal Road,  
Mumbai – 1
2. M/s Rita Agencies,  
No. 3, 1 Cresuant Road,  
Park Road,  
Gandhi Nagar,  
Chennai – 20.
3. M/s Mohan Otmann & Herbert Ltd.,  
1-79 Okhla Industrial Area  
Phase-2,  
New Delhi – 20

**ANNEXURE****COST OF RAW MATERIALS AND PACKING MATERIALS**

<b>Sl. No.</b>	<b>Name of Raw Materials</b>	<b>Quantity</b>	<b>Rate (Rs)</b>	<b>Total Amount (Rs in lakhs)</b>
1.	Sugar	8.40 T	18000/T	1.51
2.	Citric Acid	360 Kg	145/Kg	0.52
3.	Essence	81 Kg	900/Kg	0.73
4.	Activated Carbon	65 Kg	70/Kg	0.05
5.	Caustic Soda	720 Kg	30/kg	0.22
6.	Liquid Glucose	7.2 Kg	5/Kg	0.04
7.	Carbon-di-oxide	1433 Kg	40/Kg	0.57
8.	Pilfer proof caps	8.64 Lakh	0.80/Cap	6.91
	<b>TOTAL</b>			<b>10.55</b>

## **DALMUG, BHUJIA, KAJU FRY, POP CORN, MURI, PEANUT**

### **INTRODUCTION**

Dalmug, Bhujia, Kaju Fry, Popcorn, Muri, Peanut etc. are delicious snacks preferred by all ages. Though there are number of branded products flooding the market, yet the local made products are also in demand.

### **MARKET POTENTIAL**

The local products have a huge market in the semi-urban and rural areas. With careful packaging the shelf life of the product could be increased. The price tag lower than the branded items increases its demand among a particular segment of buyer, who cannot afford branded items.

### **PLANT CAPACITY**

Production per day at rated capacity	64kgs. Of various snacks, (Popcorn, Dalmug, Kaji, Peanuts etc.)
Capacity utilization	70%
Average daily production envisaged	45 kg.
Working days/year	300
Annual production	13500 kgs. of various snacks

### **RAW MATERIALS**

- \*Peanuts
- \*Kaju
- \*Maize
- \*Parboiled Rice
- \*Maida/gram flour
- \*Sugar, Salt
- \*Refine Oil
- \*Dalda
- \*Powdered spices
- \*Food colour
- \*Packing material

### **SUGGESTED LOCATION :**

Urban & semi urban areas in NER Rumitek, Dentam,  
Brang, Somogochoo in Sikkim

### **PROCESS**

- Cleaning the Raw materials.
- Mixing with various spics and ingredients.
- Frying/Roasting in various equipments.
- Cooling
- Mixing
- Packing
-

## MACHINERY

i)	Popcorn making M/c	Rs.	18,000
ii)	Bhujia making M/c	Rs.	3,500
iii)	Bhatti- 2 Nos.	Rs.	6,000
iv)	Iron Pan (big size)- 3 Nos. @ 2,500	Rs.	7,500
v)	Iron Pan (small size) 2 Nos. @ 1500	Rs.	3,000
vi)	Bamboo basket-5 Nos.@ 300	Rs.	1,500
vii)	Storage drums- 5 Nos. @ 500	Rs.	2,500
viii)	Sealing Machine	Rs.	7,000
ix)	Misc. tools	Rs.	1,000
x)	Cycle Rickshaw- 2 Nos. @ 3,000	Rs.	<u>60,000</u>
	Total:		<u>Rs. 1,10,000</u>

## TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs.3.11 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs. 2.06 lakhs.

(Rs. In lakhs)

### A. Fixed Capital

Land and Building	Rented
Plant and Machinery	1,10,000
Miscellaneous fixed assets	30,000
Preliminary and pre-operative expenses	<u>10,000</u>
Total (A)	<u>1,50,000</u>

### B Working Capital

Raw materials & Packing materials ½ month	42,600
Finished goods ½ month	50,268
Working expenses 1 month	10,280
Receivables 15 days	<u>58,125</u>
Total (B)	<u>1,61,273</u>
Total (A) + (B)	<u>3,11,273</u>

Note: Working Capital may be financed as :

Bank Finance	Rs 1,04,827
Margin Money	<u>Rs. 56,446</u>
	<u>Rs. 1,61,273</u>

## MEANS OF FINANCE

Promoter's contribution (35%)	Rs. 72,256
Term Loan (65%)	<u>Rs. 1,34,190</u>
	<u>Rs. 2,06,446</u>

## OPERATING EXPENSES

	(Rs. In Lakhs)
Raw Materials	Rs. 7,56,000/-
Packaging Materials	Rs. 96,000/-
Utilities	Rs. 15,000/-
Wages and Salaries	Rs. 1,08,000/-
Rent	Rs. 18,000/-
Other overheads	Rs. 12,000/-
Selling expenses	Rs. 54,000/-
Interest on term loan	Rs. 16,102/-
Interest on bank finance for working capital	Rs. 13,103/-
Depreciation	<u>Rs. 14,000/-</u>
	<u>Rs. 11,02,565/-</u>

## SALES REALISATION

Popcorn- 1500 kg. @ Rs. 70/kg.	Rs. 1,05,000
Kaju- 1500 kg @ Rs. 280/kg	Rs. 4,20,000
Muri- 3000 kg. @ Rs. 26/kg.	Rs. 78,000
Peanuts- 1500 kg. @ Rs. 75/kg.	Rs. 1,12,500
Dalmut- 3000 kg. @ Rs. 80/kg.	Rs. 2,40,000
Bhujia- 3000 kg. @ Rs. 70/kg.	<u>Rs. 2,10,000</u>
	<u>Rs. 11,65,500</u>

## PROFITABILITY

Based on the sales realization of Rs 11,65lakhs and the operating expenses of Rs. 11,02 lakhs, the profit at rated capacity utilization would be Rs.0.63 lakhs. per year. This works out to be return on investment of 20.21%. The unit will break even at about 52% of the targeted annual production.

## HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 3,11,273
Promoter's contribution	Rs. 72,256
Annual Sales realization	Rs. 11,65,500
Annual operating expenses	Rs. 11,02,565

Annual profit (pre-tax)	Rs. 62,935
Pre-tax return on sales	5.39%
Break-Even Point	52%
No. of persons employed	5

#### **SUPPLIERS OF MACHINERY**

1. M/s. Oriental Machinery (1919) Pvt. Ltd.  
25, R.N. Mukherjee Road  
Calcutta-700 001
2. M/s. Archana Machinery Stores  
M.S. Road,  
Fancy Bazar  
Guwahati-781 001

## **DAIRY PRODUCTS [PROCESSED CHEESE & CREAM]**

### **INTRODUCTION**

Cheese is the product made from the curd obtained from whole or skimmed milk, with or without added cream, by coagulating the casein and further treatment, of the separated curd by ripening ferments, special molds or seasoning. Preparation of different types of paneer such as surti paneer, bandal and Ducca Cheese, which are popular in certain parts of the country are allied to cheese.

Processed cheese is generally prepared from natural cheese having different varieties with different moisture content.

The natural cheese manufactured all over the world are classified in the groups of 80-55% moisture content, 55-45% moisture content, 45-34% moisture content, and 34-13% moisture content. The mozzarella cheese is included into the 55-45% moisture group and cheddar cheese in the 45-34% moisture group.

Cheese have very good market potential.

BIS (1964) IS:2785, is the ISI Specification for hard cheese, processed cheese and processed cheese spread.

### **MARKET POTENTIAL**

Milk is one of the essential items of daily life in our country and it is more so, as a majority of Indians are vegetarian and thus milk and milk products are indispensable necessity. The per capita consumption of milk products is about 190 gms. per day at present. There is a likelihood of growing this demand manifold and achieve this goal, there is a need to make available milk and milk products to the people at reasonable price, which can only be attained by setting up small scale modern dairy units in different milk producing areas to cater to the local needs. The development of this important agro-based industry will help in generating employment opportunities in the milk producing areas as well as in the consuming centers through well-knit market channels.

### **PLANT CAPACITY**

A capacity of processing 60.00 tonnes whole milk per annum and annual output of 44.40 tonnes of processed cheese and 15.00 tonnes of cream/annum on the following basis;

Processing capacity per day	: 200 Ltrs. Whole milk
Processed cheese per day (74%)	: 148 Kg.
Cream per day (25%)	: 50 Kg.
No. of working days/annum	: 300 days
No. of shift /day : 1 shift of 8 hours.	

### **RAW MATERIALS**

The milk is selected as desired under the heading of milk for cheese. Raw milk containing the fat is taken and poured into the cream separator. The cream present in the milk is separated out. After the cream is separated the milk becomes skim and their skim milk is ready for cheese making. For annual production of 45 tons of processed cheese, 60.00 tons of skim milk is required. In addition to this starter i.e. enzymes, flavours, colours, salt etc. is also required which is about 6.6 tons. Packing materials for packing the cheese and cream will be required.

### **SUGGESTED LOCATION :**

Major Centres in NER .  
Rumik, Dentam, Brang, Somgochoo in Sikkim

### **PROCESS OF MANUFACTURE**

This type of cheese (paneer) is generally made of skim milk. The milk for best result should be pasteurized. The process may be divided into following steps.

- e) Selection of milk and cream separator;
- f) Setting of milk;
- g) Cutting or breaking of curd;
- h) Cooking curds;

- i) Draining or dipping;
- j) Curd knitting;
- k) Salting;
- l) Pressing;
- m) Conversion of natural cheese into processed cheese.

#### PLANT AND MACHINERIES

- 1) Cheese Vat (Jacketed) (S.S) Cap: 2000 lits
- 2) Cheese Vat (Jacketed) (S.S.) Cap: 250 lits
- 3) Cream separator Cap: 1000-2000 lit/h of milk with 5 Hp motor with agitator chamber is made of (S.S)
- 4) Milk Cans (Aluminium alloy) 40 lits, 20 lits.
- 5) Cheese cutting table (S.S) (2m × 2m)
- 6) Cheese knives 3/8" or 1/2" (vertical and horizontal both)
- 7) Cheese Hoops Cap: 25 Kgs.
- 8) Cheese Press Hydraulic vertical;
- 9) Cheese Grinder (S.S) Cap: 100 Kgs/hr.
- 10) Ghee kettle (S.S) cap: 100 Kgs/hr.
- 11) Weighing balance platform type Cap: 500 Kgs.max.
- 12) Weighing balance, weighs 10 Kgs.
- 13) Deep freezer large vertical, multidoor
- 14) S.S. Pump
- 15) Bulk cooler Cap: 2000 lits.
- 16) Plastic Vats Cap: 500 lits each
- 17) Centrifuge for fat test (both electrically/manually tested)
- 18) Boiler (oil fired) 500 Kgs steam /hr.
- 19) Cheese filling and packaging M/c. automatic type
- 20) Processed cheese kettle (S.S.Jackated type) Cap:20 Kg per hr.
- 21) Pipe fittings, Pumps, valves and other

#### INFRASTRUCTURE

The main infrastructure required is –

Factory, Process house, raw materials	
Godown, office etc.	3500 Sq.ft.
Power	13 KW
Water	40 KL/day
Location	

#### TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs. 30.00 lakhs as follows. (Rs. In lakhs)

<b>(A) Fixed Capital:</b>		
Land	...	4.50
Building	...	6.00
Plant and Machiner	...	10.25
Miscellaneous fixed assets	...	3.00
Preliminary & Pre-operative expenses		0.60
	<b>Total (A)</b>	<b>24.35</b>
		=====
<b>(B) Working Capital:</b>		
Raw materials & Packing materials	1 month	1.25
Finished Goods	7 Days	1.86
Working expenses	15 Days	1.30
Receivable	7 Days	1.21
	<b>Total (B)</b>	<b>5.62</b>
		=====
	<b>Total (A) + (B)</b>	<b>29.97</b>
	<b>Say Rs.</b>	<b>30.00 lakhs</b>
		=====

## MEANS OF FINANCE

The project cost of Rs.30.00 lakh including Working Capital may be financed as under (merely indicative and subject to change by SFCs/Banks).

	(Rs. In lakhs)
Promoter's contribution(25%)	7.50
Term Loan(75%)	22.50
	<hr/>
	Rs. 30.00 lakhs
	=====

## OPERATING EXPENSES

The annual operating expenses are estimated at (100% Capacity utilization) Rs. 41.51 lakhs as given below :

	(Rs. In lakh )
Raw materials –	
Skim milk 60.00 tons @ Rs.20.00/ton	12.00
Stutter, enzymes, clours etc @ Rs.35,000/ton	2.31
Packing materials	
Plastic wrappers 7000 Nos. @ 10/- per pc	0.70
Wages and salaries	8.40
Other overheads	5.50
Selling expenses @ 15% of annual sales	7.80
Interest	3.40
Depreciation	1.40
	<hr/>
<b>Total :</b>	<b>41.51</b>
	=====

## SALES REALISATION

Based on the present market prices and after providing for taxes and duties etc., selling prices assumed and annual sales realization are as below:

Item	Quantity tonne	Price Rs./tonne	Sales realization Rs. Lakhs/year
Cheese	44.40	1,00,000	44.40
Cream	15.00	50,000	7.50
Total			51.90

## PROFITABILITY

Based on sales realization and the operating expenses, the profit at the targeted production would be Rs. 10.39 lakhs per year. This works out to a return on investment of 35%. The plant would break-even at about 54% of the targeted annual production.

## HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 30.00 lakhs
Promoter's contribution	Rs. 22.50 lakh
Annual Sales realization	Rs. 51.90 lakhs
Annual operating expenses	Rs. 41.51 lakhs
Annual profit (pre-tax)	Rs. 10.39 lakhs
Pre-tax return on sales	20%
Break-Even Point	54%
No. of persons employed	8

## MACHINERY & EQUIPMENT SUPPLIERS

1. Filtron Engineers Ltd.  
117-A, Vithalwadi Road,  
Pune-411030  
Fax : 477913
2. Redson Engrs. Pvt. Ltd.  
F-9/B, 1<sup>st</sup> Phase  
Hyderabad – 500 055  
Tel: 895262, 263585  
Fax: 896236



3. Raylons Metal Works,  
J.B. Nagar,  
Ram Krishna Mandir Road,  
Andheri(W),  
Mumbai – 400 059  
Tel: 8323288, 8325932  
Fax: 6236062

#### **SUPPLIERS OF RAW MATERIAL SODIUM CITRATE**

1. M/s. Citrugia Biochemical Ltd., 2. M/s. Delhi Drugs(P) Ltd.  
Neville House, J.N. Munshi Niketan,  
Heredia Marg, Ballard Estate, 1/10-B, Asaf Ali Road,  
Mumbai –400038 New Delhi –110 002
3. M/s. Iris Laboratories (India),  
Plot No. 379, Phase-II,  
G.I.D.C. Vatva,  
Ahmedabad – 382445

#### **DISODIUM PHOSPHATE**

1. M/s. Allipo chemicals,  
219, D ID C Makarpura,  
Baroda – 390 010
2. M/s. Chemeo Fine Chemicals  
Neelkanth Vihar,  
B-14, 4<sup>th</sup> Floor,  
Plot No.28-29,  
Garodia Nagar,  
Ghatkopar,  
Mumbai – 400 077

#### **RENNET ENZYEME**

1. M/s. Arun & Co.,  
2C, Kitab Mahal, 1<sup>st</sup> Floor,  
102, Dr. D.N. Road,  
Mumbai- 400 001  
Phone: 2044026, 2047224, 2047028
2. M/s. National Dairy Research Institute,  
Karnal – 132001  
Haryana
3. M/s. Deptt. Of Biotechnology,  
7-8 Floor, Block – 2,  
C.G.O. Complex, Lodhi Road,  
New Delhi – 3.

#### **FOOD COLOURS**

1. M/s. Iduchem Industries Pvt. Ltd.,  
National Insurance Building,  
Dr. Netaji Road,  
Mumbai – 400 001
2. M/s. K.C.A. Pvt. Ltd.,  
Chandralaza,  
Chandni Bazar,  
Ram Nagar – 361001

#### **PLASTIC CONTAINER**

M/s. Century Plastics,  
152 A To Z Industrial Estate,  
G.Kakam Marg,  
Mumbai – 400 013

## FRESH DRINKING WATER

### INTRODUCTION :

Fresh drinking water means the pure water which is free from any bacteria, microbes, chemicals and thus odorless, colorless crystal clear water is packaged in a sterilized pet bottle with a sealed cap. This water can be carried to any place and it remains fresh and pure up to 2 to 3 months. This water is also known as mineral water.

The demand for packaged water is linked mainly with tourism industry as the concept has virtually been imported from the western media. The necessary and hygienic nature of the product has led to an increase in its consumption mainly in the star hotels. In India, tourist inflow is continuously increasing with the growth of economy of the country, so is the consumption of bottled mineral water. Moreover, awareness about the benefit of drinking pure water has also necessitated consumption of mineral water by educated urban traveling people.

The tourists may be business executives or ordinary individuals or part of conducted tour, a delegate (to a conference, seminar or exhibition), specific interest group (religious), sport enthusiast, wild life persons etc. The arrival of foreign tourists has increased from 12.59 lakhs in 1985 to 26.00 lakhs in 2006.

### MARKET POTENTIAL :

At present there are more than 100 manufacturing units filling mineral water in the country at various places with different brand names and variety of packaging viz. half/one/two liters plastic bottles, polystyrene tumblers, sachets as well as bulk packaging in refillable polycarbonate bottles of sizes of 20-25 liters. Due to bulk reusable packing mineral water is being sold profitably even at loss of two rupees a liter. In the North Eastern region also there are many mineral water bottling and filling units. The major bottles of mineral water such as Bislery, Bailley, Golden egle, Aquafina etc. are sold in every nook and corner of even small towns because of well organized sales network.

Besides the above there are many other minor producers, marketing on regional basis like Oasis, Yes, ice, Aquaspa, Fountain, Bagpiper, Officer's choice etc.

Besides in bottles variety, other packaging such as re-usable polycarbobate jars, plastic tumblers, sachets are other types of packing in which mineral water is filled by various companies to cater to the needs of different segments of market.

In view of the above, it is observed that with the two fold increase in demand of mineral water – one due to growth in tourists in flow and the other due to increased health consciousness and purchasing power of local population – the production is not increasing at that rapid pace thereby, widening the demand & supply gap. Therefore, there still exists good scopes for new units producing bottled mineral water on regional basis.

### TARGET PRODUCTION :

An annual production of 9,00,000 Nos. of bottles of packaged drinking water at 100% capacity utilization has been suggested on the following basis –

No. of shift per day	: 1
Daily production	: 3000 bottles
Working days/year	: 300 days
Annual production	: 9,00,000 bottles.

### RAW MATERIALS :

For producing 9,00,000 bottles of mineral water per annum at 100% capacity utilization, the raw materials cum packing materials required is furnished below :

Sl. No.	Items	Qty./Nos.	Price in Rs. Per unit.	Total cost/ Annum (Rs.in lakh)
1.	Pet bottles with cap 1 Ltr. Capacity.	8,00,000	3.50	28.00
2.	Pet bottles with cap 500 ml. Capacity.	2,00,000	3.00	6.00
3.	Card board	66,700	14.00	5.01
	Box	33,400	15.00	7.50
	<b>Total :</b>			<b>53.01</b> <b>Say, 53.00</b>

The project site should have good reservoir of underground water and the same may be tested to ascertain the suitability of making it into potable water.

#### PROCESS :

The main process steps are -

- a) Water purification
  - b) Bottle filling & capping
- a) Process of purification of water includes –
- i) Pre-treatment
  - ii) Removal of BOD/COD.
  - iii) Coarse filtration
  - iv) Decolouring, deodorisation and removal of residual chlorines.
  - v) Softening
  - vi) Fine filtration
  - vii) Desalination
  - viii) Final sterilization at filling point.
  - ix) Bottle filling and packing.

#### EQUIPMENT :

Sl. No.	Description	Qty.
1.	R.D.System for preparation of drinking water	1 set
2.	2(Two) Head bottle filling machine (Gravitational)	2 Nos.
3.	Single Head capping machine.	1 No.
4.	Shrink Warp Funner for Labeling.	1 No.
5.	Purified water storage stainless steel tanks, 1500 Ltrs. Capacity, laboratory equipment etc.	--

#### INFRASTRUCTURE :

Land & Building	-- 2500 Sq.ft.
Factory	- 800 Sq.ft.
Power	-- 15 KW
Water	-- 3.33 KL/Day.

#### LOCATION :

Assam	: Sonapur, Nalbari, Nagaon, Dibrugarh.
Meghalaya	: Shillong, Nongpoh. Byrnihat.
Tripura	: Agartala, Udaipur.
Manipur	: Imphal.
Sikkim	: Rumitek, Dentam, Brang, Somgochoo

## TOTAL CAPITAL REQUIREMENT :

The total capital requirement including fixed capital and working capital is estimated at Rs 33.85 lakh as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs. 29.73 lakh.

<b>A. Fixed Capital :</b>		<b>Rs. In lakh</b>	
Land -- 25 Sq.ft.	:	1.00	
Building	:	5.00	
<b>Machinery</b>	:	<b>17.20</b>	
Misc. Fixed Assets.	:	2.50	
Preliminary & Pre-operative Expenses.	:	<u>1.10</u>	
<b>Total (A)</b>	:	<b><u>26.80</u></b>	
<b>B. Working Capital :</b>			
Raw materials/ Packing materials.	1 month	:	3.09
Finished goods.	7 days	:	1.10
Working expenses	7 days	:	1.56
Receivables	7 days	:	<u>1.30</u>
<b>Total (B)</b>		:	<b><u>7.05</u></b>
<b>Total(A) + (B)</b>		:	<b>33.85</b>
			<b>=====</b>

### Note :

Working capital may be financed as :

Bank finance	:	Rs 4.12 lakh.
Margin Money	:	Rs 2.93 lakh

## MEANS OF FINANCING :

The project cost of Rs.29.73 lakh, may be financed as under (merely indicative and subject to change by SFCs/Bank) :

		<b>Rs. Lakh</b>
Promoter's contribution(25%)	:	7.43
Term Loan(75%)	:	<u>22.30</u>
<b>Total</b>	:	<b><u>29.73</u></b>

## OPERATING EXPENSES :

The annual operating expenses are estimated at Rs. 66.46 Lakhs as given below :

		<b>Rs. Lakh</b>
Raw materials and packing materials	:	53.00
Utilities	:	1.50
Wages & salaries	:	5.15
Plant overheads.	:	0.42
Selling Expenses @2% of annual sales.	:	1.44
Interest	:	3.15
Depreciation	:	<u>1.80</u>
<b>Total</b>	:	<b><u>66.46</u></b>
		<b>=====</b>

**SALES REALISATION :**

The prevailing market price at Guwahati is around Rs12 to Rs 14 per Kg. After a margin for retailers and distributors, the ex-factory price works out to between Rs 10/- to Rs.12/- per Kg. Against this, a conservative price of Rs.8/- per Ltr. is considered. On this basis, the annual sales realization is estimated at Rs.72.00 lakhs per year.

**PROFITABILITY :**

Based on the sales realization and the operating expenses, the profit (pre-tax) at targeted production would be Rs 5.54 lakh per year. This works out to a return on investment of 19%. The plant would break-even at about 52% of the targeted production.

**HIGHLIGHTS :**

The major highlights of the project are as follows :

Total capital requirement		Rs. 29.73 lakhs
Promoter's contribution		Rs. 7.43 lakhs
Annual sales realization		Rs.72.00 lakhs
Annual operating expenses	:	Rs 66.46 lakhs
Annual profit (Pre-tax)		Rs. 5.54 lakhs
Return on sales		7.69%
Break-even point	:	52%
No. of persons employed	:	1

**ADDRESSES OF MACHINERY AND EQUIPMENT SUPPLIERS :**

Sonalifabs,  
71, Biren Roy Road (West),  
Kolkata – 700 061.

Rital Agencies.  
55 III Main Road, Gandhi Nagar,  
Chennai – 600 020.

Enviro Tech Utility,  
32 A, Main Patel Nagar Road,  
Opposite Wings Show Room,  
West Patel Nagar,  
New Delhi – 110 008.

Ion Exchange India Ltd.,  
TicconHouse.  
Dr. E.Houses Road,  
Mahalaxmi,  
Mumbai – 400 011.

Watrion Water and Filter Engg.Pvt.Ltd.,  
1, Harsivan Apartment, Ground Floor,  
(Behind Canara Bank)  
West J.P.Road, Andheri(West),  
P.B.No. 7372  
Mumbai – 400 059.

Alpha Engineering,  
158, Pocket E-20, Sector-II,  
Rohini,  
Delhi – 110 085.

## ICE CREAM MAKING UNIT

### INTRODUCTION

The proposed project envisions setting up of an ice cream manufacturing unit. This is an innovative concept for ice cream product in north eastern region.

In this project, 6-8 mm size ice cream are formed from ice cream mix, using individual freezing technology, where in each individual ice cream is formed, in cryogenic temperature range (below 30°C to 40°C), the environment created by using liquid nitrogen vapors in closed chamber. Liquid Nitrogen creates coldest temperature for instant freezing of ice cream.

Ice cream balls are stored at 20°C to 30°C and to make it appealing, they are made colourful and containing blends of exotic flavour. Ice cream is uniquely shaped and can be produced in a wide variety of colours, flavour and coatings.

### PRODUCT USES

The ice cream makes easy and quick to serve like popcorns, in pre formed paper or thermocol disposable cups or plastic containers, to maximize its sales at site like shopping malls, amusement parks, air ports and railway stations etc. It also make it much cleaner than “ordinary” ice cream, especially with young kids, as unlike regular ice creams, it can be eaten using ordinary spoons easily, without creating a mess. Ice creams are popular and commonly available in the form of cups, bars and candies.

### MARKET POTENTIAL

The ice-cream business in India was approximately INR 8955 million in the year 2005-06. The per capita consumption of ice-creams in India is approximately 200 ml. per annum, while the average global per capita consumption is 2 ltrs. The lowest per capita consumption of ice-cream in the world leaves ample scope for Ice cream products in general in India as well as in north eastern states.

Increase in population, fast changing life style increasing percentage of youths in population in north eastern states will result a satisfactory growth in current market. Ice cream finds round the year market and is consumed in all class of people as readily available hygienic food for all ages. Ice cream is consumed more in cities. However, occasionally, particularly in marriages, meetings and social gatherings. It is being used even in villages and towns. The consumption of ice cream is likely to increase in future. There is good scope for any new entrepreneur to venture in this field.

### SUGGESTED CAPACITY

Ice cream is marketed in cups, cones, family pack or party packs and as slabs. The capacity is estimated as under:

Item	March to October	November to February
	In nos.	In nos.
1. Ice-Cream		
a) big size cups	50,000	25,000
b) small size cups	80,000	50,000
2. Ice-cream slabs	16,000	8,000
3. Ice-cream (party pack or loose for selling in outlet pour lours/vendors)	10,000	4,000

<b>Basis:-</b> No. of working days	=	25 days per month
	=	300 days per year
No. of Shifts	=	1 per day.
One shift	=	8 hours

### **INFRASTRUCTURE REQUIRED**

The main Infrastructural facilities required are:

Covered Shed Area	600 sq. ft.
Power requirement	20 kw.
Water (Required every working day)	10,000 ltrs.

### **RAW MATERIALS REQUIRED AND AVAILABILITY**

The major raw materials required for production of ice-cream are milk, milk powder, cream or butter. Various other ingredients are sugar, flavors, stabilizer, colour powder. Consumables are big cups (100 ml. size), small cups (50 ml. size), paper wrapper, polythene coated box (500 ml & 1000 ml. size) and carton packet. All the raw materials and consumables are locally available. The unit will have to tie up with nearby sources for milk, either in fresh or solid form and fat cream. Milk required for ice-cream manufacture commands a higher price.

### **SUGGESTED LOCATION**

Ice cream project should be located in urban areas surrounded by available raw materials and as well as skilled manpower, location for setting up of Ice-cream making unit should be based on well developed road and air connectivity, since ice-cream is a perishable commodity and considering transportation bottlenecks which are a common feature in this region, small units are envisaged in urban as well as semi-urban areas.

### **PRODUCTION PROCESS**

Ice cream is defined as a frozen dairy project, made by suitable blending and processing of milk cream and other milk products with sugar, flavors, stabilizer and creamy texture is formed by incorporation of air by agitating during the freezing process. The main steps in the production of ice cream are:

- i) Boiling of milk
- ii) Cooling
- iii) Chilling of milk
- iv) Mixing of milk, sugar, flavors and other ingredient into semi-solid paste form
- v) Freezing, hardening & packaging

### **PROJECT ECONOMICS**

#### **Total Capital Requirement**

The total capital requirement including fixed capital and working capital is estimated at Rs 19.57 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs.17.00 lakhs.

<b>A. Fixed Capital</b>	<b>(Rs. in lakhs)</b>
Land	on rent
Land Development Cost	0,50
<b><u>Building /Civil works:</u></b>	
i) Work shed 400 sq.ft	2.40
ii) Office/Store 300 sq.ft.	1.60
iii) Toilet/Bathroom/Cemented open space, Drainage facilities etc.	0.80
Plant & Machinery	6.40
Misc. Fixed Assets	2.00
(Water arrangement/Overhead reservoir/pump set/power	

line connection/water & electrical fittings/office equipment)	
Preliminary & Pre-operative Expenses	0.60
Contingency provision	<u>0.65</u>
	<u>Total 14.95</u>

**B. Working Capital:**

Raw materials/consumables & 7 days		1.12
Packing materials		
Working expenses	1 month	1.10
Finished goods	3 days	0.50
Receivable	5 days	<u>1.50</u>
		<u>Total 4.62</u>

Note: Working capital to be financed as –

Margin Money	:	2.05
Bank Finance	:	<u>2.17</u>
		4.22

**Means of Finance:**

The project cost of Rs.17.00 lakhs may be financed as under:

Promoter's Equity(25%)	:	4.25 Lakhs
Term Loan(75%)	:	<u>12.75 Lakhs</u>
		<u>17.00 Lakhs</u>

**Operating Expenses**

The annual operating expenses are estimated as under:

	(Rs. in Lakhs)
Raw materials/consumables packing-materials & printed levels etc.	40.00
Wages & Salaries	10.17
Utilities	3.00
Repair & Maintenance	0.25
Administrative Overhead	0.40
Selling expenses 10% on sales	7.08
Depreciation	1.10
Interest	<u>1.96</u>
	<u>Total 63.96</u>

**Sales Turn Over**

Based on product-mix and ex-factory price considered, the annual sales realization is estimated at Rs70.80.

1. 75,000 cups ice-cream(big size) @ Rs 12/- each	9.00 lakhs
2. 1.30 lakhs cups ice-cream (small size) @ Rs.6/- each	7.80 lakhs
3. 24,000 nos. ice-cream slab @ Rs. 50/- each	12.00 lakhs
4. 14,000 nos. ice-cream party pack/loose for out let sale etc. @ Rs.300.00 per packet.	<u>42.00 lakhs</u>
	<u>Total 70.80 lakhs</u>

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs. 6.84 lakhs per year. This works out to a return on capital investment of 36%. The unit would break-even at about 66% of the rated capacity.

**Break Even Analysis**

<b>A. Variable Cost:</b>	(Rs. in Lakhs)
Raw Materials/Consumables & Packing Materials	40.00
Utilities	3.00
Selling Expenses	<u>7.08</u>
	<u>50.08</u>
	-----



<b>B. Semi-Variable Cost:</b>	(Rs. in Lakhs)
Wages & Salaries	10.17
Repair & Maintenance	0.25
Administrative Overhead	0.40
Depreciation	1.10
Interest	1.96
	<u>13.88</u>
C. Sales Realisation:	Rs. 70.80 Lakhs
D. Contribution	Rs. 20.72 Lakhs
E. Break Even Point (B/D X 80% (capacity Utilization)	54%

#### Machinery & Equipment:

An ice-cream plant has two main sections namely (A) condensing section and (B) freezing section. Besides, there is a host of other electrical and mechanical equipment along with piping. The main equipment required are:-

i)	Refrigeration compressor (open type) 5 TR capacity complete with motor and accessories.	:	1 no.
ii)	Cooled condenser complete with piping ,water spray assembly.	:	1 set.
iii)	Liquid receiver	:	1 no.
iv)	M.S. Brine tank (10' X 4' x 3')	:	1 no.
v)	Agitator fan assembly	:	1 no.
vi)	Thermocole	:	300 nos.
vii)	Push Cart trolleys	:	250 nos.
viii)	Ice-cream freezer complete with extension Valve, shut off valve etc.	:	3 nos
ix)	Electrical including motors ranging from ½ to 20 hp	:	complete set
x)	Mechanical accessories such de-hydrator, suction line,copper pipe, liquid distribution pipe, shut off valve etc.	:	complete set

#### Raw Materials/Consumable (Annually):

Item	Quantity	Annual (Rs in lakh)
Fat/Cream/Butter	12,000 kg	18.00
Milk solid(non fat)	10,000 kg	15.00
Sugar	20,000 kg	3.20
Colour/essence/stabilizer	3,000 kg.	1.50
Water	To make 100%	-
<b>Packing Materials</b>		
Big cup with printed levels.	52,000 nos.	0.55
Small cup with printed levels fine quality paper wrapper, poly coated & small paper box	78,000 nos.	0.75
	20,000 nos.	1.00
		<b>40.00</b>

#### Manpower:

Category	No.of person	Salary per person per month(Rs)	MonthlyRequirement (Rs )
Manager/Accountant	1	10,000	10,000
Skilled worker	2	8000	16,000
Semi-Skilled workers	3	6000	18,000
Unskilled workers	3	3000	9,000
Sales personnel	4	6000	24,000
<b>Total Manpower Cost</b>			<b>77,000</b>

Salary Bill Rs 9.24 Lakhs + Benefits @ 10% annually i.e. Rs 0.93  
Total Annual Salary Bill : Rs 10.17 Lakh.

## Utilities

Power for Machinery:	30 H.P.
General Lighting:	<u>10 H.P.</u>
	<b><u>40 H.P.</u></b>
b) Electricity Bill: 40 H.P. X 0.746 KW X 6 Hrs. X 250 days X Rs. 5.50	
Hence, annual Electric bill	Rs. 2.45 lakh
b) Water Charge = 10000 Ltrs. per day (L.S.)	Rs. 0.10 lakh
c) Fuel (Gas Cylinders) 150 cylinder X 300	<u>Rs. 0.45 lakh</u>
	<u>Rs. 3.00 lakh</u>

## Highlights:

The major highlights of the project are as follows:

Total Capital requirement	Rs.	19.17 lakhs
Promoter's contribution	Rs.	4.25 lakhs
Annual Sales realization	Rs.	70.80 lakhs
Annual Operating Expenses	Rs.	63.96 lakhs
Annual Profit	Rs.	6.84 lakhs
Return on sales		10%
Break-even point		54%
No. of person employed		13

## Address of Plant of Machinerie suppliers

1. M/S Frick India Ltd,  
3, parliament street,  
Jeevan Vihar  
New Delhi-110 001
2. M/S Munshi & Co Pvt. Ltd.  
181-183 Bapu Khote Street,  
Pydhonie, Mumbai-400003
3. M/s Kundlia Industries Corporation,  
1 , Chandney chowk street  
Kolkatta-700 072
4. M/S Indian Dairy Machinery Co. Ltd.  
Vithal Udyog Nagar GIDC,  
Ahmedabad, Gujrat-388 121

## MINI DAL MILL

### INTRODUCTION

India is the largest producer of pulses around 14.5 million tones annually. Pulses commonly known as dal in India are an important component of both the vegetarian as well as the non-vegetarian diet in India. Among the North Eastern States, Assam is the largest producer of pulses.

### THE PROJECT

Pulses constitute one of the main sources of protein in the Indian diet. There are different varieties of pulses namely Chana, Mung, Masur, Urad and Tuvar dal. Of these, Mung and Masur dal are predominantly consumed in the North Eastern States. The conversion of pulse grains into dal through the process of milling. Wherein dal is split into smaller sizes rendering it convenient for cooking. It is one of the important food processing industry usually in the medium and small-scale sector, some quantity is also processed in the rural sector manually producing inferior quality dal resulting in lesser revenue earning compared to milled dal.

### MARKET POTENTIAL

The all India per capita consumption of pulses is about 2.8 kg per year. In the north-eastern region, consumption of pulses is generally higher especially in States like Assam and Manipur. Conservatively, taking the national consumption norm of 2.8 kg and considering the total population of 365 lakhs in the north-eastern region, the demand for pulses is estimated at 1,02,000 tonne per year. There is no organized dal milling activity in the north-eastern region. In rural areas, sometimes dal milling is carried out in rice hullers. However, generally raw dal is processed in unit in nearby areas of West Bengal and milled dal re-enters the north-eastern states. The total production of pulses in north-eastern region is about 85,000 tonne per year, assuming that 80% of this quantity is available for dal milling, that the new tiny units process 15% of the available dal, there is scope for over 15 tiny units with annual milling capacity of 700 tonne of dal to be set up.

### SUGGESTED CAPACITY

In assessing the proposed plant capacity due consideration is given to availability of raw material, market and basic infrastructure like power etc. a typical dal milling unit is envisaged to produce 500 MT per annum on the following basis:

Production Capacity	:	159 kg/hr.
Number of Shifts	:	2
Daily production capacity	:	2.53 tonne
Capacity utilization	:	70%
Working days per annum	:	300
Annual Production	:	6%
Loss during dehusking	:	6%
Net Production	:	500 tonne/annum

### INFRASTRUCTURE REQUIREMENT

Covered Area	:	750 Sq. ft.
Power requirement	:	25 KW
Water	:	Minimal

### RAW MATERIAL AND ITS AVAILABILITY

More than 80% of the total production of pulses in the North Eastern Region comes from Assam. Pulses are grown in more or less all the North Eastern States. The state-wise production of pulses is as under:

<u>State</u>	<u>Tonne/Year</u>
Arunachal Pradesh	5000
Assam	60000
Meghalaya	2000
Nagaland	7000
Tripura	5000
Mizoram	<u>6000</u>
Total:	<u>85000/-</u>

### SUGGESTED LOCATION

A dal milling unit should be located in a urban/semi-urban area which has access to raw material, skilled manpower and market. However, the following tentative suggestion can be taken into consideration.

Assam	Barpeta, Haflong, Mangaldoi, Nagaon, Nalbari, Silchar
Manipur	Imphal, Chandel Senapati
Nagaland	Dimapur
Tripura	Agartala
Sikkim	Rumitek, Dentam, Brang, Somgochoo

### PRODUCTION PROCESS

The important steps involved in the process are –

1. Cleaning
2. Milling
3. Dehusking and cleaning
4. Weighing and Packing

### PROJECT ECONOMICS

#### TOTAL CAPITAL REQUIREMENTS

<b>A. Fixed Capital</b>		<b>(Rs. in lakh)</b>
1. Land		Own
2. Site Development		0.45
3. Building (working shed 750 Sq.ft. Raw material godown, finished product Godown, Office room)		4.87
4. Plant and Machinery		1.84
5. Misc. Fixed Assets		0.50
6. Preliminary/Pre-operative expenses		<u>0.30</u>
	<b>Total (A):</b>	<b><u>7.96</u></b>
<b>B. Working Capital Requirement</b>		
<b>Sl. No.</b>	<b>Norms</b>	<b>Amount (Rs.in lakh)</b>
1. Raw material and Consumables	1 month	9.23
2. Finished goods	1 week	2.87
3. Working expenses	1 month	0.42
4. Receivables	1 week	<u>2.93</u>
	<b>Total (B):</b>	<b><u>15.45</u></b>

\*Working Capital to be financed as –

Margin Money	Rs. 3.86 lakh
Bank Finance	Rs 11.59 lakh

#### MEANS OF FINANCE

Term Loan(75%)	Rs. 5.97 lakh
Promoter's Equity(25%)	<u>Rs. 1.99 lakh</u>
	<b><u>Rs. 7.96 lakh</u></b>

#### COST OF PRODUCTION AND PROFITABILITY

A. Capacity Utilisation	: 70%
B. Output (MT)	: 500 MT/annum
C. Annual Revenue	: Rs. 135.00 lakhs

The cost of various types of pulses varies from Rs. 20 to Rs. 30/Kg, so an average cost of Rs. 27,000 per tonne is taken into consideration. The annual sales revenue for 500 MT is estimated at Rs. 135 lakhs.

#### COST OF PRODUCTION

	(Rs. in lakh)
1. Raw material and consumables	110.75
2. Utilities	3.34
3. Wages and Salaries	1.38
4. Plant Overheads and repairing & maintenance	0.35
5. Depreciation	0.70
6. Administrative Expenses	0.36
7. Interest	2.46
8. Selling expenses @ 5% of annual sales	<u>6.75</u>
	<b>Rs. 126.09 lakhs</b>
Operating profit	Rs. 8.91 lakhs
Return on Sales	66%

#### MACHINERY AND EQUIPMENT

The main equipments required are –

1. Automatic Dal Mill plant with 25 HP Motor	1 No.
2. Weighing Scales	2 Nos.
3. Storage equipments	5 Nos.

The total cost of equipments have been estimated as **Rs. 1.84 lakhs**

#### MANPOWER REQUIREMENT & WAGES

Sl. No.	Category	Nos.	Average Salary/ person/month(Rs)	Total monthly Salaries(Rs)
1.	Manager	1	3,500	3,500
2.	Skilled Worker	1	2,000	2,000
3.	Unskilled workers	4	1,500	6,000
	Total:			<b>11,500</b>

**Total Annual Salary Rs. 1.38 lakhs**

## COST OF RAW MTERIAL & CONSUMABLES

The cost of raw material and consumables are as follows:

1.	Dal (various quality) @ of Rs. 25,000/-	Rs. 110.00 lakhs
2.	Packing material (Lumpsum)	Rs. 0.75 lakh
	<b>Total:</b>	<b><u>Rs. 110.75 lakhs</u></b>

## COST OF UTILITIES AND OVERHEAD

The power requirement for the milling plant:

1.	For running the automatic dal mill with 25 HP Motor	: 18.65 Hwh
2.	For internal lighting + general load	: <u>6 Kw</u>
		24.65 KW
		Say 25 KW

The total daily requirement of power

(26 Kw × 16 hrs × 2 shifts) × 8)

= 320 Kwh

The daily power bill (320 Kwh × Rs. 4)

= Rs. 1280/-

Total cost of power per annum (i.e. 300 working days)

= Rs. 3.84 lakhs

## PLANT OVERHEADS

Sl. No.	Items	Amount (Rs. in lakhs)
1.	Repair and Maintenance	
	(a) 1% on cost of civil works	0.05
	(b) 2% on Plant and M/c.	0.03
	(c) 1% on Misc. fixed assets	0.01
	Sub-Total:	0.09
2.	Insurance on Plant Assets	0.14
	2% on building, Plant & M/c. miscellaneous fixed assets	
	Total:	0.23

At 70% capacity utilization = 0.16%

## BREAK EVEN POINT ANALYSIS

		(Rs. in lakhs)
A.	Variable Cost:	
	Raw Materials and consumables	110.75
	Utilities	3.34
	Selling Expenses	<u>6.75</u>
	<b>Total (A)</b>	120.84
B.	Semi-variable Cost	
	Wages and Salaries	1.38
	Repair and Maintenance	0.35
	Administrative Expenses	0.36
	Depreciation	0.70
	Interest	<u>2.46</u>
	<b>Total (B)</b>	5.25
C.	Sales Realisation	135.00
D.	Contribution	14.16
E.	Break Even Point = B/D × 70%	26%

## MACHINERY SUPPLIERS

- M/s. Archana Machinery Stores  
A.T. Road, Guwahati
- M/s. DIW Hindustan Industrial Works  
Post Box No. 12, Dahanu Road  
Dist: Thane (Maharashtra)

## **MIXED FRUIT JAM, JELLY, PICKLE MAKING (Fruit & Vegetable Processing Unit)**

### **INTRODUCTION**

India ranks second in production of fruit & vegetables in the world. It produces a wide range of fruit of which mango, banana, orange, pineapple, guava, apple and citrus for 75 percent of the total fruit production in the country. India produces about 70 different varieties of leafy, fruity & starchy tuber varieties of vegetables in the country. Only 0.5 to 1 percent of the raw materials is processed.

Food processing industry has started receiving a great deal of attention from the policy makers. In India very little effort has been made so far in streamlining the production, procurement, processing and marketing of perishable horticultural products specially fruits & vegetables. There has been a change in the trend of consumption of fruit during the last few years in our country.

North Eastern India produces a large quantity of fruit & vegetables. The current industrial policy environment is favorable for development of food processing industry. The Government of India has been making efforts to accelerate the pace of development in processing industry.

### **PRODUCT USES**

Most kinds of fruit and some vegetables are used to make a wide variety of jam and jelly. Fruit Jam contains rich fruit pulp and available in mango, apple, mixed fruit, pineapple and orange flavors. Jelly is a clear, bright mixture made from fruit juice, sugar and sometimes pectin. Jelly and jam is used as bread spread and as a filling for some cakes and cookies. Spicy pickles are very important item in Indian meal. Pickles enhance the taste of the meal and increase the satisfaction after every meal.

### **MARKET POTENTIAL**

It is estimated that the total production of processed fruit & vegetable in India is about 15.0 lakh tonne. Out of various products fruit juices and fruit pulp accounts for 27 percent, followed by ready-to-serve beverages and pickles being between 12 to 13 percent each, jams & jellies 10 percent and synthetics 8 percent.

There are good reasons to believe that the processed products of fruit & vegetable business will remain a growth industry for a long time, one of the main reasons for expectation of growth is that the consumption of mixed fruit jam/orange jam/jelly/marmalade/pickle is gaining popularity day by day owing to the growing change in the food habits and increased consumption of bread and other convenient snack foods.

Among the established brand in the jam/jelly segment, Druk, Kissan, Dipy's tims and Sil are the prominent names and in case of pickle production, Nilons/Arnapurna/priya are famous.

### **SUGGESTED CAPACITY**

The production and product-mix at different capacity utilization per annum will be as follows:

Item	Installed Capacity (TPA)	1 <sup>st</sup> year production @80%	2 <sup>nd</sup> year onwards production @90%
1. Mixed Fruit Jam & Jelly	70	55	62
2. Orange marmalade	45	35	40
3. Pickle	12	10	11

#### **Basis:-**

No. of working days	=	25 days per month
	=	250 days per year(Avg.)
No. of Shifts	=	1 per day.
One shift	=	8 hours

## **INFRASTRUCTURE REQUIRED**

The main Infrastructural facilities required are:

Covered shed area	800 sq. ft.
Power requirement	20 kw.
Water (required in every working day)	5,000 kl.
Fuel (gas cylinders annually)	150 nos.

## **RAW MATERIALS REQUIRED AND AVAILABILITY**

The major raw materials required for production of mixed fruit jam & jelly, marmalade are orange, pineapple, guava, jackfruit and banana. For pickle making major raw materials are unripe mangos, lemons, carrots, cauliflower etc.

The consumables are sugar, citric acid, preservatives, colours, chemicals, common salt, different spices, mustard oil etc. The product will be packed in glass bottle/jars and finally in cartons.

North eastern region is important in fruit production. Raw materials are available round the year. All these fruits & vegetables are available within state, NER and other parts of the country and may be procured from different producing centre in different seasons. All raw materials & consumable items can be procured from local agencies in the open market. The cost of fruits, vegetables & consumables mentioned under, has been taken considering the seasonal fluctuation in price.

## **SUGGESTED LOCATION**

Fruit & vegetable based projects should be located, surrounded by available raw materials as well as skilled manpower, in NER including sikkim

## **PRODUCTION PROCESS**

The fruit & vegetables are washed peeled and sliced and send for production of jam, jelly, marmalade and pickles.

**Jam:** The fruit are cleaned, washed and sliced. Slices are then converted to pulp in a pulping machine. Pulp is then transferred to a stainless steel steam jacketed vacuum pan in required lots and boiled. A small quantity of water is also added before boiling the mixture to facilitate pulping. Requisite amount of pectin is added at this stage. The product together with an almost quantity of citric acid to a temperature of 220°C to 220°C determined by a preserver's thermometer. The product is cooled before packing. As fruits are seasonally available, the total production has been considered on the basis of 200 days per year.

**Orange/Pineapple marmalade:** Fruits are carefully stored according to quantity, then washed with sprayed water to remove unwanted elements. The fruits are peeled and peeled fruits are put to juice extractor, after extraction of juice is boiled along with sugar and citric acid at a controlled temperature. Upon boiling required permitted colours, flavours and preservatives are added. It is then cooled to required temperature and form a jelly like consistency. The finished product thus obtained is filled in bottles, sealed, labeled and packed in cartons for dispatch. As orange/pineapple are seasonally grown, the total production has been calculated on the basis of 150 days per year.

**Jelly:** The washed and peeled traits are fed into hopper of juice extractor and the juice is filtered. The juice containing sufficient pectin and the dry sugar are boiled in the stream-jacketed kettle until a satisfactory jelly is obtained. Necessary preservative are added towards the end of boiling process. The extracted and clean juices are sent into stainless steel blending tank, where juice is mixed with sugar syrup and other ingredients like citric acid essence. The product is cooled before packing. As fruits are seasonally available, the total production has been considered on the basis of 200 days per year.

**Pickle:** The washed, peeled and sliced unripe fruit and vegetables are kept in 2 percent common salt solution for 24 hours. The process is repeated for another three days. On the fifth day after proper curing the fruit & vegetables, the cured materials are washed thoroughly in clean hot water. The products kept in vinegar of 5% acetic acid solution, spice and condiment and smeared with a little oil. Packing the pickles in glazed jars or bottles and covered with oil and sealing the containers airtight. Preservatives may be added before packing. Total 300 working days has been taken as basis in calculation of project economics.



## PROJECT ECONOMICS

The total capital requirement estimated is Rs.24.25 lakhs as given below:-

<b>B. Fixed Capital</b>		(Rs. in Lakhs)
Land	Own/Lease	
Land Development Cost		2.50
<u>Building/Civil Works</u>		
i.)	Work shed 400 sq. ft.	2.40
ii.)	Office/Store/Reception 400 sq.ft.	3.20
iii.)	Toilet/Bathroom/cemented open space Drainage facilities etc.	1.25
Plant & Machinery		3.35
Misc. Fixed Assets (water arrangement/overhead- reservoir/ pump-set/power line connection/ water & electrical fittings/office equipments)		1.80
Preliminary & Pre-operative Expenses		<u>0.80</u>
		<u>15.30</u>

<b>Working Capital</b>	(Norms)	(Rs. in Lakhs)
Raw Materials/Consumables	10 days	1.30
Packing Materials	1 month	1.15
Working Expenses	1 month	1.10
Finished Goods	10 days	2.42
Receivable	7 days	<u>2.52</u>
		<u>8.95</u>

Note: Working Capital to be financed as:-

Margin Money:	Rs. 3.20
Bank Finance:	<u>Rs. 5.75</u>
	<u>Rs. 8.95</u>

<b>Means of Finance</b>	(Rs. in Lakhs)
Promoter's Equity(25%)	4.62
Term Loan(75%)	<u>13.88</u>
	<u>Rs.18.50</u>

## Cost of Production & Profitability (Rs. in Lakhs)

Raw materials/consumables	25.98
Packing materials & Printed levels	17.55
Wages & Salaries	13.94
Utilities	1.02
Repair & Maintenance	0.25
Administrative Overhead	0.45
Selling expenses 10% on sales	9.00
Depreciation	0.98
Interest	<u>2.93</u>
	<u>72.10</u>

## Sales Turnover (Rs. in Lakhs)

I. Selling of Marmalade 500gm. size 70,000 bottle @ Rs. 40/- per bottle	28.00
II. Selling of Jam/Jelly 500gm. Size1.60 lakhs bottle @ Rs. 35/- per bottle	56.00
III. Selling of Pickle 500gm. size 30,000 bottle @ Rs. 20/- per bottle	<u>28.00</u>
	<u>90.00</u>

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs. 17.90 lakhs per year. This works out to a return on capital investment of 74%. The unit would break-even at about 41% of the rated capacity.

**Break Even Analysis****A. Variable Cost:**

	(Rs. in Lakhs)
Raw Materials/Consumables	25.98
Packing Materials	17.55
Utilities	1.02
Selling Expenses	<u>9.00</u>
	<u>53.55</u>

**B. Semi-Variable Cost:**

	(Rs. in Lakhs)
Wages & Salaries	13.94
Repair & Maintenance	0.25
Administrative Overhead	0.45
Depreciation	0.98
Interest	<u>2.93</u>
	<u>18.55</u>

C. Sales Realisation:	Rs. 90.00 Lakhs
D. Contribution	Rs. 36.45 Lakhs
E. Break Even Point (/D X 80% (capacity Utilization)	41%

**Machinery & Equipment**

Name of the machinery	No. of M/C required	Power Required	Value (Rs. in lakhs)
1. Pulping Machine(pulper junior)	1	1 H.P.	0.25
2. Rosing M/C for orange juice	1	1 H.P.	0.23
3 Pineapple Crushing M/C	1	1 H.P.	0.28
4. Juice Pressing M/C	1	1 H.P.	0.26
5. Steam Jacketed kettle with pan and stainless still tilting type complete with pressure gauge safety valve steam cokes and stands (capacity100 ltrs.	1 set	-	0.45
6 Steam generator with accessories like safety valve pressure gauge and water pump	1 set	-	0.50
7 Mango cutter/food vegetable slicing M/C	1	0.50 H.P	0.16
8 Fruit & Vegetables slicer heavy duty(hand operated)	1	-	0.06
9 Power Grinder for spice	1	1 H.P.	0.28
10 Crown Corking M/C Floor model foot operated	1	-	0.08
11 Sealing M/C, heavy duty pedestal model with automatic threading & roller operation with one size of die hand operated	1	1 H.P.	0.21
12 Other misc. items like-Aluminum gamla, saucepan, weighing balance, processing table, knives, Punching M/C etc.	L.S.	-	0.51
<b>Total Rs.</b>			<b>2.91</b>
Add. 15% towards Packaging, forwarding, Insurance, Transportation, Loading, Unloading, Installation & Commissioning etc.			0.44
<b>Total Cost of Machinery Installation Rs.</b>			<b>3.35</b>

**Raw Materials/Consumables**

Items Product-wise	Quantity (per day)	Rates (Rs.)	Amount per day (Rs.)	Annual Requirement (Rs. in Lakhs)
<b>A. Pineapple/Orange Marmalade</b>				
ii) Orange/Pineapple	192 kg.	12 per kg.	2304.00	3.46
iii) Sugar	41 kg	17 per kg.	697.00	1.05
iv) Others	L.S.	-	150.00	0.23
<b>B. Jam &amp; Jelly</b>				
i) Fruits	190 kg.	25 per kg.	4750.00	9.50
ii) Sugar	210 kg	17 per kg.	3570.00	7.14
iii) Preservatives & Others	L.S.	-	200.00	0.40
<b>C. Pickle</b>				
i) Fruits/vegetable	190 kg.	25 per kg.	4750.00	9.50
ii) Common salt, spices & chemicals	210 kg	17 per kg.	3570.00	7.14
iii) Preservatives & Others	L.S.	-	200.00	0.40

**Packing Materials and Printed Labels (Annual Requirement)**

Products	Size of Bottle/jar	Quantity (nos.)	Unit Price (Rs.)	Value (Rs. in lakh)
1. Orange/Pineapple Marmalade	500 gm.	70,000	5.50/bottle	3.85
2. Jam & Jelly	500 gm.	1,60,000	5.50/bottle	8.80
3. Pickle	500 gm.	30,000	5.50/bottle	1.65
4. Bottle cap	Above sizes	2,60,000	0.75 per cap	1.95
5. Printed Labels	-do-	2,60,000	0.50 per labels	1.30
6. Cartoon Package	-	-	L.S.	0.50
<b>Total Cost of Packing Materials and Printed Labels Rs.</b>				<b>17.55</b>

**Manpower**

Category	No. of Person	Salary Per Person Per Month(Rs)	Monthly Salary Bill (Rs.)
a) Manager	1	10,000	10,000
b) Chemist	1	10,000	10,000
c) Supervisor cum Skilled Worker	2	6,000	12,000
d) Semi-skilled workers	3	5,000	15,000
e) Un-skilled workers	8	3,000	24,000
f) Selling & Marketing	5	6,000	30,000
<b>Total Manpower cost Rs.</b>			<b>1,01,000</b>

Salary Bill Rs 12.12 Lakhs + Benefits @15% annually i.e. Rs 1.82

**Total Annual Salary Bill : Rs. 13.94**

**Utilities**

Power for Machinery: 6.5 H.P.  
 General Lighting: 2.0 H.P.  
 -----  
**8..5 H.P.**  
 -----

c) Electricity Bill:  
 8.5 H.P. X 0.746 KW X 6 Hrs. X 200 days X Rs. 5.50  
 Hence, annual Electric bill Rs. 41,850  
 b) Water Charge = 5000 Ltrs. per day(L.S.) Rs. 15,000  
 c) Fuel (Gas Cylinders) 150 cylinder X 300 Rs. 45,000

**Total Utilities (a + b + c) = Rs. 1,01,850 Say, Rs1.02 Lakhs**

## Highlights:

The major highlights of the project are as follows:

Total Capital requirement	Rs.	24.25 lakhs
Promoter's contribution	Rs.	5.25 lakhs
Annual Sales realization	Rs.	90.00 lakhs
Annual Operating Expenses	Rs.	72.10 lakhs
Annual Profit	Rs.	17,90 lakhs
Return on sales		20%
Break-even point		41%
No. of person employed		20

Machinery Suppliers: Supplier of chemicals & consumables

- |  |  |
|--|--|
| 1. M/S Narangs Corporation<br>P-25, Connaught Place<br>New Delhi-110 001                                     | 5. M/S Assam Essence Supply & Co<br>Lalsing Mansion (2 <sup>nd</sup> Floor)<br>A.T. Road, Guwahati-781 001 |
| 2. M/S Gee Gee (Food & Packaging) Co. (P) Ltd.<br>B-188/2 Savitri Nagar, Malviya Nagar,<br>New Delhi-110 017 |  |
| 3. M/S Bhuvanewari & Co<br>Old Trunk Road, Pallavaram,<br>Chennai- 600 043                                   |  |
| 4. M/S Nagpal Brothers<br>C-127, phase-II, Mayapuri Industrial Area.,<br>New Delhi-64                        |  |

## FORMAT

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2. About the Product
3. Market Potential
4. Suggested Capacity
5. Infrastructure requirement
  - a) Covered Area
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6. Raw Materials and its availability
7. Suggested Location
8. Production process(step wise)
9. Project Economics
  - a) Capital Cost.
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  - d) Turn Over
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  - i) Manpower requirement & wage bill
  - j) Profit Sales ratio
  - k) Rate of Returns
  - l) Break Even Point

Addresses of machinery suppliers/manufacturers

## NOODLES MAKING

### INTRODUCTION:

Noodles are a value added item made from flour. Amongst processed cereal products in India, noodles have a share of about 45% in terms of output and constitute the largest segment in this sector of the processed food market. Noodles are relatively more popular in the north-eastern region where in some states they are consumed as regular breakfast item. In states like Mizoram, Meghalaya and Nagaland, noodles are popular food item.

### ABOUT THE PRODUCT:

Noodles are more popular in north-eastern region where in some states noodles are consumed as regular breakfast item. The raw material required for making noodles are available in local market. It is widely used by school children as tiffin item, because it takes less time for preparation.

### MARKET POTENTIAL:

The demand for noodles would be mainly from urban areas where there are working couples, and people are relatively more hard pressed for time. Besides, after the launch of "Maggi", a popular product, a distant market segment which has emerged is the childrens' and school, college going students' market. According to a survey, the annual demand for ready-to-serve product is estimated at 4.30 lakhs tones. This works out to a per capita demand of 0.50 Kg. per year. In urban areas in the north-east, the per capita consumption should be higher. Even at the conservative level of 0.5 kg the demand for noodles in a town having population of 3 lakh is estimated at 150 tonnes per annum. The population of major towns in the region varies from about 2 lakhs to 20 lakhs. As such, the demand could range from 100 tonne to 1000 tonne per year. At present, there are a few local units manufacturing noodles and bulk of the demand is being met by leading brands like Maggi.

Taking the capacity of a tiny unit at 15 to 20 tonne per year, there is scope for 4 to 5 units in a small town and more numbers of units in larger towns depending on the population.

### PLANT CAPACITY:

A typical unit is envisaged to have a capacity of 15 tonne per year and an annual production of 10.5 tonne on the following basis:

Production per day at rated capacity	:	50 Kg on single shift basis
Capacity utilization	:	70%
Average daily production envisaged	:	35 Kg.
Working days/year	:	300 days
Annual production	:	10.5 tonnes.

Noodles may be sold in packs of 100gm weight. On this basis, their annual sales will be 1,05,000 packets.

### RAW MATERIALS:

The main raw materials required are flour, custard powder, refined vegetable oil and their annual requirement is as follows:

	<u>Quantity</u> <u>Tonne/year</u>
Superfine flour	13.30
Custard powder	0.14
Refined vegetable oil	0.53

Besides salt, permitted colours, preservatives are required as additives. Packing materials include polythene bags, labels and cartoons. All these raw materials are available in the local market.

**PROCESS:**

The major process steps are –

- (A. Dough making by compounding flour and additives.
- (B. Dough sheet making
- (C. Strip cutting
- (D. Measure cutting, curling and casing
- (E. Packing

**MACHINERY:**

The main equipment required for noodle making are –

- (A. Chow Noodle making machinery
- (B. Measuring, cutting and folding equipment
- (C. Drying equipment

**INFRASTRUCTURE:**

The main infrastructure requirements are –

- i) Covered area : 500 sq.ft.
- ii) Power : 2 H.P.
- iii) Water : 300 ltrs/day.

**LOCATIONS:**

The following urban centers are suggested locations –

- Assam : Guwahati, Tinsukia, Dibrugarh & Tezpur
- Meghalaya : Shillong, Tura
- Mizoram : Aizawl
- Nagaland : Kohima, Dimapur
- Tripura : Agartala
- Manipur : Imphal
- Arunachal Pradesh : Itangagar, Pasighat.
- Sikkim : Rumitek, Dentam, Brang, Somgochoo

**TOTAL CAPITAL REQUIREMENT:**

The total capital requirement including Fixed Capital and Working Capital is estimated at Rs 1.75 lakh as follows. Of this, project cost comprising fixed capital and working capital, the margin money is Rs 0.44 lakhs.

			(Rs. lakhs)
<b>(A. Fixed Capital:</b>			
Land and Building			On rent
Plant & Machinery			0.70
Misc. Fixed Assets			0.30
Preliminary & Pre-operative expenses			<u>0.20</u>
	Total (A)		1.19
<b>(B. Working Capital:</b>			
Raw materials & Packing materials	½ month		0.12
Finished goods	½ month		0.13
Working expenses	1 month		0.04
Receivables	½ month		<u>1.22</u>
	Total (B)		0.56
	Grand Total (A+B)		1.75 lakh

**MEANS OF FINANCE:**

The project cost of Rs 1.75 lakhs may be financed as under:

Promoter's contribution and equity assistance (25%)	Rs	0.44 lakh
Bank Loan(75%)	Rs	<u>1.31 lakh</u>
Total	Rs	1.75 lakh

**OPERATING EXPENSES:**

The annual operating expenses are estimated at Rs 4.55 lakhs as given below:

Raw Materials –

- Superfine flour 13.3 tonne. @ Rs 16000/tonne : Rs 2.13 lakh
- Custard powder 0.14 tonne @ Rs 48000/tonne : Rs 0.07 lakh
- Refining vegetable oil 0.53 tonne @ Rs 75000/tonne : Rs 0.40 lakh
- Preservative, permitted colour, salt etc.(L.S) : Rs 0.12 lakh

Packing materials – Polythene bags, labels, Cartoons etc.	:	Rs 0.10 lakh
Utilities	:	Rs 0.12 lakh
Wages & salaries	:	Rs 0.72 lakh
Rent	:	Rs 0.18 lakh
Other overheads	:	Rs 0.15 lakh
Selling expenses @ 5% on sales	:	Rs 0.26 lakh
Interest on Term Loan & Working Capital Loan	:	Rs 0.20 lakh
Depreciation @ 10%	:	<u>Rs 0.10 lakh</u>
Total	:	<u>Rs 4.55 lakh</u>

### SALES REALIZATION:

The retail selling price of the leading brand “Maggi” is Rs 10.00 per pack of 100gm. Against this, the selling price of local brands is Rs 5.00 per 100gm packet. The total sales realization for 105000 packets would be Rs 5.25 lakh per year.

### PROFITABILITY:

Based on the sales realization and the operating expenses, the profit at working capacity (70% of rated capacity) would be Rs 0.90 lakh per year. This work out to a return on investment of 92%. The plant would break-even at 70% of the rated capacity.

### BREAK-EVEN POINT ANALYSIS:

(At 70% Capacity Utilization)

A.	<u>Variable Cost:</u>	(Rs.lakh)
	Raw materials	2.82
	Utilities	0.12
	Selling Expenses	<u>0.26</u>
	Total	<u>3.20</u>
B.	<u>Semi-Variable Cost:</u>	
	Wages & Salaries	0.72
	Rent, Insurance etc.	0.18
	Depreciation	0.10
	Administrative overhead	0.15
	Interest	<u>0.20</u>
	Total	<u>1.35</u>
C.	Sales Realization	5.25
D.	Contribution (C – A)	2.05
E.	B.E.P. B/D x % on installed capacity	70%

### HIGHLIGHTS:

The major highlights of the projects are as follows:

Total Capital requirement	:	Rs 1.75 lakh
Promoter’s contribution	:	Rs 0.44 lakh
Annual Sales realization	:	Rs 5.25 lakh
Annual operating expenses	:	Rs 4.55 lakh
Annual Profit	:	Rs 0.70 lakh
Return on sales	:	36%
Break-Even Point	:	46%
Number of persons employed	:	4 Nos.

### MACHINERY SUPPLIER:

M/s Oriental Machinery Pvt. Ltd.  
25, R.N. Mukherjee Road,  
Kolkatta – 700 001  
Ph: 22438818

## PAPAD MAKING

### Introduction:

Papad is a food/snack item made from dough of powdered pulses, spices and salt. Papads have been an integral part of the Indian food since olden times. Over the years, papads have become popular as a snack item. The papad industry in the cottage/village sector has recorded a remarkable growth during the last two decades with the advent of "LIJJAT" papad manufactured by cooperatives of a large number of women based in Maharashtra and Gujarat. Keeping in view the success of "LIJJAT" papad and considering the resourcefulness of women in the north eastern region, the prospects for papad units are encouraging.

### Market Potential:

The all India per capita consumption of papad is about 150gm per year. In States like Gujarat, Rajasthan, Bihar, Tamil Nadu, the per capita consumption is as high as 2 kg per year. Papad is popular in Assam, Manipur, Arunachal Pradesh and Tripura where it is taken along with food, whereas in States like Meghalaya, Mizoram and Nagaland it is used mostly as a snack item. Conservatively considering an average per capita consumption of 100 gm for the north eastern region and the population of 365 lakh, the annual demand for papad in the north eastern region is estimated at 3650 tonne. There are only two/three small units in Guwahati making papad on a modest scale, and bulk of the requirement is being met from sources outside the region mainly from Gujarat and Tamil Nadu. Considering the capacity of a tiny units as 30 tonnes per year and assuming that the new units can capture 25% of the market, there is scope for about 25 tiny units to be set up in the north eastern region.

### Target Production:

A typical unit will have an annual production of 30 tonne per annum on the following basis:

Working hours/day	:	8 hours.
Daily production	:	100 kg.
Working days/year	:	300 days
Annual production	:	30 tonnes

### Raw Materials:

The main raw materials required are : pulses, spices and edible oil. Pulses include moong dal, urad dal, spices including zeera, jyphal, black pepper, additives like edible soda are also required. The annual requirement of raw materials is as under:

Moong dal (powdered)	:	13,300 kg.
Urad dal (powdered)	:	12,300 kg.
Salt	:	1,200 kg.
Black pepper	:	1,200 kg.
Edible soda	:	1,200 kg.
Jyphal (powdered)	:	4,800 kg.
Jeera (white)	:	360 kg.
Edible oil	:	1,200 kg.
Dalchini	:	5 kg.
Laung	:	5 kg.
Javitri	:	5 kg.

All the above items are available locally.

### Process:

Conventionally, papads are made by rolling rounds of papad dough by rolling pins. This is a laborious process. The Central Food and Technological Research Institute (CFTRI) has developed a papad making machine which substitutes the labourious system of rolling by a simple pressing operation. The main process steps are –

- i) Mixing of various raw materials in required proportion.
- ii) Dough making after addition of water in measured quantities to mixture.
- iii) Pressing of dough in papad making machine.
- iv) Sun drying of pressed papads.
- v) Packing in polythene wrappers.



**Equipment:**

The main equipment required is a papad making machine fitted with 19" dia disc along with a set of accessories. To meet the envisaged production of 150 kg/day three (3) such machines would be required.

**Infrastructure:**

The main infrastructure facilities required are –

Shed	:	500 sq.ft.
Water	:	500 ltrs. Per day.

**Location:**

The suggested locations are –

Assam	:	Guwahati, Tinsukia, Tezpur, Dhubri.
Arunachal Pradesh	:	Itanagar
Tripura	:	Agartala
Sikkim	:	Rumitek, Dentam, Brang, Somgochoo

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 3.27 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 2.32 lakhs.

		(Amount Rs lakh)
A.	<u>Fixed Capital:</u>	
	Land and building	On rent
	Machinery	1.20
	Misc. Fixed Assets	0.40
	Preliminary & pre-op. expenses	<u>0.40</u>
	Total (A)	2.00
C.	<u>Working Capital:</u>	Amount (Rs lakh)
	Raw materials and packing materials ½ month	0.55
	Stock of finished goods 3 days	0.15
	Working expenses 1 month	0.11
	Receivable 7 days	<u>0.46</u>
	Total (B)	1.27
	Total (A + B)	3.27
Note: Working capital may be financed as –		
	Bank Finance	:
	Margin money	:
		0.95
		<u>0.32</u>
		1.27

**Means of Finance:**

Promoter's contribution(35%)	:	0.81
Term loan(65%)	:	<u>1.51</u>
		2.32

**Operating Expenses:**

The annual operating expenses are estimated at Rs 17.59 lakhs as below:

		Amount (Rs lakh)
Raw materials	:	12.85
Packing materials	:	0.30
Utilities	:	0.20
Wages & salaries	:	1.14
Rent	:	0.36
Other overheads	:	0.35
Selling expenses @ 10% on annual sales	:	19.95
Interest on Term Loan	:	0.18
Interest on bank finance for working capital	:	0.14
Depreciation	:	<u>0.12</u>
		17.59

**Sales Realization:**

The current market price of ordinary plain locally made papad is Rs 80 to Rs 90 per kg. Considering production of plain papads and providing for retail margin, a net ex-factory price of Rs 65 per kg. is considered. On this, basis the annual sales realization is estimated at Rs 19.50 lakh.

**Profitability:**

Based on the sales realization and the operating expenses, the annual profit would be Rs 1.91 lakh. This works out to a return on investment of 58%. The unit would break even at about 38% of the targeted annual production.

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs. 3.27 lakhs
Promoter's contribution	Rs 0.81 lakhs
Annual Sales realization	Rs. 19.50 lakhs
Annual Operating Expenses	Rs. 17.59 lakhs
Annual Profit	Rs. 1.91 lakhs
Return on sales	10%
Break-even point	38%
No. of person employed (direct)	6Nos.

**Machinery Suppliers:**

M/s A.M.T. Engineering,  
Station Road,  
(Opp: Veena Cinema)  
PATNA – 800 001.

## PARBOILED RICE MILL

### INTRODUCTION

Parboiled rice, popularly known as “ushna” rice in boiled form. India contributes about one-third of the world acreage under rice. Rice is available in over 5000 varieties, of which Izzong rice of Assam occupies an important position on account of its superfine grains, pleasant, fine cooking quality, sweet taste, soft texture. This article reviews the quality and traits of Izzong rice, particularly the varieties grown in different parts of Assam and North Eastern Region. Parboiling is preliminary to hulling in which the rough paddy is first soaked, then steamed and dried before removing the hulls.

There are many advantages of parboiling the paddy. It reduces grain breakage during milling, greatly improves the vitamins content and other nutrients in the polished rice grain, increases the oil content in the bran, and changes the cooking and eating quality of the rice and infestation during storage.

### PRODUCT USES

The rice in north eastern region is considered to be the main diet both vegetarian and non-vegetarian. The parboiled rice can be used for making dosa and idli. The products prepared from parboiled rice are better than those of raw rice.

### MARKET POTENTIAL

About 60% of the total production of paddy in India is parboiled. Parboiling is thus an important industry. Of the total population of region and as well as in the state of Assam and taking an average per capita consumption of 12 kg of rice per month, there is a vast scope for parboiled rice mill in the state of Assam as well as other part of north eastern region.

### SUGGESTED CAPACITY

The parboiled rice is marketed in gunny bags as well as looses. The capacity utilization is estimated at 80% in the 1<sup>st</sup> year and 90% from the 2<sup>nd</sup> year onwards.

Product	Capacity at 100% Utilization (P.A.)	1 <sup>st</sup> year capacity Utilization at 80%	2 <sup>nd</sup> yr. onward capacity Utilization at 90%
Parboiled Rice	2000 MT	1600 MT	1800 MT

### Basis:-

No. of working days	=	25 days per month
	=	300 days per year
No. of shifts	=	1 per day.
One shift	=	8 hours

### INFRASTRUCTURE REQUIRED

The main Infrastructural facilities required are:

Covered Shed Area	=	600 sq. ft.
Drying yard Area	=	2000 sq.ft.
Powder Requirement	=	10 km.
Water Requirement	=	3,000 KL. Per day
	=	Fire Wood/Coal/Furnace oil combined
	=	500 kg. Coal/Fire wood
	=	100 kg. Furnace oil

### RAW MATERIALS REQUIRED AND AVAILABILITY

The main raw material is paddy, it is available throughout the north-eastern region. Bulk of paddy is grown in the state of Assam, which has production about 6.0 lakh MT annually. About 7.0 MT of paddy is required per day for the unit. The requirement of raw materials for different capacities will be as follows.

Raw Materials	Capacity at 100% Utilization (P.A.)	1 <sup>st</sup> year capacity Utilization at 80%	2 <sup>nd</sup> yr. onward capacity Utilization at 90%
Raw Paddy	2100 MT	1680 MT	1890 MT

### SUGGESTED LOCATION

Parboiled rice milling project should be located mainly in rice growing area and also should be surrounded by available paddy cultivated area round the year.

Keeping in view the availability of paddy, the suggested locations in the state of Assam are Borpeta, Kamrup, Nalbari, Kokrajhar, Bongaigaon, Dhubri, Goalpara, Nagoan, Morigaon, Sibsagar, Lakhimpur and Cachar. In Arunachal Pradesh, Pasighat and Ziro. In Manipur, Imphal, Senapati, Thoubalan Chandel and Tamenglong etc. In the State of Tripura, Agartala, Dharmanagar and Udaipur. Sikkim – Rumitek, Dentam, Brang, Somgochoo

### PRODUCTION PROCESS

Parboiling of dehusked rice that is soaking of dehusked rice at initial temperatures of 70-100 oC and cooking at room temperature for 2 hours followed by open steaming for 20 minute shade drying and polishing gives rice with quality attributes comparable with normal parboiled rice. The cooking time is reduced by at least 30%. The process saves about 40% energy and can be easily adopted by primary processors. The main process steps are:

- Cleaning of dry paddy.
- Soaking in hot water and steaming for a short duration.
- Drying,
- Milling.
- Cleaning.
- Packaging.

## PROJECT ECONOMICS

### Total Capital Requirement

The total capital requirement including fixed capital and working capital is estimated at Rs 14.50 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs.11.42 lakhs.

<b>A. Fixed Capital</b>	(Rs. in lakhs)
Land	on rent
Land Development Cost	1.00
<u>Building /Civil works:</u>	
i) Work shed 500 sq.ft	2.50
ii) Office/Store 300 sq.ft.	1.50
iii) Toilet/Bathroom/Cemented open space, Drainage facilities etc.	0.80
Plant & Machinery	15.85
Misc. Fixed Assets	1.00
(Water arrangement/Overhead reservoir/pump set/power line connection/water & electrical fittings/office equipment)	
Preliminary & Pre-operative Expenses	0.60
Contingency provision	<u>0.40</u>
	<u>23.65</u>

**B. Working Capital:**

Raw materials/ Packing materials	15 days	2.24
Working expenses	1 month	0.98
Finished goods	10 days	1.48
Receivable	7 days	<u>1.16</u>
		<u>5.86</u>

Note: Working capital to be financed as –

Margin Money	:	2.20
Bank Finance	:	<u>3.66</u>
		<u>5.86</u>

**Means of Finance:**

Promoter's Equity(25%)	:	6.45
Term Loan(75%)	:	<u>19.40</u>
		<u>25.85</u>

**Operating Expenses**

The annual operating expenses are estimated as under:

(Rs in lakh)

Raw material/ packing materials	:	134.55
Wages & Salaries	:	5.81
Utilities	:	5.95
Repair & Maintenance	:	0.50
Administrative overhead	:	0.80
Selling expenses	:	8.74
Depreciation	:	1.95
Interest	:	<u>2.88</u>
		<u>161.18</u>

**Sales Turnover:**

Parboiled rice packed in jute Bag 1248 MT @ Rs. 14000 per MT Rs. 174.72

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs. 13.54 lakhs per year. This works out to a return on capital investment of 46%. The unit would break-even at about 47% of the rated capacity.

**Break Even Analysis:**

A. Variable Cost: (Rs in lakh)

Raw materials/ packing materials	134.55
Utilities	5.95
Selling expenses	<u>8.74</u>
	<u>149.24</u>

B. Semi-Variable Cost:

Wages & Salaries	5.81
Repair & Maintenance	0.50
Administrative overhead	0.80
Depreciation	1.95
Interest	<u>2.88</u>
	<u>11.94</u>

C.	Sales Realization	174.72
D.	Contribution	25.48
E.	Break-Even Point B/D x 100%	47%

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs.	29.51 lakhs
Promoter's contribution	Rs.	6.45 lakhs
Annual Sales realization	Rs.	174.72 lakhs
Annual Operating Expenses	Rs.	161.18 lakhs
Annual Profit	Rs.	13.54 lakhs
Return on sales	7%	
Break-even point	47%	
No. of person employed	11	

**Machinery & Equipment:**

The main equipment required are –

i)	Parboiling plant(1 tonne/hr.) with overhead Paddy holding bin, hot water tank, w3ater pump, Steam boiler, rice milling plant (1 tonne/hr.), Weighing scale and trollys	:	13.50
	Add. :Erection & Electrification @ 10% cost of machinery & equipments	:	1.35
	Add.: Taxes,duties, fright, insurance, packing, loading and unloading etc.	:	<u>1.00</u> 15.85

**Raw Materials/packaging materials (Annually):**

Item	Quantity	Rates	Annual Requirement (Rs in lakh)
1. Raw paddy	1900 MT	7.00 per Kg	133.00
2. Jute Bags	15600 nos.	8 each	1.25
3. Misc. items	L.S.	-	0.30
<b>TOTAL</b>			<b>134.55</b>

**Manpower:**

Category	No.of person	Salary per person per month(Rs)	Monthly Requirement (Rs )
Supervisor/manager	1	6000	6000
Skilled worker	2	5000	10000
Machine man	1	5000	5000
Unskilled workers	6	3000	18000
Accounts/Storekeeper	1	5000	5000
<b>Total Manpower Cost</b>			<b>44000</b>

Salary Bill Rs 5.28 lakhs + Benefits @ 10% annually i.e. Rs 0.53  
Total Annual Salary Bill : Rs 5.81 Lakh.

**Utilities:**

Annual Power requirement	84000 Kw	=	2.30 lakh
Water	3000 KL	=	0.15 lakh
Coal	75 MT	=	3.50 lakh

**Addresses Of Machinery Suppliers/Manufacturers:**

1. M/S Canara Engineering Enterprises  
B-182, II stage,  
Peenya Industrial Estate  
Bangalore-560 058
2. M/S G.G. Dandekar Machine Works (I) Ltd.  
Dandekarwadi  
Bhiwandi-421 302
3. M/S Jaya & Co.  
Trichy Road,  
P.B. No. 1347  
Coimbatore- 641 018
4. M/S Sidwin Machineries Ltd.  
No.10 III Stage  
Industrial Suburb,  
Mysore- 570 008

## PASTEURISED MILK & CREAM PROJECT

### Introduction:

Milk is an important human food. It is palatable, easy to digest and highly nutritious. It contains protein, fat, lactose, minerals and vitamin – A,B,C, D & E. There are different kinds of milk obtained from different animals like cow, buffalo, goat, camel and many others. The total solids in cow's milk range from 11% to 13% where as in buffaloes milk the range is from 15% to 19%. The compositions of milk from various animals are as follows:

	Carbohydrate	Protein	Fat
Cow	4.1 – 6.3%	2.5 – 4.0%	3.0 – 6.0%
Buffalo	4.5%	4.3%	7.55%
Goat	4.5%	3.7%	4.8%
Sheep	4.9%	6.5%	6.9%

Milk chilling/pasteurization industry plays an important role in augmenting and supplying protein rich milk and milk products at an affordable price for the masses. The modernization of dairying has had its impact at all levels from production of milk in the rural areas to its handling transportation, processing and retailing to urban customers. Presently only 12% of the milk market is represented by packaged and branded pasteurized milk, valued at about Rs 8,000 Crores. Plastic pouches replaced the bottles. Plastic pouches made transportation and storage very convenient, besides reducing costs. Milk packed in plastic pouches/bottles has a shelf life on just 2 – 3 days.

### Market Potential:

India has emerged as one of the largest milk producing country in the world despite low yields. India is the second largest milk producing country with appropriate production of about 79 million tones of milk during 2000-01. In the last two decades under the aegis of National Dairy Development Board (NDDB), a major white revolution has taken place which has led the country from a situation of scarcity to that of surplus. The efforts undertaken by NDDB have not only led to enhance production, improvement in methods of processing, development of strong marketing network but also led to the emergence of dairying as an important source of employment and income generation in the rural areas. Establishment of milk collection centers and chilling centers has enhanced the life of raw milk and enabled minimization of wastage due to spoilage of milk.

With the rising income level of the growing middle class in India, the demand for milk and milk products is also increasing significantly. Besides traditional milk products which have urban as well as rural markets, there is also a tremendous scope for marketing of value added milk products. There is an increasing demand for hygienically packed milk and other products like ice-cream, cream and malted foods. Some of the major dairy plants in India are Amul Dairy (Gujarat). Mother Dairy (Gujarat), Nestle India Ltd., (Punjab). The major milk producing states in India are Gujarat, UP, Punjab, Haryana, Maharastra, Rajasthan, MP, Bihar and West Bengal. For the past five years the average growth rate in milk production in India has been registered 9% growth over the previous year.

**Note:** Milk and Milk Products Order (MMPO) regulates milk and milk products production in the country. The order requires no permission for units handling less than 10,000 litres of liquid milk per day or milk solids upto 500 TPA. All the milk products except malted foods are covered in the category of industries for which foreign equity participation upto 51% is automatically allowed. Ice-cream, which was earlier reserved for manufacturing in the small-scale sector, has now been de-reserved. As such, no license is required for setting up of large-scale production facilities for manufacture of ice-cream. Exports of some milk-based products are freely allowed provided these units comply with the compulsory inspection requirements of concerned agencies like: National Dairy Development Board, Export Inspection Council etc., Bureau of Indian standards has prescribed the necessary standards for almost all milk-based products, which are to be adhered to by the industry.



**Plant Capacity:**

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 365
Production capacity	: Processing of 1500 Litres Milk per day. Milk in pouch : 1000 ltrs/day Cream: 100 Kg. per day.(20% yield)

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

**Raw Material:**

The major raw materials and consumables required for production of pasteurized packaged milk where the by-product is cream are raw milk collected from the local and nearby dairy farms in cans. The pasteurized milk and cream will be packed in pouches (1/2 ltr/1 litre) and plastic cartons for dispatch. The procurement costs of these materials are to be considered at the prevailing market price.

**Process:**

The major process steps involved are as follows:

Milking: The most important part of a milk collection is how cattle are prepared for milking. Poor milking practice cause poor quality of milk and mastitis. The milk produced from the cattle must be clean and low in sediment.

Storing: The collected milk should be stored at 10°C to prevent bacterial spoilage. Mechanical coolers do the cooling of stored raw milk.

Homogenization: This process mixes all type of milk and emulsifies the milk for better emulsion of that milk does not separate on standing.

Cream separation: Clarification at this stage is carried out with simultaneous cream separation. The process of clarification is carried out in cold condition but after homogenization.

Pasteurization: The milk after clarification and separation is subject to a temperature of 62° – 63°C for about not less than 30 minutes. The process is carried out in vat pasteurizer with jackets and agitators. Separated cream is also pasteurized.

Refrigeration: The pasteurized milk is stored in a chilled condition for further packing and delivery. The cream is also stored in chilled in a storage tank before packing.

**Machinery:**

The major equipment required by the unit for producing pasteurized milk and cream by processing raw milk are as follows:

Milk cans, storage tanks, homogenizer, refrigeration plant, filtration plant, pasteurizer, emulsifies cream separator, pouch packing machine, boiler etc.

**Location:**

The suitable locations for the project may be –

- (A. Kokrajhar, Jorhat, Dibrugarh, Silchar in Assam.
- (B. Dimapur, Kohima in Nagaland.
- (C. Shillong in Meghalaya.
- (D. Agartala in Tripura
- (E. Naharlagun in Arunachal Pradesh.

**Infrastructure:**

The basic infrastructure required are:

Land	:	2,500 sq.ft.
Building	:	1,500 sq.ft.
Power	:	60 KW
Water	:	8,000 KL. Per day.
Manpower	:	15 Nos. (Administrative (5), Factory Staff (10),

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 38.10 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 34.70 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		Rented
Building		Rented
Machinery		25.00
Miscellaneous fixed assets		5.50
Preliminary and pre-operative expenses		<u>2.00</u>
	<b>Total (A)</b>	<b>32.50</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Consumables	1 week	1.20
Finished goods	1 week	1.70
Working expenses	1 month	0.80
Receivables	1 week	<u>1.90</u>
	<b>Total (B)</b>	<b>5.60</b>
		=====
	<b>Total (A)+(B)</b>	<b>38.10</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 3.40 lakhs
Margin Money	.....	<u>Rs 2.20 lakhs</u>
		<b>Rs 5.60 lakhs</b>
		=====

**Means of Finance:**

The project cost of Rs 34.70 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 12.15 lakhs
Term Loan (65%)	....	<u>Rs 22.55 lakhs</u>
		<b>Rs 34.70 lakhs</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 80.30 lakhs (70% capacity utilization) as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials & consumable	59.00
2.	Utilities	1.50
3.	Wages & Salaries	7.50
4.	Overheads	1.30
5.	Selling expenses @ 0.5% on annual sales	4.50
6.	Interest on term loan (13.50%)	3.00
7.	Interest on Bank Finance for working capital (12.75%)	1.00
8.	Depreciation @10%	<u>2.50</u>
		<b>80.30</b>
		=====

**Sales Realization:**

The basis on which average ex-factory sales realization from the sale of pasteurized milk and cream at 100% capacity utilization is as follows:

Items	Qty./ day	Unit Sales Price (Rs)	Total Sales Per day (Rs)	Total Sales Per annum (Rs)
Pasteurized milk	1000 Ltrs.	20/Ltr.	20,000	73,00,000
Cream	100 Kg.	150/kg	15,000	54,75,000

Based on this the annual sales realization is estimated to be Rs 127.75 lakhs and at 70% capacity utilization the same is Rs 89.40 lakhs.

**Profitability :**

Based on the sales realization and the operating expenses, the profit would be Rs 9.10 lakhs per year (70% capacity utilization). This works out to a return on investment of 22%. The plant will break even at 49% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 34.70 lakhs
Promoter's contribution	:	Rs 12.15 lakhs
Annual sales realization (70% cap.)	:	Rs 89.40 lakhs
Annual operating expenses (70% cap.)	:	Rs 80.30 lakhs
Annual profit (pre-tax)	:	Rs 9.10 lakhs
Pre-tax Return on Sales	:	10%
Break Even Point	:	49%
No.of persons employed	:	15

**List of Machinery Suppliers:**

**List of Support Organization:**

1.	M/s Redson Engrs. Pvt. Ltd., F-9/B, 1 <sup>st</sup> Phase, Hydrabad – 500 055	1.	M/s National Dairy Development Board, P.B. No. 40, Anand GUJRAT
2.	M/s Raylons Metal Works, J.B. Nagar, Ram Krishna Mandir Road, Andheri (W) Mumbai – 400 059	2.	M/s National Dairy Development Board, (Regional Office) D.K. Block, Sector-II, Salt Lake City, Kolkata – 700091
3.	M/s Universal Dairy, Mahavir Road, Anand – 3880 001 GUJRAT	3.	M/s National Dairy Research Institute, Karnal – 132 001 Haryana
4.	M/s Dairy Equipments & Co., 111, Wadola Udyog Bhawan Mumbai – 400 001		

## POTATO CHIPS MAKING

### INTRODUCTION:

India is one of the largest producers of potato. Besides being used as a daily food item in various vegetable preparations, potato today increasingly finds use in the form of chips or wafers as snacks food. The potato chips and wafers are popular processed food items that give considerable value addition to potatoes.

### MARKET POTENTIAL:

The main consumers of potato chips and wafers are families especially in urban and semi-urban areas. Besides, hotels, restaurants, canteens, army establishments require potato chips in significant quantities.

The leading brands are *Lays, Binnies, Uncle chips, Ruffles, Bingos*. These are priced at around Rs 20.00 per pack of 90 gm i.e. around Rs 220/- per kg. It should be possible for tiny units in small urban areas to sell potato chips at around Rs 170/- per kg. and this would enable them penetrate in the market.

In urban areas, the per capita consumption of potato chips or wafers may be conservatively taken ½ Kg. per annum. The annual demand in a town having a population of 2 lakh is estimated at 100000 Kg per year. A tiny unit could be set up with a capacity of 10000 to 15000 kg. In a town with a population of 2 lakhs, if there are two units, they would be catering to only 25 to 30% of the demand. Hence, there are good prospects for potato chips units especially near the potato growing areas.

### PLANT CAPACITY:

A capacity of 9000 kg per annum and annual output of 6300 kg is suggested on the following basis.

Processing capacity per day	:	240 Kg.
Average yield of wafer/chip	:	12.5%
Daily production per single shift of 8 hours	:	30 Kg.
Effective working days per year	:	300 days
Annual production capacity	:	9000 kg.
Capacity utilization	:	70%
Annual output	:	6300 kg.

### RAW MATERIALS:

Fresh potatoes are the main raw materials. Besides, edible oil is required as a frying medium and additives such as salt and flavouring agents are required. Consumable is mainly packing material i.e. polythene bags. The annual requirement of potato and edible oil corresponding to the annual production of 6300 tonnes per year is as follows:

Fresh Potato	:	50,000 kg.
Edible oil	:	4,000 Ltrs.

The annual production of potato in the north-eastern region is about 9.42 lakh tones per year. It is grown mainly in Assam, Meghalaya, Tripura, Nagaland and Arunachal Pradesh. The State-wise production is as follows:

		Lakh tones/year
		<u>2004-05</u>
Assam	:	5.89
Meghalaya	:	1.49
Tripura	:	1.06
Nagaland	:	0.20
Manipur	:	0.01
Sikkim	:	0.33
Mizoram	:	0.04
Arunachal Pradesh	:	0.40
<b>Total</b>		<b><u>9.42</u> lakh tones.</b>

**PROCESS :**

The main process steps in the production of potato chips are –

- (A. Visual inspection and sorting of potatoes;
- (B. Washing;
- (C. Peeling and trimming;
- (D. Slicing and cutting;
- (E. Washing, sorting and dewatering;
- (F. Frying;
- (G. Cooling, salting and packing.

**MACHINERY:**

The main equipment required are –

- (A. Potato peeling machine cap. 40/50 kg per hour with 0.5 HP motor.
- (B. Slicing machine with arrangement to adjust thickness of slice complete with motor etc.
- (C. Blancher
- (D. Spin dryer to extract excess moisture cap.4kg/charge taking 3 to 4 minutes complete with motor.
- (E. Deep fat fryer
- (F. Electric polythene bag sealing machine upto 30cm wide.
- (G. Weighing machine.

**INFRASTRUCTURE:**

The main infrastructure requirements are –

Shed	:	1000 sq.ft.
Power	:	2.5 KW
Water	:	1600 ltrs/day.

**LOCATION:**

Keeping in view the availability of potatoes, the following locations are suggested.

Assam	:	Barpeta, Mankachar, Tezpur, Lakhimpur Dibrugarh, Jorhat, Nagaon, Silchar.
Meghalaya	:	Shillong, Tura, Williamnagar, Nongstoin, Jowai.
Tripura	:	Agartala
Arunachal Pradesh	:	Tawang
Nagaland	:	Kohima, Mokokchung.
Sikkim	:	Rumitek, Dentam, Brang, Somgochoo

**TOTAL CAPITAL REQUIREMENT:**

The total capital requirement including fixed capital and working capital is estimated at Rs 4.29 lakh as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 3.59 lakh.

			(Rs. lakhs)
(A.	<u>Fixed Capital:</u>		
	Land and Building		On rent
	Plant & Machinery		2.25
	Misc. Fixed Assets		0.50
	Preliminary & Pre-operative expenses		<u>0.45</u>
		Total (A)	3.20
B.	<u>Working Capital:</u>		
	Raw materials	7 days	0.12
	Packing material	2 months	0.08
	Stock of finished goods	7 days	0.19
	Working expenses	1 month	0.16
	Receivables	15 month	<u>0.54</u>
		Total (B)	<u>1.09</u>
		Grand Total (A+B)	<u>4.29</u> lakh

**Note: Working capital may be financed as –**

**Bank Finance: 0.70 lakh**

**Margin Money: 0.39 lakh**

**MEANS OF FINANCE:**

Promoter's contribution and equity assistance (35%)	Rs 1.26 lakh
Term Loan (65%)	<u>Rs 2.33 lakh</u>
Total	Rs 3.59 lakh

**OPERATING EXPENSES**

The annual operating expenses are estimated at Rs 9.25 lakh as given below:

	(Rs. lakh)
Raw materials and consumables –	
Potato 50,000 kg.	2.34
[ (a) 33000 kg @	Rs 4/kg.
for 8 months and	
(b) 17000 kg @	Rs 6/kg.
for 4 months]	
Edible oil 4000 Ltrs	
@ Rs 55/Ltr.	2.20
Additives, flavours, chemicals	0.40
Packing materials –	
Polythene bags, tin containers	0.50
Utilities	0.40
Wages & salaries	1.50
Rent	0.36
Other overheads	0.40
Selling expenses @ 5% on sales	0.53
Interest on term loan @12%	0.28
Interest on bank finance @15%	0.11
for working capital	
Depreciation	<u>0.23</u>
Total	9.25

**SALES REALIZATION:**

Sales realization of 6300 kg of Potato chips @ Rs 170/- per kg would be Rs 10.71 lakh.

**PROFITABILITY:**

Based on the sales realization and the operating expenses, the profit (pre-tax) at rated capacity would be Rs 1.46 lakh per year. This works out to a return on investment of 34%. The plant would break even at about 46% of the rated capacity.

**HIGHLIGHTS:**

The major highlights of the projects are as follows:

Total Capital requirement	:	Rs 4.29 lakh
Promoter's contribution	:	Rs 1.26 lakh
Annual Sales realization	:	Rs 10.71 lakh
Annual operating expenses	:	Rs 9.25 lakh
Annual Profit (Pre-tax)	:	Rs 1.46 lakh
Pre-tax return on sales	:	14%
Break-Even Point	:	46%
Number of persons employed	:	4 Nos.

**MACHINERY SUPPLIER:**

1. M/s Gardener's Corporation,  
6, Doctor's Lane,  
(Near Gole Market)  
Post Box No. 299,  
New Delhi – 110 001.
2. M/s Hindustan Engineering Co.,  
25/31, Ropewalk Street,  
Rampart Row.  
Fort,  
Mumbai – 400 023
3. M/s Raylons Metal Works,  
J.B. Nagar,  
Kondivitta Lane,  
Andheri,  
Mumbai – 400 059
4. M/s Prakash Machine Tools,  
5, Khetra Das Lane,  
(Besides Broadway Hotel),  
Kolkata – 700 012
5. M/s B. Sen Barry & Co.  
65/11, Rohtak Road,  
Karol Bagh,  
New Delhi – 110 005.

## SCENTED SUPARI PROCESSING

### Introduction:

Supari is the dehydrated betel nut sliced for direct consumption. It is used as mouth fresher after food. It is a typical Indian product popular with both young and old. Betel nuts are abundantly found in the N.E. Region and are extensively used. Conversion of betel nut to supari confers substantial value addition to the extent of 80% of the cost.

### Market Potential:

The raw material for supari i.e. betel nut is abundantly available in the N.E. Region specially Assam. The habit of chewing up supari with pan is popular practice in the region. The demand for supari has never decreased. It is a labour intensive with low or no technology input hence a few units can come up and shall be viable.

### Plant capacity:

Production per day at rated capacity	:	100 kg. scented supari
Working days/year	:	300
Annual production	:	30 Tons.

### Process:

The major process steps are:

- i) Boiling of raw nut.
- ii) Open sun drying for 2 to 3 days.
- iii) Peeling off semi dried nut.
- iv) Further drying for 10 to 15 days.
- v) Slicing of dried supari.
- vi) Application of essence in required quantity.
- vii) Packing in pouches.

### Machinery and Equipment:

- i) Karahi/ Pan
- ii) Slicer/ Daos.
- iii) Bamboo Mat.
- iv) Bamboo Baskets.
- v) Plastic Sheets/Tarpaulins.
- vi) Accessories.

Total : Rs 50,000

### Infrastructure:

The major infrastructural requirement are:

Covered Area	:	1000 sq.mt.
Power	:	1 KW
Water	:	500/day

### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 5,18,974 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 2,66,140.

#### A. Fixed Capital:

	(Rs)
Land	Own
Building	50,000
Plant & Machinery	50,000
Miscellaneous fixed assets	20,000
Preliminary and pre-operative expenses	<u>10,000</u>
<b>Total (A)</b>	<b>1.30,000</b>
	=====



**B. Working Capital:**

Raw materials & Packing material	½ month	1,09,875
Finished goods	½ month	1,17,459
Working expenses	1 month	11,640
Receivables	15 days	<u>1,50,000</u>
<b>Total (B)</b>		<b>3,88,974</b>

**Total (A)+(B) 5,18,974**

Note: Working capital may be financed as:

Bank Finance	Rs 2,52,834
Margin Money	<u>Rs 1,36,140</u>
	<b>Rs 3,88,974</b>

**Means of Finance:**

Promoter's contribution (35%)	Rs 93,149
Term Loan (65%)	<u>Rs 1,72,991</u>
	<b>Rs 2,66,140</b>

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 25,62,543 as given below:

	<b>(Rupees)</b>
1. Raw materials	16,50,000
2. Packing materials	2,47,500
2. Utilities	7,680
3. Wages & Salaries	1,32,000
5. Other overheads	12,000
6. Selling expenses @ 5% on annual sales	1,50,000
6. Interest on term loan	20,759
7. Interest on Bank Finance for Working Capital	31,604
9. Depreciation @10% on m/c	<u>12,000</u>
<b>Total</b>	<b>25,63,543</b>

**Sales Realization:**

Sl.No.	Product	Qty.(MT)	Rate (Rs)	Value (Rs)
1..	Supari	30 MT	10/-	30,00,000
	<b>TOTAL</b>			<b>30,00,000</b>

**Profitability :**

Based on the sales realization of Rs 30,00,000 and the operating expenses of Rs. 25,63,543 as such the profit would be Rs 4,36,457 per year. This works out to a return on investment of 84%. The plant will break even at 41% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 5,18,974
Promoter's contribution	:	Rs 93,194
Annual sales realization (70% cap.)	:	Rs 30,00,000
Annual operating expenses (70% cap.)	:	Rs 4,36,457
Annual profit (pre-tax)	:	Rs 4,36,457
Pre-tax Return on Sales	:	14.5%
Break Even Point	:	41%
No.of persons employed	:	10

**SUGGESTED LOCATION :**

Betal nut growing areas in Assam & other north eastern areas.

**Suppliers of Machinery (Potter Wheel):**

Local machinery suppliers in Guwahati.

## SPICE GRINDING & PACKAGING

### INTRODUCTION

Spices are essential ingredients adding taste and flavouring in food preparations. India is the largest producer and consumer of spices with a production of around 36.68 lakh tones. India is also the largest producer of chilli in world contributing 25% of the total world production. Indian spices are of the finest quality. Today the demand for it has considerably increased from all the countries. The project aims at production of ground spices especially chilli in consumer packs. The project mainly would involve production of chilli powder, tamarind powder, Jeera powder, Dhania powder and mix spice powder.

### ABOUT THE PRODUCT

Powdered spices are convenient to use and also saves time and energy for preparing different delicious dishes. Besides their everyday use in households, spices are used in significant quantities in processed foods such as pickles and sauces. It is also very much useful particularly for the working couples, bachelors, hostels, hotels, restaurants, hospital and different camps of defense personnel spreading throughout the country.

### MARKET POTENTIAL

Spices are integral part of Indian food (India has come to be known as "land of spices") both as a component of daily food items as well as part of pickles, sauces & chutneys etc.. With changing of life style and especially with changes of food habits and increase of income level, the use of powdered spices has increased. Of late, the market for ready mix of spices has grown significantly. Export market for Indian spices is also growing- it was Rs. 2025 crore during 2000-01. Thus the market is huge with potential for quality producer. Numbers of brands have appeared in the market such as Sona, MDH, Ashok Masala, Sunrise etc. besides these, some of local brand are also there in the market. In addition there are numbers of small units producing powdered spices, both in loose as well as packet formed.

The consumption of spices in a household of five members, in the north eastern region is estimated at 100 gm. per person per month i.e. 6.0 kg per household per year. Of this share of, powdered spice may be taken at 50% i.e. 3.0 kg per household per year. In north eastern states powdered spices are used mainly in urban and semi urban areas and it may be conservatively assumed that 70% of the urban population uses powdered spices.

### SUGGESTED CAPACITY

To assessing the proposed plant capacity due consideration is given on availability of raw materials, availability of electricity and market. The annual production of 50 tonne is suggested, the production and product-mix at different capacity utilization per annum will be as follows:

Item	Installed Capacity (TPA)	1 <sup>st</sup> yr. production @80%	2 <sup>nd</sup> yr. onwards production @90%
Turmeric powder	20	16	18
Chilli powder	10	8	9
Jeera powder	5	4	5
Dhania Powder	5	4	5
Mix Powder (dhania, chilly, pepper, bay leaf & curry leaf etc.)	10	8	9
<b>Total</b>	<b>50</b>	<b>40</b>	<b>46</b>

### Basis:-

No. of working days	=	25 days per month
	=	300 days per year
No. of shifts	=	1 per day.
One shift	=	8 hours
Daily Production	=	135 kg. (at 80 Capacity)

## **INFRASTRUCTURE REQUIRED**

The main Infrastructural facilities required are:

Covered shed area (processing hall/storages/office)	800 sq. ft.
Power requirement	10 kw.
Water (required in every working day)	1,500 ltrs.

## **RAW MATERIALS REQUIRED AND AVAILABILITY**

The major raw materials required for this unit are turmeric, chilly, jeera and dhania etc. Based on an average yields of 95% from ungrounded spices to powdered spices and annual requirement of raw materials would be about 53 tonne (basis on 100% capacity utilization).

1.	Turmeric	21.00 tonne
2.	Chilly	10.50 tonne
3.	Jeera	5.25 tonne
4.	Dhania	5.25 tonne
5.	Mix Powder (dhania, chilly, pepper, bay leaf & curry leaf etc.)	<u>11.00 tonne</u>
		<u>53.00 tonne</u>

**Capacity wise details of raw-materials & packaging materials are as follows:**

Items	Quantity (MT) in the 1 <sup>st</sup> year @ 70%		Quantity (MT) in the 2 <sup>nd</sup> year @ 80%		Quantity (MT) in the 3 <sup>rd</sup> year onward @ 80%	
	Quantity	Value (in Rs.)	Quantity	Value (in Rs.)	Quantity	Value (in Rs.)
Turmeric	14.70	2,65,000	16.80	3,03,000	18.90	3,41,000
Chilly	7.35	2,57,000	8.40	2,94,000	9.45	3,30,000
Jeera	3.70	4,44,000	4.20	5,04,000	4.75	5,70,000
Dhania	3.70	1,66,500	4.20	1,89,000	4.75	2,14,000
Mix Powder (dhania, chilly, pepper, bay leaf & curry leaf etc.)	7.70	4,50,000	8.80	5,14,000	9.90	5,78,000
Packaging Materials (50/100/200 & 500 gm. size packets)	70,000 nos.	1,05,000	80,000 nos.	1,20,000	90,000 nos.	1,35,000
<b>Total (Rs.)</b>		<b>16,87,500</b>		<b>19,24,000</b>		<b>21,68,000</b>

## **SUGGESTED LOCATION**

Generally urban as well as semi urban areas having the infrastructure of electricity, transportation, near to raw materials may be considered as viable location of NER including sikkim for setting up of spice grinding unit.

## **PRODUCTION PROCESS**

1. Raw Spices
2. Cleaning
3. Grinding/Pulverizing
4. Mixing
5. Filling & Sealing
6. Packaging
7. Transportation
8. Marketing.

## PROJECT ECONOMICS

### Total Capital Requirement

The total capital requirement including fixed capital and working capital is estimated at Rs 14.50 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs.11.42 lakhs.

<b>A. Fixed Capital</b>		(Rs. in lakhs)
Land		on rent
Land Development Cost		0.80
<u>Building /Civil works:</u>		
i)	Work shed 300 sq.ft	2.10
ii)	Office/Store for R.M./Finished goods 300 sq.ft.	2.10
iii)	Toilet/Bathroom/Cemented open space, Drainage facilities etc.	1.00
Plant & Machinery		1.00
Misc. Fixed Assets		1.50
	(Water arrangement/Overhead reservoir/pump set/power line connection/water & electrical fittings/office equipment)	
Preliminary & Pre-operative Expenses		0.50
Contingency provision		<u>0.40</u>
		<u>9.40</u>
<b>B. Working Capital:</b>		
Raw materials/consumables	15 days	1.38
Packing materials	1 month	0.30
Working expenses	1 month	1.00
Finished goods	10 days	1.45
Receivable	7 days	<u>0.97</u>
		<u>5.10</u>
Note: Working capital to be financed as –		
Margin Money	:	2.02
Bank Finance	:	<u>3.08</u>
	:	<u>5.10</u>
<b>Means of Finance:</b>		
The project cost of Rs.11.60 lakhs may be financed as under:		
Promoter's Equity(25%)	:	2.87
Term Loan(75%)	:	<u>8.55</u>
		<u>11.42</u>
<b>Operating Expenses</b>		
The annual operating expenses are estimated as under:		
Raw material/consumables	:	24.93
packing materials:	:	2.20
Working expenses	:	6.27
Repair & Maintenance	:	0.10
Administrative overhead	:	0.30
Selling expenses 10% on sales	:	5.00
Depreciation	:	0.50
Interest	:	<u>1.49</u>
		<u>40.79</u>
<b>Sales Turnover:</b>		
1.	Dhania(coriander)40 Qtls@ Rs.9,000/Qtls	Rs. 2.48 lakhs
2.	Chilli powder 82 Qtls@ Rs.12,000/Qtls	Rs. 9.84 lakhs

3.	Haldi(turmeric) 165 Qtls@ Rs.9,000/Qtls	Rs.10.23 lakhs
4.	Jeera ( camin seed) 40 Qtls@ Rs.16,000/Qtls	Rs. 6.40 lakhs
5.	Meat Masala 85 Qtls@ Rs.18,000/Qtls	<u>Rs.15.30 lakhs</u>
		<u>Rs.49.99 lakhs</u>

**Say Rs. 50.00 lakhs**

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs. 9.21 lakhs per year. This works out to a return on capital investment of 64%. The unit would break-even at about 36% of the rated capacity.

**Break Even Analysis:**

A.	<u>Variable Cost:</u>	(Rs in lakh)
	Raw materials/Consumables	24.93
	Packing materials	2.20
	Utilities	1.25
	Selling expenses	<u>5.00</u>
		<u>33.38</u>
B.	<u>Semi-Variable Cost:</u>	
	Wages & Salaries	5.02
	Repair & Maintenance	0.10
	Administrative overhead	0.30
	Depreciation	0.50
	Interest	<u>1.49</u>
		<u>7.41</u>
C.	Sales Realization	50.00
D.	Contribution	16.62
E.	Break-Even Point B/D x 80%	36%

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs.	14.50 lakhs
Promoter's contribution	Rs.	2.87 lakhs
Annual Sales realization	Rs.	50.00 lakhs
Annual Operating Expenses	Rs.	40.79 lakhs
Annual Profit	Rs.	9.21 lakhs
Return on sales		18%
Break-even point		36%
No. of person employed		9

**Machinery & Equipment:**

The main equipment required are –

i)	Spice Grinding Machine 24" Vartical stone,complete set	:	2 sets.	23,000
ii)	Electric Motor 15 h.p. 1400 RPM with Starter	:	1 no.	32,000
iii)	Power Capacitor 6 KVAR	:	1 no.	1,600
iv)	V. Belt,Pulley	:	2 set.	10,000
v)	Line shaft, rubber pulley bearing and block etc	:	2 set.	5,500
vi)	Rubber belt,foundation boltand weighing scales etc. accessories	:	L.S.	<u>15,000</u>
				87,100

Add.: Taxes,duties, fright, insurance, packing,  
Loading and unloading etc. @15%

13,000  
1,00,100

**Say Rs.1.00 Lakh**

**Raw Materials/Consumable (Annually):**

Item	Quantity	Rates(Rs.)	Annual Requirement (Rs in lakh)
Dhania(coriander)	42MT	4,000/MT	1.68
Chilli powder	84MT	4,200/MT	3.53
Haldi(turmeric)	168 MT	4,500/MT	7.56
Jeera ( camin seed)	42MT	8,000/MT	3.36
Meat Masala(Mixed)	88 MT	10,000/MT	8.80
<b>Total Rs.</b>			<b>24.93</b>

**Packaging materials**

Item	Quantity(nos.)	Rates(Rs.)	Annual Requirement (Rs in lakh)
100 gm. poly bag	1.00 lakh	0.50 each	0.50
200 gm. poly bag	0.75 lakh	0.75 each	0.57
50 gm. poly bag	1.25 lakh	0.50 each	0.63
500 gm. poly bag	0.50 lakh	1.00 each	0.50
<b>Total Rs.</b>			<b>2.20</b>

**Manpower:**

Category	No.of Person	Salary per person per month(Rs)	Monthly Requirement (Rs)
Manager cum skilled worker	1	6000	6000
Un-skilled worker	4	3000	12000
Store cum Accountant	1	5000	5000
Sales personnel	3	5000	15000
<b>Total Manpower Cost</b>			<b>38,000</b>

Salary Bill Rs 4.56 Lakhs + Benefits @ 10% annually i.e. Rs 0.46  
Total Annual Salary Bill : Rs 5.02 Lakh.

**Utilities**

Power for Machinery:	15 H.P.
General Lighting:	2 H.P.
	-----
	<b>17 H.P.</b>
	-----
d) Electricity Bill:	
17 H.P. X 0.746 KW X 6 Hrs. X 300 days X Rs. 5.50	
Hence, annual Electric bill	Rs. 1.15 lakh
b) Water Charge = 5000 Ltrs. per day(L.S.)	Rs. 0.10 lakh

**ADDRESSES OF MACHINERY SUPPLIERS/MANUFACTURERS**

1. M/S Archana Machinery Stores  
M.S. Road, Fency Bazer,  
Guwahati-781 001
2. M/S Shew Machinery Store.  
A.T. Road,  
Guwahati-781 001
3. M/S Process Machinery & Equipments Pvt. Ltd.  
8A, Shyamapaprasad Mukherjee Road.  
Kolkata-700 025
4. M/S Bengal Metal Works.  
69A, Serpentine Lane,  
Kolkata-700 014.

## FORMAT

- (A) Introduction.
- (B) About the Product
- (C) Market Potential
- (D) Suggested Capacity
- (E) Infrastructure requirement
  - a. Covered Area
  - b. Utilities
- (F) Raw Materials and its availability
- (G) Suggested Location
- (H) Production process(step wise)
- (I) Project Economics
  - a. Capital Cost.
  - b. Working Capital requirement
  - c. Cost of Production & Profitability
  - d. Turn Over
  - e. Sources of Finance
  - f. Plant & Machineries
  - g. Cost of Raw Materials & Consumables
  - h. Cost of Utilities & Overhead
  - i. Manpower requirement & wage bill
  - j. Profit Sales ratio
  - k. Rate of Returns
  - l. Break Even Point

Addresses of machinery suppliers/manufacturers

## TEA PROCESSING

### Introduction:

A small tea processing unit that will satisfy the need of the small tea growers has a very good market prospect. The small cottage tea industries established in the states like Meghalaya and Assam have been running successfully as a profit earning venture. The quality of the product produced by these units have been found to be better and thus greatly in demand than the large unit's produce.

### Market Potential:

The processed tea (CTC Black Tea) produced by the only unit at Sarupathar (Assam) under Dhansiri under Golaghat District is being sold like hot cakes in Sarupathar locality.

The Cottage made CTC Tea has great demand among the users due to its special manufacturing process, which imparts its quality and aroma. Besides, cottage organic Tea (CTC and Orthodox), Bio-Tea may be produced, which will have great market potential. So a couple of cottage tea factory could be set up in concentrated tea growing areas which will have a steady market for its products.

### MANUFACTURING PROCESS :

#### 1. **Withering :**

Natural Withering :

The fresh tea leaves are laid out in thin layers on mats staked one above another and dried in the fresh air for at least 20 hours.

Artificial Withering :

The leaves are laid out in layers of up to 20cm. thick on a mesh. The meshes are placed in a tunnel ; through which warm air mixed with fresh air is forced. This considerably reduces the total withering time. Around 60-62% residual moisture suitable for tea processing of the withered green leaves.

#### 2. **Breaking Up :**

A circular table fitted in the center with a cone and across the surface with slats called battens. A jacket, or bottomless circular box with a pressure cap, stands a top of the table. Table and jacket rotate eccentrically in opposite directions, and the leaf placed in the jacket is twisted and rolled over the cone and battens in a fashion similar to land rolling.

#### (C) **CTC Method (Crushing, tearing and curling) :**

This machine consists of two separated metal rollers, placed close together and revolving at unequal speeds, which cut, tear and twist the leaf. CTC machines are widely used, for example in Assam.

#### (D) **Fermentation :**

During fermentation, the oxidation process which had begun during rolling is continued. Fermentation takes place in separate fermentation rooms, which need to be kept extremely clean to avoid bacterial infection of the tea. The tea leaves are placed in 3.5 – 7.5 cm. Layers on aluminium trays. The thickness of the layers depends on the room temperature. As soon as the tea has acquired a copper red colour, the correct degree of fermentation has been reached, and the process must be halted by drying.



## Drying :

The drying process carried on a 4 plates system vanician typed drier. Hot air up to 90 degree C. is blown against the leaves, which should have reached 80- degree C. by the time drying has been completed, in order for the polyphenol oxidize enzyme to be properly inactivated. The moisture content should be reduced to 3.5% whereby the aroma becomes established and the leaves take on their typical black coloration.

## MACHINERY :

Plant & Machinery :

- (a) CTC Machine (3CUT) 3 Pair 8" Roller (8-10-8 TPI)  
with 3 HP motor complete.
- (b) Furnace including heat exchange & Chimney.
- (c) Drier (VaniceanType)  
includes Blower with 1 HP motor.
- (d) Humidifier.
- (e) Pivot Balance.
- (f) Spring Balance.
- (g) Rolling Table-30 kg. batch (with 1 HP motor).
- (h) 12.5 KVA Diesel Generator set.
- Forced Green Leaves de-humidification Chamber,  
Capacity 600 green leaves holding
- (j) Fiber Separator.

**Total :**

**SUGGESTED CAPACITY:**

**Rs. 8.40 lakhs.**

600 kg/day for 200 days working days in a year because tea leaves are grown seasonally. Number of shift per day is one.

## INFRASTRUCTURE :

The major infrastructure requirements are :

Building	2000 sq.ft.
Power	20 KW
Water	200 litres/day.

## LOCATIONS:

This unit can be set up at any tea growing areas or where green leaves are available readily, in NER including Sikkim.

## TOTAL CAPITAL REQUIREMENT :

The project cost comprising fixed capital and margin money on working capital is Rs 16.82 lakhs.

	<b>Rs. Lakhs.</b>
<b>Fixed Capital :</b>	
Land & Building	5.50
Plant & Equipments	8.40
Misc. Fixed Assets.	1.20
Preliminary & Pre-op.expenses.	<u>0.70</u>
<b>Total (A) :</b>	<b><u>15.80</u></b>

**Working Capital :**

Raw materials	2 months.	2.27
Finished goods.	1 week.	0.56
Working expenses	1 month	0.24
Receivables	7 days.	<u>1.02</u>
	<b>Total-(B) :</b>	<b><u>4.09</u></b>

**Note :**

Working capital may be financed as –

Bank finance	:	Rs. 3.07 lakhs.
Margin Money	:	<u>Rs. 1.02 lakhs.</u>
<b>Total</b>		<b><u>Rs 4.09 lakhs</u></b>

**MEANS OF FINANCING :**

The project cost of Rs 16.82 lakhs may be financed as under –

	<b>Rs. Lakhs</b>
Promoter's contribution(35%)	5.89
Term loan(65%)	<u>10.93</u>
<b>Total :</b>	<b><u>16.82</u></b>

**OPERATING EXPENSES :**

The annual operating expenses are estimated at Rs.16.24 lakhs as under :

	<b>Rs. Lakhs</b>
Raw materials – 1,20,000 Kgs	
Green leaves @ Rs 8/- per Kg.	9.60
Utilities	0.86
Wages & salaries	2.00
Other overheads	0.24
Selling expenses @ 5% on annual Sales.	1.02
Interest	1.68
Depreciation-10%	<u>0.84</u>
<b>Total :</b>	<b><u>16.24</u></b>

**SALES REALISATION :**

Sl.No.	Particulars	Amount in lakhs
1.	Green leaves processing per year = 600 kg. per day x 200 days = 1,20,000 kg. of leaves. = Total Production of Made Tea @ 20% yield. = 24000 Kg of Made Tea x @ Rs.85/Kg	20.40

**PROFITABILITY :**

Based on the sales realization and the operating expenses, the profit at 100% capacity utilization would be Rs 4.16 lakhs per year. This works out to a return on investment of 25%. The unit would break even at about 58% of the rated capacity.

**HIGHLIGHTS :**

The major highlights of the project are as follows :

Total capital requirement	:	Rs 16.82 lakhs.
Promoter's contribution	:	Rs 5.89 lakhs
Annual sales realization	:	Rs 20.40 lakhs
Annual operating expenses	:	Rs 16.24 lakhs
Annual profit (Pre-tax)	:	Rs 4.16 lakhs
Pre-tax return on sales.	:	20%
Break-Even Point.	:	58%
No. of persons employed.	:	10

**MACHINERY SUPPLIER :**

M/s Avery India Ltd.

12 B, Russel Street,

P.Box – 9329

Kolkata – 700 071.

M/s Bansal Engg. & Steel Co. Pvt. Ltd.,

Rotary Road,

Dibrugarh,

Assam..

## TOMATO SAUCE

### INTRODUCTION

India produces a wide range of fruits and vegetables in substantial quantities make it the second largest producer of these perishable, but nutritionally essential, crops in the world. The percentage of fruits and vegetables used by processing industries for commercial purposes and to make valued added food products is about 1.6% of total production of fruits & vegetables in the country.

Food processing industry has started receiving a great deal of attention from the policy makers. In India very little effort has been made so far in streamlining the production, procurement, processing and marketing of perishable horticultural products. There has been a change in the trend of consumption of vegetable during the last few years in our country.

North Eastern India produces a large quantity of fruit & vegetables. The current industrial policy environment is favorable for development of food processing industry. The Government of India has been making efforts to accelerate the pace of development in processing industry.

### PRODUCT USES

Tomato sauce is being used with snacks like rolls, cutlets, samosas, chops, soup, chowmin and other Continental as well as Chinese dishes. Bright mixture made from tomato is used as important items with all modern food/snacks. Tomato sauce enhances the taste of the meal and increase the satisfaction in every Continental/Chinese meal.

### MARKET POTENTIAL

Assam as well as north eastern states are one of the largest fruits and vegetable producing region in India. These states produce a sizeable quantity of tomato in plain as well as hilly areas throughout the year.

There is a big market for this product. The market scenario has revealed a positive indication for the specially packed tomato sauce in local as well as outside market. Many units are operating in small scale sector in the country are not capable of catering to the international standard in an organized fashion. It is estimated that the total production of processed fruit & vegetable in India is about 15.0 lakh tonne.

There are good reasons to believe that the processed products of fruit & vegetable business will remain a growth industry for a long time, one of the main reasons for expectation of growth is that the consumption of tomato sauce is gaining popularity day by day owing to the growing change in the food habits and increased consumption of Chinese/Continental and other convenient snack foods.

### SUGGESTED CAPACITY

The tomato sauce the production at different capacity utilization per annum will be as follows:

Item	Installed Capacity (TPA)	1 <sup>st</sup> year production @80%	2 <sup>nd</sup> year onwards production @90%
Tomato sauce	50	40	45

#### Basis:-

No. of working days	=	25 days per month
	=	200 days per year (Avg.)
No. of Shifts	=	1 per day.
One shift	=	8 hours

## INFRASTRUCTURE REQUIRED

The main Infrastructural facilities required are:

Covered shed area	500 sq. ft.
Power requirement	5 kw.
Water (required in every working day)	2000 kl.
Fuel (gas cylinders annually)	100 nos.

## RAW MATERIALS REQUIRED AND AVAILABILITY

The major raw materials required for production of tomato sauce is fully ripe selected tomatoes. Raw materials are available round the year. Tomatoes are available within state, NER and other parts of the country and may be procured from different producing centre in different seasons.

The consumables are sugar, preservatives, colours, chemicals, common salt, different spices etc. The product will be packed in glass bottle/jars and finally in cartons. All raw materials & consumable items can be procured from local agencies in the open market. The cost of tomatoes and consumables has been taken considering the seasonal fluctuation in price.

## SUGGESTED LOCATION

Tomato based units should be located, surrounded by available tomato growing areas and skilled manpower. Keeping in view the availability of tomatoes the following location are suggested.

Assam	Barpeta, Dhubri, Kamrup, Nagaon, Tezpur.
Arunachal Pradesh	Pasighat, Zero, Bomdila.
Meghalaya	Shillong, Jowai
Tripura	Udaipur
Sikkim	Rumitek, Dentam, Brang, Somgochoo

## PRODUCTION PROCESS

Fully ripe selected tomatoes are washed at first and then sliced. It is heated and passed through pulper to produce pulp followed by sieving. The liquid pulp is boiled/cooked with various ingredients (ground spice, garlic, onion etc. as per formulation) followed by addition of sugar, salt, acetic acid/vinegar, chemicals etc. Sodium Benzoate is generally added before the product is filled into washed bottles, sealed, labeled and packed in cartons for dispatch.

## PROJECT ECONOMICS

The total capital requirement estimated is Rs.10.96 lakhs as given below:-

D. Fixed Capital		(Rs. in Lakhs)
Land		Own/Lease
Land Development Cost		0.80
<u>Building/Civil Works</u>		
i.)	Work shed 300 sq. ft.	1.80
ii.)	Office/Store/Reception 200 sq.ft.	1.20
iii.)	Toilet/Bathroom/cemented open space Drainage facilities etc.	0.80
Plant & Machinery		3.05
Misc. Fixed Assets (water arrangement/overhead-reservoir/ pump-set/power line connection/ water & electrical fittings/office equipments)		1.00
Preliminary & Pre-operative Expenses		<u>0.50</u>
		<u>9.15</u>
<b>Working Capital</b>		
	(Norms)	(Rs. in Lakhs)
Raw Materials/Consumables	10 days	0.20
Packing Materials	1 month	0.36
Working Expenses	1 month	0.45
Finished Goods	10 days	0.39
Receivable	7 days	<u>0.56</u>
		<u>1.96</u>

**Note: Working Capital to be financed as:-**

Margin Money:	0.85
Bank Finance:	<u>1.11</u>
	<u>1.96</u>

**Project cost including margin money for wc Rs 10.00 lakh****Means of Finance**

	(Rs. in Lakhs)
Promoter's Equity(25%)	2.50
Term Loan (75%)	<u>7.50</u>
	Rs. 10.00 lakh

**Cost of Production & Profitability**

	(Rs. in Lakhs)
Raw materials/consumables	6.12
Packing materials & Printed levels	4.32
Wages & Salaries	4.75
Utilities	0.70
Repair & Maintenance	0.12
Administrative Overhead	0.25
Selling expenses 10% on sales	2.40
Depreciation	0.55
Interest	<u>1.07</u>
	20.28

**Sales Turnover**

The major brand in the market in North Eastern Region "*Maggi & Kisan*" the retail price of these brand varies between Rs. 40 & Rs 45 for 500ml bottles and Rs 70 – 75 per 1 kg bottle. After allowing for trade discount, taxes, duties, and dealers margin the average ex-factory price would be about Rs 65 per kg. Conservatively considering an ex-factory price of Rs 60 per kg, the annual sales turnover for 40 MT of Tomato sauce is estimated at Rs 24.00 lakh..

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs. 3.72 lakhs per year. This works out to a return on capital investment of 33%. The unit would break-even at about 52% of the rated capacity.

**Break Even Analysis**

<b>A. Variable Cost:</b>	(Rs. in Lakhs)
Raw Materials/Consumables	6.12
Packing Materials	4.32
Utilities	0.70
Selling Expenses	<u>2.40</u>
	13.54
<b>B. Semi-Variable Cost:</b>	(Rs. in Lakhs)
Wages & Salaries	4.75
Repair & Maintenance	0.12
Administrative Overhead	0.25
Depreciation	0.55
Interest	<u>1.07</u>
	6.74
C. Sales Realization:	Rs. 24.00 Lakhs
D. Contribution	Rs. 10.46 Lakhs
E. Break Even Point (/D X 80% (capacity Utilization)	52%

### Machinery & Equipment

Name of the machinery	No. of M/C required	Power Required	Value (Rs. in lakhs)
Pulping machine all contact of Stainless steel with 1 HP, 3 Phase motot, 500 kg per hour.	1	1 HP	0.28
Steam jacketed Kettle, tilting type both inner and outer jacket of stainless steel with pressure gauge	1	--	0.50
Exhaust and process tank with motor	1	1.5 HP	0.90
Bottle washing machine (Semi-automatic)	1	0.50 HP	0.21
Filling machine (Hand operated )	2	--	0.10
Spice grinding machine	1	1 HP	0.28
Crown corking machine	1	--	0.08
Label gumming machine (hand operated)	1	--	0.10
Assorted vessels alluminium/ stainless steel	L.S	--	0.06
Testing equipment and other equipment/accessories	L.S.	--	0.12
<b>Total Rs.</b>			<b>2.65</b>
Add. 15% towards Packaging, forwarding, Insurance, Transportation, Loading, Unloading, Installation & Commissioning etc.			0.40
<b>Total Cost of Machinery Installation</b>			<b>3.05</b>

### Raw Materials/Consumables

Items Product-wise	Quantity (per day)	Rates (Rs.)	Annual Requirement (Rs. in Lakhs)
1. Tomatoes	45 MT	10/Kg.	4.50
2. Sugar	6 MT	17/kg	1.02
3. Preservatives, colours, and other ingredients	L.S	--	0.60
Total			6.12

### Packing Materials and Printed Labels (Annual Requirement)

Products	Size of Bottle/jar	Quantity (nos.)	Unit Price (Rs.)	Value (Rs. in lakh)
For Sauce/tomato ketchup	500 gm	40000	5.50 per bottle	2.20
-do-	1000 gm	15000	8.00 per bottle	1.20
Bottle cap	All sizes	65000	0.75 per cap	0.49
Printed labels	All sizes	65000	0.50 per label	0.33
Cartoon packet	L.S.	--	--	0.10
<b>Total Cost of Packing Materials and Printed Labels</b>				<b>4.32</b>

### Manpower

Category	No. of Person	Salary Per Person Per Month(Rs)	Monthly Salary Bill (Rs.)
a) Manager-cum-chemist	1	8000	8,000
b) Skilled Worker	2	6000	12,000
c) Un-skilled workers	2	3000	6,000
f) Selling & Marketing persons	2	5000	10,000
<b>Total Manpower cost Rs.</b>			<b>36,000</b>

Salary Bill Rs Lakhs + Benefits @15% annually i.e. Rs 0.43

**Total Annual Salary Bill : Rs. 4.75**

## Utilities

Power for Machinery:	5 H.P.
General Lighting:	2.H.P
	-----
	<b>7 H.P.</b>
	-----
e) Electricity Bill:	
7 H.P. X 0.746 KW X 6 Hrs. X 200 days X	Rs. 5.50
Hence, annual Electric bill	Rs.35,000
b) Water Charge = 2000 Ltrs. per day(L.S.)	Rs. 5,000
c) Fuel (Gas Cylinders) 100 cylinder X 300	<u>Rs.30,000</u>
	<u>Rs 70,000</u>

## Highlights:

The major highlights of the project are as follows:

Total Capital requirement	Rs. 11.11 lakhs
Promoter's contribution	Rs 2.50 lakhs
Annual Sales realization	Rs. 24.00 lakhs
Annual Operating Expenses	Rs. 20.28 lakhs
Annual Profit	Rs. 3.72 lakhs
Return on sales	16 %
Break-even point	52%
No. of person employed (direct)	7 Nos.

Machinery Suppliers: Supplier of chemicals & consumables

- |  |  |
|--|--|
| 1.M/S Narangs Corporation<br>P-25, Connaught Place<br>New Delhi-110 001                                      | 5. M/S Assam Essence Supply & Co<br>Lalsing Mansion (2 <sup>nd</sup> Floor)<br>A.T. Road, Guwahati-781 001 |
| 2. M/S Gee Gee (Food & Packaging) Co. (P) Ltd.<br>B-188/2 Savitri Nagar, Malviya Nagar,<br>New Delhi-110 017 |  |
| 3. M/S Bhuvaneswari & Co<br>Old Trunk Road, Pallavaram,<br>Chennai- 600 043                                  |  |
| 4. M/S Nagpal Brothers<br>C-127, phase-II, Mayapuri Industrial Area.,<br>New Delhi-64                        |  |



## BAMBOO MAT BOARD

**INTRODUCTION** o mat board is better than common wood board for its good strength, longer durability and better dimensional stability. The board has perfect waterproof function for its shrinking rate and expanding rate. Water absorbing rate is better than wood texture and the board is never rusted. It is humidity resistant and smooth in texture.

### **Advantage of Bamboo Mat Board over Wood Ply board**

- Bamboo is found to be most suitable to replace timber as it grows more rapidly than trees and starts to yield within three or four years of planting.
- Plantation establishment requires minimal capital investment and builds upon the inherent plant-cultivation skills of local farmers and foresters.
- Bamboo can be harvested annually and non-destructively.
- Bamboos are excellent for rejuvenating degraded lands and protecting against soil erosion.
- Bamboo may easily be intercropped with shallow-rooted crops.
- Bamboo culms as well as all other parts of the bamboo plant can be used in rural livelihoods such as shoots for food, leaves for fodder, and branches for items such as brooms and for firewood.
- Forest land conservation-In India alone, 8000 hectares of natural forest could be saved each year if just one-quarter of the country's annual plywood production (8,00,000 sq.metres) was replaced by bamboo mat/ply board.
- Bamboo mat board can revive traditional mat weaving in tribal areas and raise women's incomes, as this industry will ultimately generate an estimated 660 Lakhs workdays for mat weavers all over India.
- Since mats are woven from bamboo, bamboo is a part and parcel of rural people all over the NE. It is most suitable socio-ecological product for industrial vitalization of Northeastern region where due to Supreme Court Ban almost all the Ply board factories are closed.

### **Technology**

The technology for "Bamboo Mat Board" has been developed and commercialized by IPIRTI, Bangalore. The Bureau of Indian Standard has brought out a specification IS:13958 for Bamboo Mat Board for general purpose.

Plant and machineries are available in India, Taiwan and China.

### **Application of Bamboo Mat board(BMB)**

#### **In house construction & house-hold**

◆Walls ◆ Doors ◆ Paneling ◆ Partitions ◆ Flush doors ◆ Furniture & cupboards

#### **In Transportation**

◆Roof and sides of carts & trucks ◆Packing cases ◆Storage bins

#### **Shuttering**

And many more include constructing prefabricated houses for use during earthquakes, floods and other natural disasters.

#### **SUGGESTED LOCATION :**

Major centres in NER & Gangtok, Penlang, North Sikkim in Sikkim.

#### **MARKET POTENTIAL**

The total market size of all the different types of boards and plywood put together is estimated at Rs.5000 crores currently, out of which plywood industry is Rs.4000 crore and that of the other boards (MDF, Particle, Hard board) is Rs. 1000 crore.

The cost economics of using bamboo filling as against wood provides ample justification for this kind of switchover.

The switchover to bamboo based ply board can take place in at least 20 per cent of the organized medium sized units currently engaged in plywood production and which have been shut down because of no-availability of material. This implies a total market size of Rs. 200 crore which can be expected in the next four years which is the current turnover of the organized medium sector of ply wood units, The units belonging to the unorganized sector can also be expected to switchover because of the cost economies involved.

The present turnover of the unorganized sector is Rs.3000 crore; out of which even if 10 per cent of the units switchover to bamboo, it implies a turnover of Rs. 300 crore for the bamboo board industry.

## MANUFACTURING PROCESS

The following are the step by step methods for making Bamboo mat Board :

- Cutting of bamboo poles in required sizes with the Cross cutting machine
- Bamboo is split strips of the desired size.
- Skin removing.
- Making of slivers of required thickness
- Slivers are woven into mats. For thickness greater than 6mm, bamboo mats are inter leaved with wood into veneers to make bamboo mat veneer composites.
- Bamboo boards are made by using bamboo slivers
- The boards are made using alternate layers of bamboo sliver mats in the longitudinal direction and transverse direction while the top and bottom layers are weaved bamboo mat.

## PROPOSED CAPACITY

Installed capacity – Bamboo ply board – 25200 Mat per annum (3mm-50%, 4mm-50%)

Working days - 300  
Shifts/day - 1(One)

## INFRASTRUCTURE

### Building & Civil work

About 2000 M<sup>2</sup> industrial and other shed/building

### Power

Total connected load of 150 KW

## SPECIES SUITABLE FOR BAMBOO PLYBOARD

The species of bamboo which have been found appropriate for use in bamboo board are:

- a) Bambusa Vulgaris
- b) Bambusa Arundiacear
- c) Dendrocalamus Strictus

## TOTAL CAPITAL REQUIREMENT

### Cost of the Project

Sl.No.	Particulars	(Rs. In lakhs)
1.	Land- 3000 M <sup>2</sup>	Lease / Won
2.	Site Development	5.00
3.	Building and Civil Works	30.00
4.	Plant and Machinery	68.00
5.	Miscellaneous Fixed Assets	20.00
6.	Contingency	5.00

7.	Preliminary and pre-operative Expenses	14.00
8.	Margin money for Working Capital	10.00
	Total:	152.00

Working Capital Requirement	Rs.	40.00 Lakhs
Working capital may be financed as		
Bank Finance	Rs.	30.00
Margin Money	Rs.	10.00
	Total:	<u>Rs. 40.00 lakhs</u>

### MEANS OF FINANCE

The project cost of Rs. 152.00 lakhs may be financed as under:

Sl.No.	Particulars	(Rs. In lakhs)
1.	Promoter's Contribution (35%)	53.20
2.	Term Loan from Bank/Financial Institute(65%)	98.80
	Total :	152.00

### ANNUAL COST OF OPERATION (AT 60% CAPACITY UTILIZATION)

The annual operating expenses are estimated at Rs. 94.38 Lakhs as given below :

Sl.No.	Particulars	(Rs. In lakhs)
1.	Raw materials	35.91
2.	Consumables	14.55
3.	Transportation cost	2.91
4.	Utilities	6.62
5.	Salary & wages	7.00
6.	Repair & maintenance	3.00
7.	Administrative overhead	1.80
8.	Selling expenses @ 2% of sales	1.97
9.	Interest	14.62
10.	Depreciation	6.00
	Total	94.38

### ANNUAL SALES REALISATION

Bamboo mat Board 15120 Nos @ Rs. 650.00 per piece Rs. 98.28 lakhs

### PROFITABILITY

Based on the sales realization and the operating expenses, the profit would be (Rs. 98.28 lakhs – Rs. 94.38 lakhs) = Rs. 3.90 lakhs. The plant would break even at about 55% of the targeted production.

### HIGHLIGHTS

The highlights of the project are as follows :

Total capital requirement	Rs.	152.00 lakhs
Promoter's contribution	Rs.	53.20 lakhs
Annual sales realization	Rs.	98.28 lakhs
Annual operative expenses	Rs.	94.38 lakhs
Annual profit (pre-tax)	Rs.	3.90 lakhs
Annual pre-tax return on sales		4%
Break-even point		55%
No. of persons employed		45

### MACHINERY SUPPLIER

1. M/s. B.S. Engineering  
117, Raja Dinendra Street, Kolkata 700 004, Ph- 033- 25558976, 25557192

## BANANA FIBRE EXTRACTION AND WEAVING

### INTRODUCTION

Banana fibre is eco friendly like jute fibre. The technology of banana fibre extraction has been developed in South India where in a good number of banana fibre extraction units have been running very successfully. Some firms are exporting the banana fibre products.

Banana growing states of N.E.Region has adopted the technology from South and started production of banana fibre and fabric.

### MARKET POTENTIAL

The banana fibre is being used for weaving attractive pieces of clothes, rugs, sarees etc. Besides, it is also being used to produce a variety of items such as hats, photo frames, trinket boxes, gift bags, picture frames, hand bags, belts, baskets and sandals etc.

Dresses woven out of natural fibres are in great demand inside and outside India.

### PLANT CAPACITY

Capacity utilization	: 70%
Average daily production envisaged	: 10 Kg cloth.
Working days/year	: 25 days in a month and 300 days in a year.
Annual production	:
- Door Mat	: 1000 Nos.
- Floor covering	: 1000 Nos.
- Screen	: 1600 Mt.
- Durry	: 1500 Nos.

### RAW MATERIALS

The main raw material for the unit is banana tree which is abundantly available in the State of Meghalaya, Mizoram, Arunachal Pradesh and Assam.

1. Cost of Banana Stem	:	1.40 lakhs
2. Misc. items	:	<u>0.20 lakhs</u>

**Total : 1.60 lakhs.**

### SUGGESTED LOCATION :

Banana growing areas in Assam, Meghalaya, Mizoram and Arunachal Pradesh.

### PROCESS

#### Banana Fibre Processing and Weaving :

The extraction of the natural fibre from the plant required certain care to avoid damage. In the present experiments, initially the banana plant sections were cut from the main stem of the plant and then rolled lightly to remove the excess moisture. Impurities in the rolled fibres such as pigments, broken fibres, coating of cellulose etc. were removed manually by means of comb, and then the fibres were cleaned and dried.

This mechanical and manual extraction of banana fibres was tedious, time consuming, and caused damage to the fibre. Consequently, this type of technique cannot be recommended for industrial application. A special machine was designed and developed for the extraction of banana fibres in a mechanically automated manner. It consisted mainly of two horizontal beams whereby a carriage with an attached and specially designed comb, could move back and forth. The fibre extraction using this technique could be performed simply by placing a cleaned part of the banana stem on the fixed platform of the machine, and clamped at the ends by jaws. This eliminated relative movement of the stem and avoided premature breakage of the fibres. This

was followed by cleaning and drying of the fibres in a chamber at 20°C for three hours. This fibres were then labeled and ready for lamination process.

After extraction of fibre, weaving is done in the looms as per normal process like any other material.

### MACHINERY

The major equipment required are :

Sl.No.	Particulars	Nos.
1.	Banana fibre extractor	2
2.	Loom complete with all accessories	4
3.	Bobbin circle	1
4.	Charkha	1
5.	Bobbin	100
6.	Pirn	100
7.	Shuttle	8
8.	Misc. items	L.S.

### INFRASTRUCTURE

The major infrastructural requirement are :

Covered area : 1200 Sq.ft.  
Power : 5 KW.

### TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs.1.70 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs.1.55 lakhs.

		(Rs. In lakh)
<b>A</b>	<b>Fixed Capital :</b>	
	Land and Building	Own
	Plant and Machinery	0.90
	Misc. fixed assets.	0.30
	Preliminary & Pre-op. Expenses:	<u>0.10</u>
	Total(A) :	1.30
<b>B.</b>	<b>Working Capital :</b>	
	Raw materials & Packing materials	15 days 0.09
	Finished goods	15 days 0.20
	Working Expenses	1 month 0.16
	Receivables	15 days. <u>0.25</u>
	<b>Total (B) :</b>	<b><u>0.70</u></b>
	<b>Total(A) + (B) :</b>	<b>1.70</b>

**Note :** Working capital may be financed as :

Bank Finance (65%)	Rs. 0.45 lakh
Margin Money (35%)	<u>Rs. 0.25 lakh.</u>
<b>Total :</b>	<b><u>Rs. 0.70 lakh.</u></b>

**C. Capital Cost of Projec**

Fixed Cost	:	Rs. 1.30 lakh
Margin Money for Working Capital.	:	<u>Rs. 1.25 lakh</u>
<b>Total :</b>		<b><u>Rs. 1.55 lakh.</u></b>

**MEANS OF FINANCE**

Promoter's contribution (35%)	:	0.55 lakh
Term Loan (65%)	:	<u>1.00 lakh.</u>
<b>Total :</b>		<b><u>1.55 lakh</u></b>

**OPERATING EXPENSES**

The annual operating expenses are estimated at Rs 4.99 lakhs as given below :

		(Rs. in lakhs)
1.	Raw materials	: 1.60
2.	Packing materials.	: 0.20
3.	Utilities	: 0.40
4.	Wages & Salaries	: 1.50
5.	Rent, Insurance etc.	: 0.30
6.	Other overheads.	: 0.35
8.	Selling expenses @ 5% on annual Sales.	: 0.33
8.	Interest on term loan @ 12.50%	: 0.13
9.	Interest on bank finance for working capital @11%.	: 0.05
10.	Depreciation 10% on M/c.	: <u>0.13</u>
	<b>Total :</b>	<b><u>4.99</u></b>

**SALES REALISATION**

Sl. No.	Items	Qty.	Rates(Rs)	Value (Rs)
1.	Door Mat (13' x 22')	1000 Nos.	60/-	0.60
2.	Floor Covering (4' x 6')	1000 Nos.	300/-	3.00
3.	Screen	1600 Nos.	50/-	0.80
4.	Durry (2.5' x 5.0')	1500 Nos.	150/-	2,25
	Total			6.65

## **PROFITABILITY**

Based on the sales realization of Rs 6.65 lakhs and the operating expenses of Rs 4.99 lakhs, the profit at rated capacity utilization would be Rs 1.66 lakhs per year. This works out to be return on investment of 98%. The unit will break even at about 31% of the targeted annual production.

## **HIGHLIGHTS**

The major highlights of the project are as follows :

Total capital requirement	Rs. 1.70 lakhs.
Promoter's contribution	Rs. 0.55 lakhs.
Annual Sales realization	Rs. 6.65 lakhs.
Annual operating expenses	Rs. 4.99 lakhs.
Annual Profit (Pre-tax)	Rs. 1.66 lakhs.
Pre-tax return on sales	25%.
Break-Even Point.	31%.
No. of persons employed.	8 Nos.

## **SUPPLIERS OF MACHINERY**

Addresses of Machinery and Raw Material Suppliers :

Supplier of Banana Fibre Extractor :

M/s Andhra Pradesh Agro-Industries Dev. Corporation,  
Hydrabad

Looms and other accessories are available in the local market.

## CANE & BAMBOO FURNITURE

### Introduction:

Cane and Bamboo products have always occupied an important position in the handicrafts sector. Cane & bamboo are renewable resources, grows widely and abundantly available in the North Eastern Region. The products also have great demand in the international market. Over the years, rural artisans have imbibed wide range of skills in the manufacture of various items and the skills have been passed from generations to generations. Assam and Tripura occupies a prominent place in cane and bamboo products both nationally as well as internationally.

### The Product:

Cane is largely used for furniture making, whereas bamboo is used for making decorative items like lamp-stand, partition, screen, flower pots, basket, fans mats etc. In recent years, uses of cane furniture have considerably increased not only in middle class homes, hotels and offices but also among foreign tourist coming to N.E. Region. Most of the class hotels are using cane and bamboo items to give elegance and stylish traditional look to their interiors.

### Market Potential:

Though all the North Eastern States produce cane and bamboo items yet Assam, Tripura and some extent Arunachal Pradesh has a major contribution in the total production. The present share of only cane furniture is about 15 to 20 crores and out of which 2 crores are exported. NEHHDC, AGMC, ARTFED along with some private and involved in exporting of the products. Some of the products that are exported from the North East to internal as well as external markets are as follows:

- Basket ware,
- Cane furniture
- Mat & matting
- Decorative items.

The countries where there products go are China, USA, Japan, French, West Germany, Italy, Netherlands, U.K., Switzerland, Austria etc.

Hence there is considerable demand for the product in the national as well as international market. There is a potential of 15% grow every year. Based on the present production level of 20 crores per annum, it is envisaged that an additional 3 crore per annum production can come up. A typical unit can produce around 10 lakhs to 15 lakhs worth of items and an additional 10 to 13 such units can come up every year.

### Suggested capacity:

There are varieties of can and bamboo products. A typical cane and bamboo furniture unit would be set up with the following product-mix.

<u>Items</u>	<u>Nos. / year</u>
1. Decorative Sofa Set	50
2. Screens	100
3. Single chairs	200
4. Bamboo basket	200
5. Shelves	100
6. Shelves with drawers	100
7. Dining chairs	200
8. Murahs	200
9. Dining tables	100
10. Divans (Deluxe)	50
11. Divans (Simple)	75
12. Police Lathis	800
13. Police Shields	400
14. Pot stands	300
15. Cane beds	100
16. Trolley	100

### Infrastructure Requirements:

The major infrastructure requirements are –

Working shed, store and show room counter : 1200 sq ft.



Power	:	2 KW
Water	:	500 ltrs/day

**Raw Material and Its Availability:**

The main raw materials required are canes of different varieties and bamboo. There is no dearth of raw materials in the N.E. Region. Following is the approximate consumption of raw materials per month.

Different type of canes (e.g. Raidang, Jeng, Jatti)		2750 pcs.
Bamboo	:	500 pcs. L.S.
Sital patti (for design) Sand paper, Nails, Glass, varnish, Plywood, Kerosene oil, turpentine oil, Adhesive, Plastic traps, Gums etc.	:	

**Suggested Locations:**

Keeping in view availability of canes and bamboo, the following locations are suggested:

Assam	:	Lakhimpur, Bongaigaon, Diphu, Guwahati Jorhat, Silchar, Tinsukia, Mangaldoi, Tezpur.
Tripura	:	Nelaghar, Bishramganj, Belonia, Agartala, Udaipur, Dharmanagar, Khowai
Arunachal Pradesh	:	Along, Pasighat, Tezu, Bomdila, Zero, Itanagar.
Nagaland	:	Dimapur, Kohima, Mokokchung
Manipur	:	Ukhrul, Churachandpur, Chandel, Tamenlong.
Sikkim	:	Gangtok, Penlang, North Sikkim area.

**Production Process:**

The major process involved is –

- Selection of natural cane & bamboo for specific job work.
- Preparation of basic elements or members by bending length of whole cane to required shape.
- Fixing the members in position by use of nails.
- Blending the wavered joints by length of split cane to cover visible nails and give additional rigidity.
- Scrapping & varnishing/painting where required.

**Project Economics:**

**Total capital Requirements:**

The total capital requirements for the project is estimated at Rs 10.05 lakh which includes fixed capital and working capital.

A	<u>Fixed Capital:</u>	(Rs in lakhs)
	Land	Own
	Site Development	0.45
	Building: Working Shed	5.60
	Plant & Machinery	0.95
	Misc. Fixed Assets	0.50
	Preliminary & Pre-operative Expenses	0.30
	Contingency Provision	<u>0.35</u>
		Rs. 8.15 lakh
B.	<u>Working Capital to be Financed as –</u>	
	Margin Money	0.48
	Bank Finance	<u>1.42</u>
		Rs. <u>1.90 Lakh</u>

**Means of Finance:**

	Amount (Rs lakh)
Term Loan ((75%))	6.11
Promoter's Equity(25%)	<u>2.04</u>
	Rs. 8.15 lakh

**Coat of Production & Profitability:**

	Amount (Rs lakhs)
A. Annual Revenue	Rs. 22.75 lakh
B. <u>Cost of Production:</u>	
Raw Materials & Consumables	10.14
Utilities	0.16
Wages & Salaries	4.32
Plant Overheads & Repair, Maintenance	0.21
Depreciation	0.70
Administrative expenses	0.24
Interest	0.95
Selling expenses @ 5% of annual sales	<u>0.92</u>
	Rs. 17.64 lakh
Operating Profit	Rs 5.11 lakh

**Annual Sales Realization:**

Items	Quantity (Nos.)	Rate (Rs/piece)	Amount (Rs lakhs)
Sofa set (complete)	50	7000	3.50
Screens	100	1500	1.50
Single chair	200	600	1.20
Bamboo basket	200	200	0.40
Shelves	100	800	0.80
Shelves with drawers	100	1500	1.50
Dining chairs	200	500	1.00
Murahs	200	250	0.50
Dining tables	100	1500	1.50
Divans (Deluxe)	50	4000	2.00
Divans (Simple)	75	2000	1.50
Police lathis	800	75	0.60
Police shields	400	300	1.20
Pot sands	300	350	1.05
Cane beds	100	3500	3.50
Trolleys	100	1000	1.00
TOTAL			22.75

**Machinery & Equipment:**

The main equipments are –

	Amount (Rs lakh)
Cane Splitting Machine 4 Nos.	
Blow lamp 14 Nos.	
Hand drill 6 Nos.	
Pipes for blending 14 Nos.	0.95
Planner 2 Nos.	
Misc. items – Hand tools like Hacksaw frames, knives, Dao, Pliers, hammers, cane cutting Scissors etc.	

**Building:**

Working shed – 800 sq.ft. (Pucca floor with CI roofing)	3.20
Storage/Godown for Raw Materials – 200 sq.ft and finished products	<u>2.40</u>
Office-cum-display center – 200 sq.ft.	
	Rs 5.60 lakh

**Cost of Raw Materials & Consumables:**

Items	Quantity (Nos.)	Rate (Rs/piece)	Amount (Rs lakhs)
Complete Sofa set	30	2800	0.84
Screens	50	600	0.30
Basket (Bamboo)	200	80	0.16
Single chair	200	350	0.70
Shelves	100	500	0.50
Shelves with drawers	100	800	0.80
Dining chairs	200	280	0.56
Murahs (Cane decorative)	200	150	0.30
Dining tables	100	800	0.80
Divans (Deluxe)	50	1900	0.95
Simple Divans	75	1100	0.83
Police lathis	800	75	0.60
Police shields	400	100	0.40
Pot sands	300	150	0.45
Cane beds	80	1500	1.20
Trolleys	100	250	0.25
		Total	9.64
Add: Consumables like sand paper, varnish, nails, tupes, pelties, plywoods, hinges, glass etc.			0.50
		TOTAL	19.78

**Manpower Requirement and Wages:**

Sl. No.	Category	Nos.	Avg. salary per month	Total Salary per month
1.	Manager	1	3000	3,000
2.	Skilled workers	8	2500	20,000
3.	Semi-Skilled workers	4	2000	8,000
4.	Helper	2	1500	3,000
5.	Sales personnel	1	2000	2,000
	Total	16		36,000
	Annual Salary Bill			Rs 4.32 lakh

**Cost of Utilities & Overheads:**

The power requirement for the unit:

Since the requirement are generally hand tools, power requirement is for general light and water requirements : 2 KW

The total daily requirement of power [ 2 KW x 8 hrs. (single shift x 0.8) : 12.8 Kwh  
i.e. 13 Kwh

: . Daily power bill ( 13 Kwh x Rs 4/-) = 52/-

Total annual cost of power : Rs 0.156 lakh

**Plant Overheads:**

Repair and maintenance	Amount (Rs lakh)
Insurance 2% of building, plant Assets &	0.07
Misc. Fixed assets	0.14
	Rs. 0.21 lakh

**Break – Even Point Analysis:**

		Amount (Rs lakh)
A.	<u>Variable Cost</u>	
	Raw Material & consumables	10.14
	Utilities	0.16
	Selling expenses	<u>0.92</u>
		11.22
B.	<u>Semi-Variable Cost:</u>	
	Wages & Salaries	4.32
	Repair and maintenance	0.21
	Administrative expenses	0.24
	Depreciation	0.70
	Interest	<u>0.95</u>
		5.72
C.	Sales Realization	22.75
D.	Contribution	11.53
E.	Break Even Point B/D x 100	49.60%

## COIR SPINNING UNIT (AUTOMATIC)

### Introduction:

Coir is a natural fibre extracted from the husk of the coconut. Among the natural fibre, coir has some unique characteristic particularly its rigidity, durability and friction.

Coir Industry in India is one of the important rural industries. Although the coir industry has traditionally been associated with the State of Kerala, but now this industry has developed in Tamil Nadu, Orissa, Andhra Pradesh and Karnataka. Assam is one of the leading states of India in production of coconuts. There is significant production of coconuts in Tripura also. This could form the basis for development of the coir industry in the North East which can generate substantial employment. The main uses of coir rope/yarn are in the construction of houses, industrial building, tying ladders, packing of large boxes and also for drawing water from wells.

### Market Potential:

As stated, one of the main uses of coir rope in the construction of houses and buildings. Due to tremendous rise the construction of Multi-storied building, ownership flat, shopping mall in the city and urban areas, stadium, Govt. and Private offices and RCC construction in the rural areas the demand of coir yarn or rope has been increasing drastically. As there is no automatic or semi-automatic yarn manufacturing unit in Assam, the present requirement of fibre are met from Andhra Pradesh and Orissa. As per the information available with Coir Board the present demand of Rs 4 Crores per year of coir rope is the N.E. Region. Considering the demand of coir yarn/rope, coir spinning unit has viability.

### Plant Capacity:

The production basis for a Tiny Unit would be as under:

Working hour per day	:	16 hours (2 shift2)
Production capacity	:	800 Kg per day.
Working Days in a year	:	300 days
Capacity Utilization	:	85%
Annual production	:	221 MT.

### Raw Materials:

The main raw material is coconut fibre, which could be extracted from coconut husk. About 233 MT fibre required for the production of 221 MT of coir yarn/rope. The total production of coconuts in the N.E. Region is approximately 200 million nuts per year of which Assam Accounts for 150.30 million nuts. In Assam, coconuts are grown mainly in Nalbari, Barpeta, Nagaon, Golaghat and Lakhimpur district.

### Process:

The main process steps involved are –

- i) Collection of Fibre
- ii) Spinning of extraction fibre.
- iii) Conversion of spun fibre to yarn/rope in machine.

### Machineries:

i )	Willowing machine 2 HP	:	1 No.
ii)	Silvering machine 2 HP	:	2 Nos.
iii)	Spinning machine 2 HP	:	12 Nos.
iv)	Spooling & Re-husking machine	:	2 Set

### Infrastructure:

The major infrastructural requirement are –

Lane	-	1 Bigha ( 14400 sq.ft)
Building /Washing shed	-	2000 sq.ft.
Power - One transformer	-	20 KW
Water – Well & Pump set.	-	5 HP

**Location:**

Keeping in view the availability of coconuts, the suggested locations are –

Assam	: Nalbari, Barpeta, Golaghat, Nagaon, Darrang.
Tripura	: Agartala, Udoipur

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs. 20.82 lakh. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 17.50 lakh.

A.	<u>Fixed Capital</u>		(Rs. in lakh)
	Land		1.00
	Building		3.85
	Plant & Machinery with Motors		8.25
	Electrical Installation including transformer		1.25
	Misc. Fixed Assets		0.50
	Preliminary & Pre-Op. expenses		<u>0.45</u>
		Total (A)	15.30
B.	<u>Working Capital</u>		(Rs. in lakh)
	Raw material	1 month	1.85
	Finished goods	1 week	0.47
	Working expenses	1 month	2.70
	Receivables (L.S)	10 days	<u>0.50</u>
		Total (B)	5.52

**Note:** Working Capital may be finance as –

Bank finance	3.32
Margin money	<u>2.20</u>
	<u>5.52</u>

**Means of Finance:**

The project cost of Rs 17.50 lakh may be finance as under –

Promoters' contribution(25%)	4.38
Term Loan(75%)	<u>13.12</u>
	17.50

**Operating Expenses:****A. Variable Cost:**

Raw materials –	
Good quality of coir fibre 233 MT	22.14
@ Rs 9500/MT	
Lead Thread	1.10
Wages & Salaries – 40 workers @ 1500/-	60,000/-
2 Mechanic cum-	
Supervisor @ 2500/-	5000/-
Watchmen 2 Nos.	
@ Rs 1000/-	<u>2000/-</u>
	8.04
Electricity & spares & Maintenance	–
	<u>1.20</u>
	<u>32.48</u>

**B. Fixed Cost:**

1) Depreciation on Building 5%	= 0.19	
on Plant & m/c 10%	= <u>0.83</u>	1.02
2) Interest on Borrowers Fund		
13.50% on Term Loan	= 1.77	
12.75% on W.C.	= <u>0.53</u>	<u>2.20</u>
		3.22

TOTAL OPERATING COST (32.48 + 3.22)	35.70
COST OF PRODUCTION PER MT	Rs 16,154

**Sales Realization:**

The market price of coir rope/yarn is about Rs 35 per Kg. providing for dealers commission and other expenses a net ex-factory price of Rs 20/- per kg has been considered. On this basis, the annual sales realization is estimated at Rs 44.20 lakh i.e. (221 MT of coir yarn @ Rs 20,000/- MT).

**Profitability:**

Based on the sales realization and the annual expenses the profit @ 85% capacity utilization would be Rs 8.50 lakh per year. This works out to a return on investment @ 48.57%. The unit would break-even at about 27.47% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

1.	The capital requirement	:	20.82 lakh
2.	Promoter contribution	:	4.38 lakh
3.	Annual Sales	:	44.20 lakh
4.	Annual operating expenses (Fixed + Variable)	:	35.70 lakh
5.	Annual Profit (Pre-tax)	:	8.50 lakh
6.	Pre-tax return on sales	:	19.23 lakh
7.	Break Even Point	:	27.47%
8.	Return on Investment	:	48.57%
9.	Number of person employed	:	44 Nos.

**Machinery Suppliers:**

1. M/s Dollar Industrial Machines  
R.S. 109/3, Palamuthi Road,  
Pathukkottai, Tamil Nadu,  
Ph: 04373 – 222308/235408
2. Ananteswar Engineering Workshop  
Sakhigopal, Puri,  
Orissa,  
Ph: 06752 – 272207
3. M/s G.S. Industries,  
K.P. No.17/761, Kollode,  
P.O: Kattakkada,  
Thiruvananthapuram  
Ph: 695571

## COIR YARN/ROPE OF COMMERCIAL GRADE

### Introduction:

Coir is a natural fibre extracted from the husk of the coconut. Among the natural fibre, coir has some unique characteristic particularly its rigidity, durability and friction.

Coir Industry in India is one of the important rural industries. Although the coir industry has traditionally been associated with the State of Kerala, but now this industry has developed in Tamil Nadu, Orissa, Andhra Pradesh and Karnataka. Assam is one of the leading states of India in production of coconuts. There is significant production of coconuts in Tripura also. This could form the basis for development of the coir industry in the North East which can generate substantial employment. The main uses of coir rope/yarn are in the construction of houses, industrial building, tying ladders, packing of large boxes and also for drawing water from wells.

### Market Potential:

As stated, one of the main uses of coir rope in the construction of houses and buildings. Due to tremendous rise in the construction of Multi-storied building, ownership flat, shopping mall in the city and urban areas, stadium, Govt. and Private offices and RCC construction in the rural areas the demand of coir yarn or rope has been increasing drastically. As there is no automatic or semi-automatic yarn manufacturing unit in Assam, the present requirement of fibre are met from Andhra Pradesh and Orissa. As per the information available with Coir Board the present demand of Rs 4 Crores per year of coir rope is the N.E. Region.

### Plant Capacity:

The production basis for a Tiny Unit would be as under:

Working hour per day	:	8 hours (1 shift)
Production capacity	:	350 Kg per day.
Working Days in a year	:	300 days
Capacity Utilization	:	75%
Annual production	:	78.75 tonnes.

### Raw Materials:

The main raw material is coconut husk. About 112.5 tonnes of husk are required for the production of 78.75 Kg of coir yarn/rope. The total production of coconuts in the N.E. Region is approximately 200 million nuts per year of which Assam Accounts for 150.30 million nuts. In Assam coconuts are grown mainly in Nalbari, Barpeta, Nagaon, Golaghat and Lakhimpur district.

### Process:

The main process steps involved are –

- (A. Collection and storage of husk.
- (B. Extraction of fibre.
- (C. Spinning of extraction fibre.
- (D. Conversion of spun fibre to yarn/rope in machine.

### Machineries:

i)	Bruster 15 HP	:	1 No.
ii)	Decorticator 30 HP	:	1 No.
iii)	Shifter 2 HP	:	1 No.
iv)	Baling press 2 HP	:	1 No.
v)	Willowing machine	:	1 No.
vi)	Traditional Motorized Ratts	:	20 Nos.
vii)	Re-hanking Frame & Accessories	:	15 Nos.

### Infrastructure:

The major infrastructural requirement are –

Land – Defibring unit	-	5760 sq.ft.
Spinning unit	-	2880 sq.ft.
Building /Washing shed	-	4000 sq.ft.
Power - One transformer	-	15 KW
Water – Well & Pump set.	-	5 HP



**Location:**

Keeping in view the availability of coconuts, the suggested locations are –

Assam	: Nalbari, Tamulpur, Golaghat, Nagaon, North-Lakhimpur
Tripura	: Agartala, Udoipur

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated 15.70 lakh. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 14.68 lakh.

A.	<u>Fixed Capital</u>		(Rs. in lakh)
	Land		0.30
	Building		5.25
	Plant & Machinery with Motors		6.25
	Electrical Installation including transformer		1.25
	Misc. Fixed Assets		0.50
	Preliminary & Pre-Op. expenses		<u>0.45</u>
		Total (A)	14.00
B.	<u>Working Capital</u>		(Rs. in lakh)
	Raw material	1 month	0.59
	Finished goods	1 week	0.26
	Working expenses	1 month	0.35
	Receivables	10 days	<u>0.50</u>
		Total (B)	1.70

**Note:** Working Capital may be financed as –

Bank finance	1.02
Margin money	<u>0.68</u>
	1.70

**Means of Finance:**

The project cost of Rs 14.68 lakh may be finance as under –

Promoters' contribution(25%)	3.68
Term Loan(75%)	<u>11.00</u>
	14.68

**Operating Expenses:****A. Variable Cost:**

Raw materials –		
@ Rs 500/- per 80 Kg. of husk x 112.5 MT		7.04
Lead Thread		0.03
Wages & Salaries – 20 workers @ 1000/-	20,000/-	
2 Mechanic cum-Supervisor @ 2000/-	4000/-	
Watchmen 2 Nos.		
@ Rs 1000/-	<u>2000/-</u>	3.12
Electricity & spares & Maintenance		<u>0.60</u>
		10.79

**B. Fixed Cost:**

1)	Depreciation on Building 5%		
	on Plant & m/c 10%		0.89
(A.)	Interest on Borrowers Fund		
	12% on Term Loan =		1.32
	15% on W.C. =	<u>0.15</u>	<u>1.47</u>
			2.36

TOTAL : OPERATING COST 10.70 + 2.36) = 13.15

**Sales Realization:**

The market price of coir rope/yarn is about Rs 35 per Kg. providing for dealers commission and other expenses a net ex-factory price of Rs 25/- per kg has been considered. On this basis, the annual sales realization is estimated at Rs 19.69 lakh i.e. (78-75 MT of coir yarn @ Rs 25,000/- MT).

**Profitability:**

Based on the sales realization and the annual expenses the profit @ 75% capacity utilization would be Rs 6.54 lakh per year. This works out to a return on investment @ 44.55%. The unit would break-even at about 26.52% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

1.	The capital requirement	:	15.70 lakh
2.	Promoter contribution	:	3.68 lakh
3.	Annual Sales	:	19.69 lakh
4.	Annual operating expenses (Fixed + Variable)	:	13.15 lakh
5.	Annual Profit (Pre-tax)	:	6.54 lakh
6.	Pre-tax return on sales	:	33.21 lakh
7.	Break Even Point	:	26.52%
8.	Return on Investment	:	44.55%
9.	Number of person employed	:	24 Nos.

**Machinery Suppliers:**

1. M/s Dollar Industrial Machines  
R.S. 109/3, Palamuthi Road,  
Pathukkottai, Tamil Nadu,  
Ph: 04373 – 222308/235408
2. Ananteswar Engineering Workshop  
Sakhigopal, Puri,  
Orissa,  
Ph: 06752 – 272207
3. M/s G.S. Industries,  
K.P. No.17/761, Kollode,  
P.O: Kattakkada,  
Thiruvananthapuram  
Ph: 695571

## DECORATIVE HANDLOOM PRODUCTS

### Introduction:

The handloom industry has been playing a dominant role in most of the states of the North Eastern Region, which is exclusively producing products of muga, eri, mulberry, tussar, silk, jute viscose etc. using traditional design and colour motif on different, product lines. The region has the highest concentration of handloom units which is about 14.6 lakhs out of 25.4 lakhs in the country. The products have such as Mekhela, Chaddar, Gamocha, Shawls, Dhuti, Lungi, Bed-cover, Lychenphee etc.

### Market Potential”

The handloom products of NER have demand in the market. However, the products are not exclusively exposed in the market due to some inherent disadvantage such as absence of proper distribution channel, poor pricing strategy non-availability of market intelligences in adequate marketing infrastructure etc. Despite all the infirmities the region has rich heritage of weaving techniques, design, colourful fabrics etc. which have tremendous scope for export. A little awareness among the weavers about requirement of market, fashion trend, colour forecast, design input and latest dyeing or finishing practices have proved helpful to the weavers to produce for export as well as conversion of domestic looms to commercial looms.

### Plant Capacity:

Production capacity per month	:	86 pair.
Capacity Utilization	:	70%
Average monthly production envisaged	:	60 pairs
Working days/year	:	25 days in a month/ 300 days in a year
Annual Production	:	720 Pairs.

### Raw materials:

Major raw materials required for the proposed project are:

(Rs. Lakhs)

1) Mulberry silk	: 360 kg @ Rs 1200/kg	:	4.32
2) Colour silk thread	: 20 kg @ Rs 200/kg	:	0.04
3) Colour, Chemical, design cards, & graphs etc. (L.S)	:	:	<u>0.25</u>
<b>Total</b>	:	:	<b><u>4.61</u></b>

**Suggested Location** : Major Centres in NER including Sikkim.

### Machinery & Equipment:

The major equipment required are –

<u>Sl.No.</u>	<u>Particulars</u>	<u>Nos.</u>
v)	Frame Looms 60"	8 Nos.
vi)	Sley 60"	8 Nos.
vii)	Reed 52" x 60"	4 Nos.
viii)	Reed 100" x 100"	4 Nos.
ix)	Shuttle	12 Nos.
x)	Pirn	12 Nos.
xi)	Pully	2 Nos.
xii)	HC Ball	12 Nos.
xiii)	Charkha	4 Nos.
xiv)	C.V. Heald 52 x 60	4 Nos.
xv)	C.V. Heald 100 x 100	3 Nos.
xvi)	Bobbin	2 Gross.
xvii)	Drum 2.5 Mts.	1 No.
xviii)	Dobby machine	8 Nos.

**Infrastructure:**

The major infrastructure requirement are –

Covered Area	:	300 sq.mt.
Power	:	2 KW

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 3.93 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 2.88 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land building		Rented
Plant & Machinery		1.80
Miscellaneous fixed assets		0.40
Preliminary and pre-operative expenses		<u>0.10</u>
	<b>Total (A)</b>	<b>2.30</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	15 days	0.23
Finished goods	15 days	0.46
Working expenses	1 month	0.33
Receivables	15 days	<u>0.61</u>
	<b>Total (B)</b>	<b>1.63</b>
		=====
	<b>Total (A)+(B)</b>	<b>Rs. 3.93 Lakhs</b>

Note: Working capital may be financed as:

Bank Finance (65%)	.....	Rs 1.05 Lakhs
Margin Money (35%)	.....	<u>Rs 0.58 Lakhs</u>
		<b>Rs 1.63 lakhs</b>
		=====

**Capital Cost of Project:**

1. Fixed Cost	.....	Rs 2.30 Lakhs
2. Margin money for W.C.	.....	<u>Rs 0.58 Lakhs</u>
		<b>Rs 2.88 Lakhs</b>
		=====

**Means of Finance:**

Promoter's contribution (35%)		Rs 1.01 lakhs
Term Loan (65%)		<u>Rs 1.87 lakhs</u>
		<b>Rs 2.88 lakhs</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 10.60 lakhs as given below:

		<b>(Rs. lakhs)</b>
1.	Raw materials:	4.61
2.	Packaging materials	0.05
3.	Utilities	0.30
4.	Wages & Salaries	3.60
5.	Rent, Insurance	0.48
6.	Other overheads	0.36
7.	Selling expenses @ 5% on annual sales	0.61
8.	Interest on term loan @ 12.50%	0.23
9.	Interest on Bank Finance for Working Capital @12%	0.13
10.	Depreciation @10%on m/c	<u>0.23</u>
	<b>Grand Total</b>	<b>10.60</b>
		=====

**Sales Realization :**

Sl.No.	Particulars	Qty.	Rate (Rs)	Value (Rs Lakhs)
1.	Decorative mekhela chaddar	360 pairs	1400/pair	5.04
2.	Decorative Coloured Mekhela chaddar	360 pairs	2000/pair	7.20
	<b>TOTAL</b>			<b>12.24</b>

**Profitability :**

sBased on the sales realization of Rs 12.24 lakhs and the operating expenses of Rs. 10.60 lakhs the profit would be Rs 1.64 lakhs per year. This works out to a return on investment of 41%. The plant will break even at 41% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs	3.93 Lakhs
Promoter's contribution	:	Rs	1.01 "
Annual sales realization (70% cap.)	:	Rs	12.24 "
Annual operating expenses (70% cap.)	:	Rs	10.60 "
Annual profit (pre-tax)	:	Rs	1.64 "
Pre-tax Return on Sales	:		13%
Break Even Point	:		41%
No.of persons employed	:		13Nos.

**Suppliers of Machinery**

Looms and other accessories are available in the local market.

## DIVERSIFIED JUTE HANDICRAFTS PRODUCTS

### Introduction:

Jute is cultivated in several states of India. In India, around 1 million hectare of land is under jute cultivation, production is 10 million tones and yield is 1960 Kg per hectare. In N.E. States jute is cultivated in Assam, Arunachal Pradesh, Meghalaya, Nagaland & Tripura. Assam ranks second as the most jute producing state in India after West Bengal. Unfortunately 75% of the jute produced in Assam goes out of the state in raw form and a large position of it comes back to Assam after value addition outside the state.

There is a large list of jute handicrafts products which can be produced within the state itself and production of jute handicrafts products such as jute based furnishing, upholstery, floor coverings soft luggage, vegetable, shopping bags, decorative items do not require huge investments. It is particularly suitable as 'production by mass' enterprise for generating rural employment in the initial stage.

Demand for diversified jute handicrafts is high and steady in all cities & townships of N.E. States. ARTFED is one institution which procures & market jute handicrafts products.

Raw material is available in many jute cultivation areas. Artisans in jute producing areas can also go for a jute fibre extraction machine known as Jute Ribboner (Cost around Rs 30,000/- 120 Kg stem/hr capacity) to meet their own jute fibre requirement. Barpeta Road in Assam is the main market center of jute. Artisans/entrepreneurs can procure jute from this market in bulk throughout the year and produce required jute yarns even manually. Processed, Ready to use jute yarns also available at Guwahati Market.

Diversified jute handicrafts products can be easily modernized and expanded to mass production enterprises in phased manner, with introduction of machinery equipments such as Handloom (Chittaranjan an Frame loom), dobby jacquard, drum winding machine, hand sizing vat, hank dyeing vat, charkha & other accessories. Once the artisans/entrepreneurs gain experience in manual production and with gradual expansion of market for their products.

Jute products are also eco-friendly and hygienic besides being competitive in cost with respect to synthetic counterparts.

**SUGGESTED LOCATION** : Major centres in Assam, A. P., Meghalaya, N. L & Tripura, Gangtok, Penlang, North Sikkim area of Sikkim

### Production programme:

Sl.No.	Description	Qty.	Rate(Rs)	Total (Rs)
1.	Door mat	260	50	13,000
2.	Jute Carpet	160	300	48,000
3.	Wall hanging	260	50	13,000
4.	Marketing bag	300	200	60,000
5.	Ladies side bag	260	200	52,000
6.	Gents hand bag	200	120	24,000
7.	Ladies purse	260	40	10,400
8.	Magazine holder	300	20	6,000
9.	Dining mat	100	72/set	7,200
10.	Tea mat	260	45	11,700
11.	Table mat	260	150	39,000
12.	School bag	260	200	52,000
13.	College bag	200	250	50,000
14.	Cricket cap	260	125	32,500
15.	Round hat	260	125	32,500
16.	Assamese Jaapi	260	125	32,500
17.	Door screen	260	175	45,500
18.	Window screen	150	100	15,000
19.	Simple sikka	400	20	8,000

20.	Pineapple sikka	150	115	17,200
21.	Light shade	150	150	22,500
22.	Flower tub	150	120	18,000
	TOTAL			6,10,000

**Machinery & equipment:**

Sl.No.	Description	Qty.	Rate(Rs)	Total (Rs)
1.	Heavy duty sewing machine	2 Nos.	18,000	36,000
2.	Working tool-kits/utensils	20 sets	5,000	1,00,000
3.	Miscellaneous tools/equipt	--	L.S.	14,000
4.	Total			1,50,000

Sl.No.	Description	Qty.	Rate(Rs)	Total (Rs)
1.	Good quality jute	4050 Kg.	20/Kg	1,50,000
2.	Chain	2 Roll	--	1,000
3.	Thread	50 Kg.	200	10,000
4.	Buttons	10 Pkts	10	100
5.	Lining cloth	100 mtrs.	20	2,000
6.	Colour	L.S.	--	300
7.	Misc. items	L.S.	--	600
	Total			1,64,000

**Utilities:**

Electric consumption (L.S) Rs 12,000/-

**Manpower:**

Sl.No.	Category	Nos.	Monthly Salary(Rs)	Annual Salary (Rs)
1.	Manager	1	4,000	48,000
2.	Skilled workers	10	1,200	1,44,000
3.	Semi-Skilled workers	4	1,000	48,000
4.	Total			2,40,000

**Working Capital:**

Sl.No.	Particular	Norms	Amount (Rs)
1.	Raw materials	3 months	41,000
2.	Wages & Salaries	1 month	20,000
3.	Utilities	1 month	1,000
4.	Total		62,000

**Misc. Fixed Assets:**

Sl.No.	Particulars	Qty.	Rate(Rs)	Total (Rs)
1.	Bamboo mat	30	100	3,000
2.	Stool	10	100	1,000
3.	Table	2	3,000	6,000
4.	Chair	5	1,000	5,000
5.	Bench	5	1,000	5,000
6.	Fan	8	1,000	8,000
7.	Misc. items	L.S.		7,000
	Total			35,000

**Capital Cost of the Project:**

Sl.No.	Particular	Total Amount (Rs)
1.	Working shed	Rented
2.	Machinery & equipment	1,50,000
3.	Misc. Fixed Assets	35,000
4.	Preliminary & Pre-operative expenses	25,500
5.	Working Capital requirement	62,000
	Total	2,72,000

**Means of Finance:**

Bank Loan(65%)	Rs 1,77,000
Promoter's Contribution(35%):	<u>Rs 95,500</u>
Total	<u>Rs 2,72,500</u>

**Profitability Analysis:**

<b>A. Sales Revenue</b>		<b>Rs 6,10,000</b>
<b>B. Cost of Production:</b>		<b>(Rs)</b>
1. Raw materials		1,64,000
2. Utilities		12,000
3. Wages & salaries		2,40,000
4. Rent/Insurance etc.		18,000
5. Depreciation @ 5% on m/c		7,500
6. Repair & maintenance		2,000
7. Consumables and stores		6,000
8. Administrative overhead		10,000
9. Interest on Bank Loan @12.5%		<u>22,125</u>
	Total of (B)	<u>4,81,625</u>
<b>C. Operating Profit (A-B)</b>		<b>1,28,375</b>
<b>D. Percentage of profit on sales</b>		<b>21%</b>
<b>E. Percentage of profit on investment</b>		<b>47%</b>
<b>Break-even point analysis (at 100% capacity utilization)</b>		
<b>A. Variable Cost:</b>		<b>(Rs)</b>
1. Raw materials		1,64,000
2. Consumables and stores		6,000
3. Utilities		<u>12,000</u>
	Total of (A)	<u>1,82,000</u>
<b>B. Semi-Variable and Fixed Assets:</b>		
1. Wages & salaries		2,40,000
2. Repair and maintenance		2,000
3. Rent/Insurance etc.		18,000
4. Depreciation		7,500
5. Administrative overhead		10,000
6. Interest		<u>22,125</u>
	Total of (B)	<u>2,99,615</u>
<b>C. Sales realization</b>		<b>Rs. 6,10,000</b>
<b>D. Contribution (C – A )</b>		<b>Rs. 4,28,000</b>
<b>E B.E.P. B/d x 100%</b>		<b>70%</b>



## JUTE BAG MAKING

### INTRODUCTION

Jute is a bio-degradable eco-friendly item. Prior to nineties, jute fabric was used for making low cost carry bags and gunny bags for packing rice, paddy, sugar, dal, cement etc. With the start of Jute diversification, a large market has developed for the jute yarn, jute fabrics and other jute based products. With the market assistance of JMDC and NCJD a large production base of small and cottage sector units have come up with a wide variety of products and are sold through exhibitions organized by different agencies. Both NCJD and JMDC have their own development schemes to support jute entrepreneurs beginning from imparting "Basic Training Programme", "Advance Training Programme", "Advance Training cum Design Dissemination Programme", "Technical demonstration" and "Buyer Seller Meet". They are also assisting the jute entrepreneurs to sell their products through different Trade Fairs/Exhibitions in the country. JMDC is also providing marketing assistance to jute entrepreneurs by providing them stalls in the trade fairs/exhibitions in the domestic market as well as in the foreign markets.

For creating pollution free environment the Govt. has started discouraging the use of polythene and rexin items. In some states, the polythene bags have been totally banned.

For eco-friendly character the demand for jute yarn, jute fabrics and other jute items is increasing very fast. New technologies have evolved for bulk use of jute as a raw material in the production of high value added and price competitive final products. A host of innovative new products have been developed high value addition such as home textiles, jute composites, jute geo-textiles, technical textiles, handicrafts and fashion accessories etc.

Jute fabrics are strong, durable, light, colour fast, attractive and cheaper than most fabrics made from other fibres. These are anti static, UV protective, carbon dioxide neutral and naturally decomposable i.e. free from the health hazards. Jute fabrics are excellent raw materials for jute bags. The proposed unit will make high quality jute bags which have demand in the domestic market as well as in the foreign market.

National center for Jute Diversification (NCJD), Ministry of Textiles , Govt. of India has appointed collaboration agency all over India for operating "Jute Raw Material Bank" (JRMB) in order to supply jute raw materials to jute artisans at mill gate-price".

### Manufacturing Process:

Both laminated and non-laminated jute fabrics are procured from the market and as per drawing, design and size cutting is done to make bags. After cutting, the clothes are placed on the table and printing is done. Then cut pieces are stitched in the sewing machine. During the process of making the bags, lining, buckles, chains, runner, handles of clothes, bamboo and canes are fitted. After completion of total works the bags are packed and dispatched to market for sale.

### Production Programme:

It has been proposed to make 5 items of jute bags viz. Shopping bag, Ladies bag, School bag, gents hand bag and jute folders at the initial stage because these bags have high demand in the market 37500 Nos. of bags will be produced in 12<sup>th</sup> months and the wholesale price of the products has been calculated to Rs.32,25,000/-.

### Machinery and Equipment:

It has been proposed to buy 5nos. industrial sewing machine of which 3 medium and 2 are heavy duty. Besides, sufficient quantity of tools and equipment will be kept for functioning of the unit . Total cost of machinery and equipments has been calculated to Rs.89,700/-.

### Raw Materials:

Requirement of jute fabric (both laminated and non-laminated) would be 18825 mtrs bamboo mat 15,000 sq mt. per year. Quality of Shopping bag, School bag, Gents hand bag and Jute Folder would be of higher range and the ladies bag would be of very high quality. Bag accessories like buckles, hook, runner, chain, lining cloth, eye let, and handle etc. would be required for making the bags. All accessories will not be required for all bags. So, the cost of accessories for bamboo folder has been estimated @Rs.35/- per bag for 6000 bags which comes to Rs2,10,000 and the cost of accessories of jute bag has been estimated @Rs.12/- per bag on an average which come to Rs.4,50,000 and the total cost of raw materials has been estimated to Rs.20,29,650/- per annum.

**Suggested Location :** **Assam** : Barpata, Kamrup, Nalbani, Nagaon, Goalpara  
**A. P** : Itanagar, Daimukh  
**Manipur** : Imphal, tamenglong  
**Tripura** : Agartala, Dharmanagar  
**Sikkim** : Gangtok, Penlang, North Sikkim Area.

**Utilities:**

Monthly electricity bill has been estimated to Rs. 17,400/- and the cost of machine oil etc. would be Rs.50/- .So, the total amount under this head would be Rs.18,000/-

**Manpower:**

Total manpower requirement for the unit would be 10 nos. including promoter of which 5nos. will be skilled tailor, 3 nos. helper and 1(one) Accountant. Total amount of wage and salary would be Rs.4,08,000/- per annum.

**Misc. Fixed Assets:**

Total cost of miscellaneous fixed assets has been estimated to Rs.30,000/- which includes the cost of cutting table, stool, office table, chair, almirah and rack. etc.

**Working Capital:**

It has been assumed that the norms for maintaining the working capital would be 1(one) month for raw materials, wage and salary and utility and 15 days for stock of finished goods. Total requirement of working capital would be Rs.3,11,997/- of which Rs.1,04,623/- would be margin money and Rs. 2,07,374/- would be bank loan for working capital.

**Capital cost of the Project:**

Capital cost of the Project has been calculated to Rs.2,52,323/- of which Rs.89,700/- for machinery and equipment, Rs.30,000/- for miscellaneous fixed assets, Rs.20,000/- for the preliminary and pre-operative expenses, Rs 8,000/- for electrical installation and Rs.1,04,623/- towards margin money for working capital.

**Means of Finance:**

65% of the cost project amounting to Rs.1,64,000/- has been expected from Bank as term loan; 25% amounting to Rs.63,080/- from NCJD as interest free loan and the balance 10% amounting to Rs.25,243/- would be contributed by the promoter.

**Assumption:**

The unit will operate 8 hours daily and 25 days in a month. It has been assumed that the capacity utilization will be 80% which will remain constant. Since the project is small the financial calculation has been done for one year only.

**Profitability Analysis:**

Total sales proceed has been estimated to be Rs. 32,25,000/- per annum, total cost of production Rs.27,94,810 per annum and the operating profit has been calculated to Rs.4,30,190/- . The percentage of profit on sales has been calculated to 13% and the profit on investment to 94%.

**Break Even Point:**

Break Even Point has been calculated to 45% at 80% capacity utilization.

**Financial Analysis of the project**

**Production Programme:**

Sl. No.	Items	Qty (Nos)	Rate (Rs)	Total Amount
1	Shopping Bag	9000	40	3,60,000
2	Ladies Bag	6000	80	4,80,000
3	School Bag	7500	70	5,25,000
4	Gents Hand Bag	9000	90	8,10,000
5	Jute Bamboo folder	6000	17	10,50,000
	Total	37500		32,25,000

**Machinery / Equipment:**

Sl. No.	Items	Qty	Rate (Rs.)	Total Amount (Rs.)
1	Industrial Sewing Machine 31K	3	7,500	22,500
2	Sagar Paduka (Bamboo M/c.)	1	13,500	13,500
3	Titan	1	18,000	18,000
4	Misc. Tools & Equipment	L.S.	15,000	15,000
	Sub- Total:			69,000
5	Add: 30% towards freight, tax insurance etc.			20,700
	<b>Grand Total</b>			<b>89,700</b>

**Raw Materials:**

Sl. No.	Items	Qty	Rate	Total Amount
1	Cloth for: Shopping Bag	4500m	42	1,89,000
2	Ladies Bag	3000m	60	1,80,000
3	School Bag	5625m	42	2,36,250
4	Gent Hand Bag	4500m	42	1,89,000
5	Jute Bamboo Folder	1200m	42	50,400
6	Bamboo mat for jute bamboo folder	15,000sq ft.	35	5,25,000
7	Jute fabric, Lining adhesive, raxin, paper etc. per bamboo Folder	6000 bags	35 per bag	2,10,000
8	Buckles, Hook, Runner, Chain, Lining, Handle, Eye let, etc.	37,500 m	@ 12/-	4,50,000
	<b>Total:</b>			<b>20,29,650</b>

**Utilities:**

Sl. No.	Items	Annual Requirement (KW)	Rate (Rs)	Total Amount
1	Electricity for lighting purpose	L.S.	-	17400
2	M/c. Oil, lubricant. etc.	L.S.	-	600
	Total		-	18000

**Manpower:**

Sl. No.	Category	Nos	Salary per month	Annual Salary
1	Master cutter(Promoter)	1	8000	96,000
2	Accountant	1	5000	60,000
3	Tailor	5	3000	1,80,000
4	Helper	3	2000	72,000
	Total	10		4,08,000

**Misc. Fixed Assets:**

Sl. No.	Items	Qty	Rate	Total Amount(Rs.)
1	Cutting Table	2	2500	5000
2	Stool	10	250	2500
3	Table	1	2000	2000
4	Chair	5	500	2500
5	Almirah	2	4500	9000
6	Reck	1	3500	3500
7	Misc. Items.	L.S.		5500
	<b>Total</b>			<b>30,000</b>

**Working Capital:**

Sl. No.	Description	Norms	Margin	Total Amount	Margin Money	Bank Loan
1	Raw Materials	1 month	25%	1,69,138	42,284	1,26,854
2	Wages & salaries	1 month	100%	34,000	34,000	-
3	Utility	1 month	100%	1,500	1,500	-
4	Stock Finished goods	15 days	25%	1,07,359	26,839	80,520
	<b>Total:</b>			<b>3,11,997</b>	<b>1,04,623</b>	<b>2,07,374</b>

**Capital Cost Of Project:\**

Sl. No.	Particulars	Total Amount (Rs.)
1	Land & Building	Rented
2	Machinery & Equipment	89,700
3	Misc. Fixed Assets	30,000
4	Preliminary & Pre-operative expenses	20,000
5	Electrical Installation etc.	8,000
6	Margin Money for Working Capital	1,04,623
	<b>Total</b>	<b>2,52,323</b>

**MEANS OF FINANCE**

Sl.No.	Particulars	Total Amount (Rs.)
1.	Promoter's Contribution (10%)	25,243
2.	Bank Loan (65%)	1,64,000
3.	NCJD's Interest Free Loan (25%)	63,080
	<b>Total:</b>	<b>2,52,323</b>

**Profitability Analysis:**

Sl.No.	Particulars	Value (Rs.)
<b>A.</b>	<b>Sales Revenue</b>	32,25,000
<b>B.</b>	<b>Cost of Production:</b>	
	1) Raw Materials	20,29,650
	2) Utilities	18,000
	3) Wages & Salaries	4,08,000
	4) Rent, Insurance etc.	50,000
	5) Depreciation 10% on Machinery Equipment	8,970
	6) Repair and Maintenance	12,000
	7) Consumables and stores	30,000
	8) Administrative Overheads	30,000
	9) Selling Expenses 5% on sales	1,61,250
	10) Interest on Term Loan @ 12.50%	20,500
	11) Interest on Working Capital Loan @12.75%	26,440
	<b>Total of (B)</b>	<b>27,94,810</b>
<b>C.</b>	<b>Operating Profit (A – B)</b>	<b>4,30,190</b>
<b>D.</b>	<b>% of Profit on Sales</b>	<b>13%</b>
<b>E.</b>	<b>% of Profit on Investment</b>	<b>94%</b>

**BREAK EVEN POINT ANALYSIS  
(80% Capacity Utilisation)**

Sl.No.	Particulars	Value (Rs.)
<b>A.</b>	<b>Variable Cost:</b>	
	Raw Materials	20,29,650
	Consumables and Stores	30,000
	Utilities	18,000
	Selling expenses	1,61,250
	<b>Total (A)</b>	<b>22,38,900</b>
<b>B.</b>	<b>Semi-variable and Fixed Costs:</b>	
	Wages & Salaries	<b>4,08,000</b>
	Repair and maintenance	<b>12,000</b>
	Rent, Insurance etc.	<b>50,000</b>
	Depreciation	<b>8,970</b>
	Administrative Overhead	<b>30,000</b>
	Interest	<b>46,940</b>
	<b>Total (B)</b>	<b>5,55,910</b>
<b>C.</b>	<b>Sales Realization</b>	<b>32,25,000</b>
<b>D.</b>	<b>Contribution (C-A)</b>	<b>9,86,100</b>
<b>E.</b>	<b>B.E.P. = B ÷ D × 80</b>	<b>45% of Installed Capacity</b>

## **JUTE SUTLI (JUTE TWINE / ROPE)**

### **INTRODUCTION**

Jute is a natural cellulosic bast fiber. Due to its good spinable characteristics, it is well known as a golden fiber. Jute has various inherent characteristics like, high tensile strength, low extensibility, long durability, fire and heat resistance, silkiness, luster and long staple lengths.

India is the single largest jute producer in the world producing around 35% of the world production and earn highest foreign currency from jute. In India around 1 million hectare of land is under jute cultivation, production is 10 million tones and yield is 1960 kg per hectare. In North Eastern States Jute is cultivated in Assam, Arunachal Pradesh, Meghalaya, Nagaland & Tripura. Assam ranks second as the most jute producing state in India after West Bengal. Unfortunately 75% of the jute produced in Assam goes out of the state in raw form and a large position of it comes back to Assam after value addition outside the state.

The Jute sector continues to play an important role in the economy of the country in general. In state wise jute production, West Bengal, Assam and Bihar are the three major jute producing states accounting for around 98% of India's total production.

### **ABOUT THE PRODUCT**

Jute can be defined as an eco-friendly natural fiber with versatile application. Jute with its unique versatility, rightfully deserves to be branded as the "fiber for the future". Prospects ranging from low value geo-textiles to high value carpet, apparel, composites, decorative, upholstery furnishings, fancy non-woven for new products, decorative colour boards etc. The traditional excellence of Indian craftsmen and artisans is reflected in a wide range of jute handicrafts of utility, decoration and novelty.

Jute is classified in traditional products and diversified products. Traditional products essentially comprise of Hessian, Carpet-backing cloth and sacking while diversified products include blankets, decorative fabrics, gift articles, shopping hand bags and wall hangings.

Jute twine of different qualities and thickness are used extensively in India. Three classes of twine are made viz. general twine, export twine and sacking twine, General twine is utilized in India for a large variety of purpose, particularly for packing purpose and various type of rope making., and other twines are used in finishing nets On the other hand the softened twines can be used for packing cloth, carpets etc.

### **MARKET POTENTIAL**

Traditional jute products occupy a dominant share in both production and market. The global jute production was estimated at approximately 3.13 million tones in 2002-03. India topped the list of the largest producers accounting for an impressive 64% of the world production in 2002-03. Indian prices were found to be competitive in export market of jute yarn and jute fabrics, while India faced a stiff price competition in export of twine, ropes. The demand of Jute products is good and there is bright scope of jute yarn, jute sutli making unit.

### **SUGGESTED CAPACITY**

To assessing the proposed plant capacity due consideration is given on availability of raw materials, availability of electricity and market. The annual production of 100 tonnes is suggested, the production at different capacity utilization per annum will be as follows:

Installed Capacity	1st yr. production @80%	2nd yr. onwards production @90%
Production Capacity 330 Kg per day	264 kg per day	297 kg per day
Production Capacity 10,000 Kg per yr.	80,000 kg per year	90,000 kg per year

**Basis:-**

No. of working days	=	25 days per month
	=	300 days per year
No. of shifts	=	1 per day.
One shift	=	8 hours
Effective working hours/day	=	6 hours

**INFRASTRUCTURE REQUIREMENT**

The main Infrastructural facilities required are:

Covered shed area (processing hall/storages/office)	800 sq. ft.
Power requirement	10 kw.

**RAW MATERIALS**

Raw material is available in many jute cultivation areas. Few jute extraction units can also be set up in jute growing areas to meet jute fiber requirement. Barpeta Road in Assam is the main market centre of jute. Jute can be procured from this market in bulk throughout the year and produce required jute yarns even manually. Processed, ready to use jute yarns also available in the local market.

**SUGGESTED LOCATION**

Jute based project should be located mainly in jute growing area and also should be nearby available market round the year.

Keeping in view the availability of jute, the suggested locations in the state of Assam are Borpeta, Kamrup, Nalbari, Bongaigaon, Dhubri, Goalpara, Nagoan, Cachar, Hilakandi and Karimganj . In Arunachal Pradesh-Itanagar and Daimukh In Manipur-Imphal, and Tamenglong etc. In the State of Tripura-Agartala, Dharmanagar, Sikkim-Gangtok, Penlang, North Sikkim area.

**PRODUCTION PROCESS (STEP WISE)**

The main process steps are:

1. Extraction of fibre.
2. Carding of extra fibre.
3. Spinning.
4. Conversion of spun jute yarn into sutli/rope.
5. Coiling of sutli/rope.
6. Finishing
7. Weighing & packing.

**PROJECT ECONOMICS****Total Capital Requirement**

The total capital requirement including fixed capital and working capital is estimated at Rs 14.50 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs.11.42 lakhs.

<b>A. Fixed Capital</b>	(Rs. in lakhs)
Land	on rent
Land Development Cost	1.00
Building /Civil works:	
i) Work shed 500 sq.ft	2.50

ii)	Office/Store 300 sq.ft.		1.80
iii)	Toilet/Bathroom/Cemented open space, Drainage facilities etc.		1.20
	Plant & Machinery		2.05
	Misc. Fixed Assets (Water arrangement/Overhead reservoir/pump set/power line connection/water & electrical fittings/office equipment)		1.20
	Preliminary & Pre-operative Expenses		0.60
	Contingency provision		0.50
			10.85
<b>B.</b>	<b>Working Capital:</b>		
	Raw materials/ Packing materials	15 days	0.62
	Working expenses	1 month	0.52
	Finished goods	10 days	0.66
	Receivable	7 days	0.65
			2.45
	Note: Working capital to be financed as –		
	Margin Money	:	1.00
	Bank Finance	:	1.45
			2.45
	<b>Means of Finance:</b>		
	Promoter's Equity(24.8%)		2.95
	Term Loan(75.2%)		8.90
			11.85

Cost of Production & Profitability:		(Rs in lakh)
Raw material & packing materials	:	12.40
Wages & Salaries	:	5.80
Utilities	:	0.40
Repair & Maintenance	:	0.24
Administrative overhead	:	0.30
Selling expenses 10% on sales	:	2.80
Depreciation	:	0.66
Interest	:	1.30
		23.90

#### Sales Turnover:

The market price of sutli varies between Rs. 40 to Rs. 50 per kg. Keeping in view the margin for retailers/wholesalers, the ex-factory price had been taken at Rs. 35.00 per kg. and accordingly the sales realization is estimated at Rs. 28.00 lakhs per year.

#### Break Even Analysis:

A.	Variable Cost:	(Rs in lakh)
	Raw materials/ packing materials	12.40
	Utilities	0.40
	Selling expenses	2.80
		<b>15.60</b>
B.	Semi-Variable Cost:	
	Wages & Salaries	5.80
	Repair & Maintenance	0.24
	Administrative overhead	0.30



Depreciation	0.66
Interest	1.30
	8.30
C. Sales Realization	28.00
D. Contribution	12.40
E. Break-Even Point B/D x 80%	54%

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs. 4.10 lakhs per year. This works out to a return on capital investment of 31%. The unit would break-even at about 54% of the rated capacity.

**Machinery & Equipment:**

The main equipment required are –

	No. of Machinery	Power
i) Fibre Extraction machine	: 2 Nos.	2 H.P. each
ii) Fibre Carding machine	: 2 Nos.	1 H.P. each
iii) Semi-auto twisting machine	: 1 No.	1 H.P.
iv) Automatic feed rope making(4 ply)	: 1 No.	½ H.P.
v) Hand making coil winding M/C	: 1 No.	½ H.P.
vi) Rope finishing M/C	: 1 No.	-
vii) weighing scales etc.	: 1 set.	-

**Raw Materials/Packaging materials (Annually):**

Item	Quantity (per day)	Rates(Rs.)	Amount required per day(Rs.)	Annual Requirement (Rs in lakh)
1. Raw Jute	281 kg	14/-per kg	3934.00	11.80
2. Packing roll	L.S.	-	200.00	0.60
TOTAL				12.40

**Manpower:**

Category	No.of person	Salary per person per month(Rs)	Monthly Requirement (Rs )
Supervisor	1	6000	6000
Skilled worker	1	6000	6000
Semi-Skilled workers	3	5000	15000
Unskilled workers	4	3000	12000
Accounts/store keeper	1	5000	5000
Total Manpower Cost			44,000

Salary Bill Rs 5.28 Lakhs + Benefits @ 10% annually i.e. Rs 0.52  
Total Annual Salary Bill : Rs 5,80 Lakh.

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs.	13.30 lakhs
Promoter's contribution	Rs.	2.95 lakhs
Annual Sales realization	Rs.	28.00 lakhs
Annual Operating Expenses	Rs.	23.90 lakhs
Annual Profit	Rs.	4.10 lakhs
Return on sales		15%
Break-even point		54%
No. of person employed		10

#### **ADDRESS OF MACHINERY MANUFACTURER/SUPLIERS**

1. Ambia Texmech Manufactures (P) Ltd,  
B-13, Noble Chamber (VATSA HOUSE),  
Gogha Street, Fort,  
Mumbai-400 021
2. Textool Company Ltd.  
Ganapatji  
Coimbatore-641 006
3. Texcomast Export,  
2, Arcadia  
Nariman Point,  
Mumbai-400 001
4. Bimag Machine Pvt. Ltd.  
309, Dolmal Tower  
Nariman Point,  
Mumbai-400 021
5. Perna Textiel Industries Pvt.Ltd.  
212/213, T.V.Industrial Estate  
(2nd Floor) Plot No.248A,  
52, Ahire Marg, Worli,  
Mumbai-400 025

## JUTE WEAVING

### Introduction:

Decorative jute weaving products have demands in most of the homes. It is not only fashionable but also durable and washable. It has made its presence not only in the domestic sector but also commercial sectors like hotels. Convention centres also prefer to have them.

### Market Potential:

The door mats, floor covering, screens and durries have great demand in the urban and semi-urban homes, apart from these the big hotels. Commercial centres, malls, clubs also give preference to these items due to their decorative looks and comparatively cheaper price.

### Raw materials:

Jute yarn	:	2580 kg.
Cotton yarn	:	192 Kg.
Acrylic yarn	:	273 kg.

### Machinery:

The major equipment required are –

1.	Loom (Complete with all accessories)	:	4 Nos. x Rs 6000 =	Rs 24,000
2.	Bobbin Crile	:	1 No. x Rs 1000 =	Rs 1,000
3.	Charkha	:	1 No. x Rs 500 =	Rs 500
4.	Bobbin	:	100 Nos. x Rs 3 =	Rs 300
5.	Pirn	:	100 Nos. x Rs 3 =	Rs 300
6.	Shuttle	:	10 No. x Rs 50 =	Rs 500
7.	Misc. Items	:	L.S.	<u>Rs 3,400</u>
			Total	<u>Rs 30,000</u> =====

### Infrastructure:

The major infrastructure requirement are –

Covered Area	:	40 sq.mt.
Power	:	1 KW.

### Location:

The suggested locations are –

Assam	:	Kokrajhar, Bongaigaon, Guwahati, Nagaon, Sibsagar, Tinsukia.
Arunachal Pradesh	:	Itanagar, Doimukh, Pasighat
Meghalaya	:	Nongpoh, Tura, Williamnagar
Nagaland	:	Dimapur, Kohima
Tripura	:	Agartala, Udaipur
Manipur	:	Imphal, Churachandpur, Thoubal.
Mizoram	:	Aizawl.
Sikkim	:	Gangtok, Penlang, North sikkim area

### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 1,13,435 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 75,435 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land building		Rented
Machinery		30,000
Miscellaneous fixed assets		15,000
Preliminary and pre-operative expenses		<u>10,000</u>
	<b>Total (A)</b>	<b>55,000</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	13,300
Finished goods	15 days	14,060
Working expenses	1 month	9,100
Receivables	15 days	<u>21,975</u>
	<b>Total (B)</b>	<b>58,435</b>
		=====
	<b>Total (A)+(B)</b>	<b>1,13,435</b>
Note: Working capital may be financed as:		
Bank Finance .....		Rs 38,000
Margin Money.....		<u>Rs 20,435</u>
		<b>Rs 58,435</b>
		=====

**Capital Cost of Project:**

1. Fixed Cost.....	Rs 55,000
2. Margin money for W.C. ....	<u>Rs 49,000</u>
	<b>Rs 75,435</b>
	=====

**Means of Finance:**

Promoter's contribution (35%)	Rs 26,435
Term Loan (65%)	<u>Rs 49,000</u>
	<b>Rs 75,435</b>
	=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 3,06,015 as given below:

		<b>(Rupees)</b>
1. Raw materials:		
i) Jute yarn 2580 kg.		77,400
ii) Cotton yarn 192 kg.		26,880
iii) Acrylic yarn 273 kg.		54,600
iv) Misc. items (L.S)		<u>1,120</u>
		1,60,000
2. Utilities		12,000
3. Wages & Salaries		97,200
4. Rent, Insurance		12,000
5. Other overheads		12,000
6. Interest on term loan@ 11.50%		4,180
7. Interest on Bank Finance for Working Capital@11%		5,635
9. Depreciation @10%on m/		<u>3,000</u>
	<b>Grand Total</b>	<b>3,06,015</b>
		=====

**Sales Realization:**

Sl.No.	Particulars	No.	Rate (Rs)	Value (Rs)
1..	Door mat (13"x22")	600 Nos.	80/-	48,000
2.	Floor covering (4"x6')	600 Nos.	350/-	2,10,000
3.	Screen (1200m)	--	--	60,000
4.	Durry (2.50' x 5')	450 Nos.	100/-	45,000
	<b>TOTAL</b>			<b>4,39,500</b>

**Profitability :**

Based on the sales realization of Rs 4,39,500 and the operating expenses of Rs. 3,00,015 the profit would be Rs 1,33,485 per year. This works out to a return on investment of 118%. The plant will break even at 40% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 1,13,435
Promoter's contribution	:	Rs 26,435
Annual sales realization (70% cap.)	:	Rs 4,39,500
Annual operating expenses (70% cap.)	:	Rs 3,06,015
Annual profit (pre-tax)	:	Rs 1,33,485
Pre-tax Return on Sales	:	30%
Break Even Point	:	40%
No.of persons employed	:	7

**Suppliers of Machinery**

All machineries and equipment are available in the local market.

## MUGA & MULBERRY SILK WEAVING

### Introduction:

Weaving is a way of life and an integral part of the weaving community residing in the North Eastern Region. More than 50% of the total looms found all over India exist in this region. The Assam silk and muga not only holds an important place in the handloom sector in the national market but has also a great demand in the international market.

### Market Potential:

There exists a great potential for muga and silk fabrics and garments in the local, national as well as international market. Care should be taken to upgrade the quality and design of the items in order to meet the international demand. Although there are a number of units in Assam, yet there are still scope for a few more units to come up.

### Plant Capacity:

Average daily production envisaged: 3 Nos. (Mekhela-chaddar & Saree)

Working days/year	:	300
Annual production	:	900 Nos. (400 Nos. of Mekhela-Chaddar) 500 Nos. of Sarees

### Raw materials:

Muga yarn	:	125 Kg.
Silk yarn	:	225 kg.
Dolly yarn (for design)	:	3360 Nos.

### Process:

The major process steps are –

Pre loom process:

- Sorting of yarn
- Dyeing where necessary
- Winding
- Warping
- Fitting in looms for weaving

Post loom process:

- Cutting as per requirement
- Packaging

### Machinery:

The major equipment required are –

8. Plain loom & Accessories
  - (A. Frame – 3 Nos.
  - (B. Slay – 3 Nos.
  - (C. Beam – 6 Nos.
  - (D. Charkha – 3 Nos.
  - (E. Reed (52 x 60) – 3 Nos.
  - (F. Bobbin – 36 Nos.
  - (G. Shuttle – 3 Nos.
2. Loom with Dubby machine & Accessories:
  - (A. Frame – 2 Nos.
  - (B. Slay – 2 Nos.
  - (C. Dubby machine – 2 Nos.
  - (D. Charkha – 2 Nos.
  - (E. Reed (100 x 60) – 1 No.
  - (F. Bobbin – 200 Nos.
  - (G. Purn – 50 Nos.
  - (H. Shuttle – 2 Nos.
  - (I. Card – 600 Nos.
  - (J. Punching Plate – 2 Nos.

3. Other Accessories

<b>Total Cost :</b>		<b>Rs 49,965/-</b>
	<b>Say</b>	<b>Rs 50,000/-</b>

**Infrastructure:**

The major infrastructure requirement are –

Covered Area	: 750 sq.mt.(Working space + Office room & show-room)
Power	: 1.5 KW.
Water	: 1000 L/day

**Location:**

The suggested locations are –

Preferably in district headquarter of Assam.

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 7,85,322 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 6,42,113.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land & building	:	Own
(750 sq.ft working shed +	:	0.25
Office room + show-room)		
Plant & Machinery		4.50
Miscellaneous fixed assets		0.50
Preliminary and pre-operative expenses		0.30
		<u>0.10</u>
	<b>Total (A)</b>	<b>5.65</b>
		=====

<b>B. Working Capital:</b>		<b>(Rs)</b>
Raw materials & Packing material	½ month	40,570
Finished goods	½ month	54,326
Working expenses	1 month	18,760
Receivables	10 days	<u>1,06,666</u>
	<b>Total (B)</b>	<b>2,20,322</b>
		=====
	<b>Total (A)+(B)</b>	<b>7,85,322</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 1,43,209
Margin Money	.....	Rs 77,113
		<u>Rs 2,20,322</u>
		=====

**Means of Finance:**

Promoter's contribution (35%)	Rs 2,24,740
Term Loan (65%)	<u>Rs 4,17,373</u>
	<b>Rs 6,42,113</b>
	=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 3,06,015 as given below:

		<b>(Rs.)</b>
1.	Raw materials:	7,93,400
2.	Packing materials	48,000
3.	Utilities	11,520
4.	Wages & Salaries	2,13,600
5.	Other overheads	12,000
6.	Selling expenses @ 5% on annual sales	1,30,000
7.	Interest on term loan	53,215
8.	Interest on Bank Finance for working capital	17,901
9.	Depreciation @10% on m/c	<u>50,000</u>
	<b>Grand Total</b>	<b>13.29,636</b>
		=====

**Sales Realization:**

Sl.No.	Items	Qty.	Rate (Rs)	Annual Sales Realization (Rs)
1..	Mekhela Chaddar			
	– Silk	300 Pair	2000/-	6,00,000
	– Muga	100 Pair	3500/-	3,50,000
2.	Sarees			
	– Silk	300 Nos.	2500/-	7,50,000
	– Muga	200 Nos.	4500/-	9,00,000
	<b>TOTAL</b>			<b>26,00,000</b>

**Profitability :**

Based on the sales realization of Rs 26,00,000 and the operating expenses of Rs. 13,29,636, the profit at rated capacity utilization would be Rs 12,70,364 per year. This works out to a return on investment of 161%. The plant will break even at 52% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 7,85,322
Promoter's contribution	:	Rs 2,24,740
Annual sales realization (70% cap.)	:	Rs 26,00,000
Annual operating expenses (70% cap.)	:	Rs 13,29,636
Annual profit (pre-tax)	:	Rs 12,70,364
Pre-tax Return on Sales	:	49%
Break Even Point	:	52%
No.of persons employed	:	10

**Suppliers of Machinery**

1. M/s Guwahati Tatshal  
Panbazar Main Road,  
Guwahati – 781 001
2. M/s Kumar Stores,  
Fancy Bazar,  
Guwahati – 781 001



## TERRACOTTA WARE

### Introduction:

Terracotta wares such as pots, surais, follower tubs and other decorative clay articles are made out of locally available plastic clay. A traditional potter can easily manufacture the above items which are being used by all classes of people.

### Market Potential:

There is good demand for surais & pots for storing potable water for drinking purposes. The use of the articles is more in summer. Demand for these terracotta wares are growing very fast all over India.

### Process of manufacturing:

Locally available plastic clay after digging is kept for aging at least one week. The aged clay is further kneaded, and a desired quantity of clay is taken and thrown into the required shape of article on the improved potter-wheel. This important operation requires good skill by an artisan such as professional potter. After shaping, the article is allowed for better hardening and then taken for joining of handles etc. and the articles are kept for drying. The dried articles are loaded to the open type Country Kilns for firing with either sawdust, paddy husk etc. On cooling, the fired articles are unloaded, sorted and sent for marketing.

### Basis and Presumption:

This scheme is envisaged based on the local resources and skill.

The proposed project is calculated on single shift basis working 300 days in a year. The operation of the Country Kiln will work till the cycle of firing is completed. Provision has been made for use of improved type of potter wheel with electrically driven.

### Raw Materials:

Tank Clay - 720 MT @ Rs 100/MT	:	Rs 72,000
--------------------------------	---	-----------

### Machinery and Equipment:

i) Pottery wheels with ½ HP motor along with other equipment - 9 Nos. x Rs 12,000 :		Rs 1,08,000
ii) Country Kiln – 1 No.	:	Rs 25,000
iii) Working tools ( L.S)	:	<u>Rs 10,000</u>
Total		<u>Rs 1,43,000</u>

### Infrastructure:

The major infrastructural requirement are:

Covered Area	:	1000 sq.mt.
Power	:	2 KW

### Location:

Assam	:	Sapatgram, Goalpara, Barpeta, Rangia Mangaldoi, Nagaon.
Meghalaya	:	Phulbari
Nagaland	:	Dimapur
Tripura	:	Udaipur
Manipur	:	Imphal.
Sikkim	:	Gangtok, Penlang, North sikkim

### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 2,46,315 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 1,92,160.

A. Fixed Capital:		(Rs in lakh)
Land & building		Rented
Plant & Machinery		1,43,000
Miscellaneous fixed assets		15,000
Preliminary and pre-operative expenses		<u>5,000</u>
<b>Total (A)</b>		<b>1.63,000</b>
		=====

**B. Working Capital:**

Raw materials & Packing material	1 month	6,000
Finished goods	15 days	16,765
Working expenses	1 month	18,500
Receivables	15 days	<u>42,050</u>
	<b>Total (B)</b>	<b>83,315</b>
		=====
	<b>Total (A)+(B)</b>	<b>2,46,315</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 54,155
Margin Money	.....	Rs 29,160
		<b>Rs 83,315</b>
		=====

**Capital Cost of Project:**

1. Fixed Cost	.....	Rs 1,63,000
2. Margin money for W.C.	.....	Rs 29,160
		<b>Rs 1,92,160</b>
		=====

**Means of Finance:**

Promoter's contribution (35%)		Rs 67,256
Term Loan (65%)		Rs 1,24,904
		<b>Rs 1,92,160</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs. 3,06,015 as given below:

		<b>(Rupees)</b>
1. Raw materials		72,000
2. Packing materials		25,000
3. Utilities		72,000
4. Wages & Salaries		1,50,000
5. Rent		24,000
6. Other overheads		10,000
7. Selling expenses @ 20% on annual sales		1,68,200
8. Interest on term loan @ 12.50%		15,613
9. Interest on Bank Finance for Working Capital @ 12%		6,499
10. Depreciation @ 10% on m/c		<u>16,300</u>
	<b>Total</b>	<b>5,59,612</b>
		=====

**Sales Realization:**

Total quantity of finished products after allowing 20% breakage and rejections:

Sl.No.	Product	Qty.(MT)	Rate (Rs)	Value (Rs)
1..	Surai	173 MT	1500/-	2,59,500
2.	Pots	173 MT	1500/-	2,59,000
3.	Flower Tub	115 MT	1200/-	1,38,000
4.	Decorative Articles	115 MT	1600/-	1,84,000
	<b>TOTAL</b>	<b>576 MT</b>	<b>--</b>	<b>8,41,000</b>

**Profitability :**

Based on the sales realization of Rs 8,41,000 and the operating expenses of Rs. 5,59,612 the profit would be Rs 2,81,388 per year. This works out to a return on investment of 114%. The plant will break even at 27% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 2,46,315
Promoter's contribution	:	Rs 67,256
Annual sales realization (70% cap.)	:	Rs 8,41,000
Annual operating expenses (70% cap.)	:	Rs 5,59,612
Annual profit (pre-tax)	:	Rs 2,81,388
Pre-tax Return on Sales	:	33%
Break Even Point	:	27%
No.of persons employed	:	8

**Suppliers of Machinery (Potter Wheel):**

M/s Sri Venkateswara General Engg. Works  
"B" Type, 8-139, Raju Colony,  
Balanagar,  
Hyderabad – 500 037

M/s Sri Lakshmi Narayana Reddy,  
Kamala Nagar,  
Ananthapur

M/s Sri Venkateswara Mechanic Tools,  
Shed No. D-28,  
Phase- IV, Extension,  
Behind Electrical Sub-Station,  
IDA, Jeedimetla,  
Hyderabad.

## YARN DYEING

### INTRODUCTION

The art of dyeing is a branch of applied chemistry in which a use of both physical and chemical principle is made in order to bring about a permanent union between the dyes and the textile materials. The art lies in colouring the textile in such a manner the colour may be fast and is not removed by operations such as working, rubbing, sunlight etc. Yarn dyeing is a common feature in the North Eastern states with nearly 50% of the handloom being located here and the demand for dyed yarn both cotton and silk is of great demand for this sector.

### 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.

### PLANT CAPACITY

Production per day at rated capacity	: 375 Kgs.
Capacity Utilisation	: 70%
Average daily production envisaged	: 262.5 Kgs
Working Days/year	: 300 Days
Annual production	: 17,500 bundles or : 78750 Kgs

### RAW MATERIALS

The main raw material required for the unit is gray yarn 78750 Kgs and the cost of the grey yarn @ Rs.70/kg is estimated Rs.55.12 lakhs.

The Different colour powders are :

• Violet	: 105 Kgs
• Blue	: 105 Kgs
• Green	: 90 Kgs
• Dark blue	: 160 Kgs.
• Pink	: 65 Kgs.
• Red-scarlet R base	: 190 Kgs
• Maroon A.S.T.R. base	: 55 Kgs
• Black	: 1225 Kgs.
• Chocolate – GBC base	: 55 Kgs.
• Orange –G.C. base	: 20 Kgs
• Yellow	: 30 Kgs.

Other Inputs (Chemicals)

• A.S.	: 160 Kgs.
• B.S.	: 160 Kgs.
• Sodium Nitrate	: 160 Kgs.
• Hydrolic Acid	: 370 Ltrs.
• Ammonium sulphate	: 315 Kgs
• Sodium Sulphate	: 1050 Kgs.
• Caustic Soda	: 1575 Kgs.
• Hydrogen Sulphide	: 525 Kgs.
• Sodium accelate	: 40 Kgs
• Soft soap	: 1750 Kgs.

Packing Materials – Paper, Cartons, Boxes etc.

## PROCESS

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/ sulphur dyes / Naphthol dyes.
- iv) Washing in fresh water and squeezing of dyed yarns.
- v) Drying of dyed yarns under fan.

## MACHINERY

The major equipment required are:

		( Rs. )
i)	Cast Iron Pan (Cap 100 Ltr.)	5 Nos. 15,000/-
ii)	Cast Iron Karahi (Cap. 20 Ltr.)	4 Nos. 4,800/-
iii)	Weigh M/c.	1 No. 5,000/-
iv)	Storage Trays	10 Nos. 10,000/-
		34,800/-
	Cost of Transportation, etc.	2,000/-
	<b>Total:</b>	<b>36,800/-</b>

=====

## INFRASTRUCTURE

The major infrastructural requirement are:

Covered Area	: 1200 Sq.ft.
Power	: 2 KW
Water	: 500 Ltrs/Day

## LOCATION

The suggested locations are:

Assam	} Nearer to handloom clusters in the semi-urban areas and district headquarters
Meghalaya	
Nagaland	
Tripura	
Manipur	
Arunachal Pradesh	
Sikkim	

## TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs. 4.18 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 1.85 lakhs.

( Rs. In lakh)		
<b>A. Fixed Capital:</b>		
Land and Building		On rent
Plant and Machinery		0.37
Miscellaneous fixed assets		0.15
Preliminary and pre-operative expenses		0.08
	<b>Total (A) :</b>	<b>0.60</b>
		=====
<b>C. Working Capital:</b>		
Raw materials & packing materials	½ month	0.12
Finished goods	½ month	0.10
Working expenses	1 month	1.51
Receivables	15 Days	1.85
	<b>Total (B)</b>	<b>3.58</b>
		=====
	<b>Total (A) + (B)</b>	<b>4.18</b>
		=====
Note: Working capital may be financed as:		
Bank Finance	...	Rs 2.33 lakh
Margin Money	...	Rs 1.25.lakh
		<b>Rs 3.58 lakh</b>
		=====

## MEANS OF FINANCE

Promoter's Contribution (35%)	...	Rs. 0.65 lakh
Term Loan (65%)	...	Rs. 1.20 lakh

**Rs. 1.85 lakh**

=====

## OPERATING EXPENSES

The annual operating expenses are estimated at Rs.73.47 lakhs as given below:  
(Rs. In lakhs)

1.	Raw materials	
	- Grey yarn 78750 Kgs. @ Rs.70/Kg	55.12
	- Colour powder, other inputs + packing materials @ 15% of Raw material	8.27
2.	Utilities 0.16	
3.	Wages & Salaries	0.08
4.	Rent	0.30
5.	Other overheads	0.12
6.	Selling expenses	7.94
7.	Interest on term loan	0.14
8.	Interest on bank finance for working capital	0.29
9.	Depreciation	0.05

**Total: 73.47**

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## SALES REALISATION

Colour Yarn	Qty. per annum (Kg)	Price/Kg (Rs.)	Annual Sales Realisation (Rs. in lakhs)
Violet	7875	110	8.66
Blue	7875	100	7.87
Green	7875	100	7.87
Dark Blue	11810	100	11.81
Pink	2360	100	2.36
Red	14175	100	14.17
Maroon	3940	100	3.94
Black	15750	100	15.75
Chocolate	3940	100	3.94
Orange	1575	100	1.58
Yellow	1575	100	1.58
<b>Total</b>			<b>79.53</b>

## PROFITABILITY

Based on the sales realization of Rs.79.53 lakhs and the operating expenses of Rs.73.47 lakhs, the profit at rated capacity utilization would be Rs. 6.06 lakhs per year. This works out to be return on investment of 145%. The unit will break even 25% of the targeted annual production.

## HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 4.18 lakhs
Promoter's contribution	Rs. 0.65 lakh
Annual Sales realization	Rs. 79.53 lakhs
Annual operating expenses	Rs. 73.47 lakhs
Annual profit (pre-tax)	Rs. 6.06 lakhs
Break-Even Point	24.63%
No. of persons employed	5

## SUPPLIERS OF MACHINERY

The yarns as well as the colours and chemicals are available in Guwahati and all other state capitals.

## LEATHER GOODS MANUFACTURING

### Introduction:

Use of leather goods is increasing day by day. Now-a-days fancy leather goods are being used by the people of even remotest area of our country, because lifestyle has been changing very fast. Fancy leather products are durable and beautiful to look at in comparison to other similar products.

### Market potential:

With the development in tanning technology, good quality leathers are coming to market. Leather products have very high demand in domestic and foreign market. The demand for leather products like hand bags, wallets, purses & belts etc is increasing gradually. It brings maximum unit value realization as compared to other leather products. The main foreign markets for leather products are Europe, Canada, Japan and USA. There is good scope for expansion of the industry.

### Plant capacity:

Average daily production envisaged ( 80% capacity utilization):

i)	Hand bag	:	25 Nos.
ii)	Wallet/Purse	:	25 Nos.
iii)	Belts	:	25 Nos.

### Raw Materials:

i)	Leather
ii)	Silk Cloth for lining
iii)	Adhesives
iv)	Solution, spirit, buckles, buttons etc.

### Manufacturing Process:

The proposed items are manufactured by units in different methods. The main operations are pattern making, economical layout of patterns, clicking of components, skiving decoration by embossing machine or hand, folding, colouring, assembling, stitching, fitting and finishing.

### Machinery:

The major equipment required are –

i)	Flat bed Ind. Sewing machine Complete with motor	2 x Rs 7500/-	Rs 15,000/-
ii)	Cylinder bed sewing machine Complete with motor	1 x Rs 35,000/-	Rs 35,000/-
iii)	Upper Leather skiving machine Complete with motor	1 x Rs 25,000/-	Rs 25,000/-
iv)	Misc. tools & equipments	L.S	<u>Rs 15,000/-</u>
		<b>Total</b>	<b>Rs 90,000/-</b>

### Infrastructure:

The major infrastructural requirement are –

Covered area	:	1000 sq.ft.
Power	:	2 KW

### Location:

The suggested locations are –

Assam	:	Guwahati, Tinsukia
Meghalaya	:	Shillong, Jowai
Nagaland	:	Dimapur
Tripura	:	Agartala
Manipur	:	Imphal.

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 6,42,450 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 3,33,450 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs)</b>
Land building		Rented
Machinery		90,000
Miscellaneous fixed assets		30,000
Preliminary and pre-operative expenses		<u>10,000</u>
	<b>Total (A)</b>	<b>1,30,000</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	1,77,700
Finished goods	15 day	1,30,220
Working expenses	1 month	36,000
Receivables	15 days	<u>1,68,750</u>
	<b>Total (B)</b>	<b>5,12,450</b>
		=====
	<b>Total (A)+(B)</b>	<b>6,42,450</b>
Note: Working capital may be financed as:		
Bank Finance	.....	Rs 3,09,000
Margin Money	.....	<u>Rs 2,03,450</u>
		<b>Rs 5,12,450</b>
		=====

**Capital Cost of the Project:**

Fixed capital	:	Rs 1,30,000
Margin money for Working capital	:	<u>Rs 1,16,450</u>
		Rs 3,33,450
		=====

**Means of Finance:**

Promoter's contribution(35%)	Rs 1,16,450
Term Loan (65%)	<u>Rs 2,17,000</u>
	<b>Rs 3,33,450</b>
	=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 28,82,175 as given below:  
(Rs in lakhs)

1. Raw materials:		
i) Leather 45,120 sq.ftx45		20,30,400
ii) Lining cloth – 190 x 25		57,000
iii) Adhesive, rubber, solution, spirit, buttons, thread, board, buckles etc.		20,000
2. Packing materials		<u>25,000</u>
		21,32,400
3. Utilities		36,000
4. Wages & Salaries		3,96,000
5. Rent, Insurance		40,000
6. Other overheads		30,000
7. Selling expenses @ 5% on annual sales		1,70,625
8. Interest on term loan@ 13.25%		28,752
9. Interest on Bank Finance for Working Capital@12.75%		39,398
10. Depreciation @10% on machinery		<u>9,000</u>
		<b>28,82,175</b>
		=====



**Sales Realization:**

Sl.No.	Particulars	No.	Rate (Rs)	Value (Rs)
1.	Hand bags	7500	250/-	18,75,000
2.	Wallet/Purse	7500	40/-	6,00,000
3.	Belts	7500	125/-	9,37,500
	<b>TOTAL</b>			<b>34,12,500</b>

**Profitability :**

Based on the sales realization of Rs 34,12,500 and the operating expenses, the profit would be Rs 28,82,175, the profit at rated capacity utilization would be Rs 5,30,325 per year. This works out to a return on investment of 83%. The plant will break even at 40% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 6,42,450
Promoter's contribution	:	Rs 1,16,450
Annual sales realization (70% cap.)	:	Rs 34,12,500
Annual operating expenses (70% cap.)	:	Rs 28,82,175
Annual profit (pre-tax)	:	Rs 5,30,325
Pre-tax Return on Sales	:	16%
Break Even Point	:	40%
No.of persons employed	:	7

**List of Machinery Suppliers:**

1.	M/s Singer Sewing Machine Co. 29, Waterloo Street, Kolkata – 700 001		
2.	M/s Benson Industries, 96, Sri Arobinda Road, Salkia Howrah		
3.	Local Dealers of USHA & MERRIT Sewing Machine		

## BIO DEGRADABLE SHEETS/CARRY BAGS

### Introduction:

Low density polyethylene (LDPE) and linear low density polyethylene (LLDPE) belong to polyethylene group of thermo-plastics. LDPE is generally the softest and least crystalline of all the polyethylene. LDPE has a unique combination of properties namely toughness, high impact strength, low-brittleness temperature, flexibility, processibility, film transparency, chemical resistance and having a density of 0.91 – 0.94. LDPE applications are mostly film based. The most common application areas are in general food packaging, milk pouches, industrial products, textiles, frozen foods, agriculture and horticulture section etc.

LLDPE has all the advantages of LDPE together with the added benefit of low energy output which leads to a saving of over 20% in the manufacturing cost. The use of LLDPE has been predominantly in blends with LDPE as far as film extrusion is concerned. LLDPE and LDPE blended film are used for milk packaging, nursery bags, heavy duty sacks and general purpose bags.

### Market Potential:

The unit is envisaged to manufacture LLDPE carry bags and LDPE sheets. The biggest advantage of using LLDPE is the possibility of down gauging of the film upto 30 percent or more with an improvement in the mechanical properties such as tensile strength, tear strength etc. The common sizes of plastic carry bags are 1½' x 1½', 1½' x 2', 1½' x 3', 1½' x ½' and ½' x ½'. Different sizes LLDPE carry bags are required by grocery shops, stationary shops, textile shops, restaurant, bakery, pharmaceuticals shops, automobile spare parts shops etc.

Conversion of LDPE is mostly in the form of a film with balanced orientation for better toughness. LDPE sheets generally come in rolls of size 100m x 2m and weight around 12 kg – 14 kg. LDPE sheets are mostly required by tea gardens to be used as aprons by labour for plucking of tea leaves, by vegetables seller and for commercial as well as domestic use for protection from water/rainfall and for tea packaging along with jute bags etc. LDPE sheets also have a good potential outlet in the field of agriculture and horticulture for several packaging and non packaging applications.

Mention may be made here that products manufactured from granules are of "A" Grade quality with fine finish fetching high price, the products manufactured from mixing of granules and scraps are of Grade "B" quality with medium finished fetching medium price and the products manufacturing from scraps are of Grade "C" quality with average finish fetching low price. In view of recent ban on Grade "B" and Grade "C" quality finished products only "A" Grade quality finished products is considered for the purpose.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	:	8 (1 shift)
Working days in a year	:	300
Annual Production capacity	:	45 MT
		(carry bags 30 MT, Sheets 15 MT)

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw materials required are LDPE/LLDPE granules and master batch (colour). The colour to be mixed with the raw materials is at the rate of around 2%. The requirement of LDPE/LLDPE granules, and master batch are as follows:

LDPE/LLDPE granules	:	45 MT
Master batch	:	920 Kg.

The required raw materials are manufactured by Indian Petro-chemicals Limited (IPCL), Baroda. There exist authorized dealer of IPCL for whole of the N.E. region at Guwahati. The unit will have to tie-up with this authorized dealer for regular supply of raw materials including master batch.

**Process:**

LDPE/LLDPE films are manufactured by extrusion process. Plastic extrusion is basically defined as converting plastic powder or granules into a continuous uniform melt and forcing this melt through a die which yields a desired shape. Any thermo-plastic product required in length of uniform cross-section is extruded. The basic process steps involved are –

- Mixing of colours with granules.
- Feeding of colour mixed granules into the hopper.
- Heating of these mixed raw materials in an extruder.
- Passing of molten raw materials through dies to get desired shape.
- Cooling and winding of film.
- Making of desired size Sheets/Bags and sorting.
- Packing and despatch.

In India a indigenous technology for LDPE, LLDPE products manufacturing is provided by a good number of organizations like Central Institute of Plastic Engineering & Technology (CIPET).

**Machinery:**

The major equipment required by the unit are shown below. The equipment has been selected keeping in view the capacity and other process considerations.

- Brimco Model BRHM -40 Plant and equipment for extrusion of LDPE/LLDPE film which consists of the main assembles – Low base extruder, spiral type die set, air cooling ring, blower for cooling, take up tower, surface winder and electrical control panel - (1 No.).
- Punches suitable for dies of 50mm and 80mm for processing LLDPE with air ring insert – (2 Nos.)
- Snap winding mechanism and cutting system – (1 No.).
- BSL -450 bottom – Seal and both end seal bag making machine (for carry bags) – (1 No.).
- 0.7 KW air compressor as well as compressed air pipe system – ( 1 No.).
- Tool kits – (2 sets).

Mention may be made here that Brimco Model BRHM- 40 is suitable for processing LDPE, LLDPE & HMHDPE by accordingly changing the dies, punch etc. which can be fitted on the same machine

**Location:**

The suitable locations for the project may be –

- Guwahati, Jorhat, Tinsukia, Silchar, Biswanath Chariali in Assam.
- Jorabat/ Byrnihat in Meghalaya.
- Naharlagun in Arunachal Pradesh.
- Dimapur in Nagalan.
- Imphal in Manipur
- Kolasib in Mizoram<sup>1</sup>

**Infrastructure:**

The basic infrastructure required are :

Land	:	4,400 sq.ft.
Building	:	520 sq.ft.
Power	:	111.04 Kwh per day.
Water	:	1600 Ltr. Per day.
Manpower	:	10 Nos. [Administrative (4), Factory Staff (6)],

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 47.50 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 41.20 lakhs.

A.	Fixed Capital:	(Rs in lakh)
	Land	2.50
	Building	8.50
	Machinery	20.00
	Miscellaneous fixed assets	3.80
	Preliminary and pre-operative expenses	<u>2.20</u>
	<b>Total (A)</b>	<b><u>37.00</u></b>
		=====

**B. Working Capital:**

Raw materials	2 months	5.00
Finished goods	3 weeks	3.00
Working expenses	1 month	0.50
Receivables	2 weeks	<u>2.00</u>
	<b>Total (B)</b>	<b>10.50</b>

=====

**Total (A)+(B) 47.50**

Note: Working capital may be financed as:

Bank Finance	.....	Rs 6.30 lakhs
Margin Money	.....	<u>Rs 4.20 lakhs</u>
		Rs 10.50 lakhs

=====

**Means of Finance:**

The project cost of Rs 41.20 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 14.40 lakhs
Term Loan (65%)	....	<u>Rs 26.80 lakhs</u>
		Rs 41.20 lakhs

=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 42.90 lakhs (70% capacity utilization) as given below:

	(Rs in lakhs)
1. Raw materials	30.00
2. Utilities	0.80
3. Wages & Salaries	3.40
4. Overheads	1.35
5. Selling expenses @ 1.5% on annual sales	0.75
6. Interest on term loan	3.70
7. Interest on Bank Finance for Working Capital (14%)	0.90
8. Depreciation @10%	<u>2.00</u>
	42.90

=====

**Sales Realization:**

The estimated average ex-factory sales realization from the sale of carry bags & sheet is Rs 150/- per Kg. carry bags/sheets of Grade-I quality. Based on this the annual sales realization is estimated to be Rs 67.50 lakhs and at 70% capacity utilization the same is Rs 47.25 lakhs.

**Profitability:**

Based on the sales realization and the operating expenses, the profit would be Rs 4.35 lakhs per year (70% capacity utilization). This works out to a return on investment of 11%. The plant will break even at 56% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 47.50 lakhs
Promoter's contribution	:	Rs 14.40 lakhs
Annual sales realization (70% cap.)	:	Rs 47.25 lakhs
Annual operating expenses (70% cap.)	:	Rs 42.90 lakhs
Annual profit (pre-tax)	:	Rs 4.35 lakhs
Pre-tax Return on Sales	:	10 %
Break Even Point	:	56%
No.of persons employed	:	10

**List of Machinery Suppliers:**

1. M/s R.H. Windsor (India) Ltd.  
E-6 – UZ Road,  
Thane Industrial Estate,  
Thane – 400 604
2. M/s British Plastic & Engineering Works  
89.2, Block – A,  
Naraina Industrial Area,  
Phase-1,  
New Delhi – 110 028
3. M/s Oswal Engineering Corpn.  
142/48 S.V. Road,  
Ghaswala Industrial Estate,  
Jogeswari (West)  
Mumbai – 400 102
4. M/s Kwaliti Engineering works,  
48A, Muktaram Babu Street,  
Kolkata – 700 007

**List of Raw Materials Suppliers:**

1. M/s Mittal Station Works,  
12/3297,  
Agrapura Roshampura Road,  
Subji Mandi,  
New Delhi – 110 007
2. M/s R.K. Traders,  
43, A, Dilshad Garden,  
G.T. Road,  
Sahodora,  
New Delhi
3. M/s Indian Petrochemicals Corpn.Ltd.  
33A, Chowringhee Road,  
3<sup>rd</sup> floor,  
Kolkata – 700 071
4. M/s Swastic Plastics,  
24/25, Roopchand Roy Street,  
Kolkata – 700 001

## DISPOSABLE PLASTIC CUP

### Introduction:

The disposable plastic cups are manufactured by thermoforming technique. They are fast replacing conventional cups. Ice-cream and other dairy products are packed in disposable cups. Besides Ice-cream industry, hotels, restaurants, canteens etc. have been increasingly using disposable cups as against conventional glass-wares or ceramic cups. Disposable cups are mainly used for food items and are made out of polypropylene or polystyrene sheets. Sheets having thickness 0.35mm to 18mm are used for these items in thermoforming machine. The disposable cups are gaining popularity due to attractive look, low weight for container, ease of transportation and low impermeability. Organizations like Railways, Airlines are using disposable cups for serving coffee, tea etc. now-a-days.

### Market Potential:

Due to the recent change in the life style of urban class the demand for disposable cups is increasing at a rapid rate. Plastic disposable cups are used by Ice-cream industry, hotels, restaurants, canteens etc. but the major customer of disposable cups is ice-cream industry. The per capita consumption of ice-cream in India is far below compared to the level of consumption in developed countries. However, the Indian Ice-cream industry is going faster and according to an estimate the annual rate of growth of Indian Ice-cream Industry is approximately 20 – 25%. Considering the above factors, demand of disposable cups is expected to increase faster in future. Huge quantities plastic disposable cups are being used during festivals/functions/party/picnic time. Besides organization like Railways, Airlines are using a good quantity of plastic disposable cups.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 300
Annual Production capacity	: 60,00,000 Nos. plastic disposable cups.

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw material required for manufacturing plastic disposable cups is High Impact Polystyrene (HPIS) sheet(15 MT per annum).

### Process:

Polypropylene/Polystyrene sheet feeding reels of preset length is dragged from bobbin reel in the thermoforming plant. The conveyor chains carry the sheet through the heater assembly to the forming table. The heated sheet is punched to form the shape of the mould. The cups thus formed are stocked and the punched waster sheet is wound on scrap sheet winder. To get printed cups, the sheets are printed before forming into cup. Taking 200ml. cup as yard stick as it is mostly used for serving coffee/tea the installed capacity of the machine with 5 cavities mould is approximately 52500 cups per shift. In terms of weight, a 200ml cup made of 0.7mm thick High Impact Polystyrene sheet is approximately 2.58 gms. Therefore, the total weight of output per shift is 135 Kg. The average weight of sheet required per cup is 3.2gms. (which implies wastage of approximately 0.62gms per cup). As the raw material wastage is very high the scrap needs to be recycled. The scrap can be ground and extruded in sheet extruder.

### Machinery:

The major equipment required by the unit for manufacturing plastic disposable cups are as follows:

- Automatic thermoforming machine
- Die Punch for cups
- Other accessories (Air compressor)
- Sheet extruder and scrap grinder
- Testing equipment

**Location:**

The suitable locations for the project may be –

- Kokrajhar, Tezpur, Dibrugarh, Silchar in Assam.
- Dimapur in Nagaland.
- Naharlagun in Arunachal Pradesh.
- Agartala in Tripura.
- Barapani in Meghalaya.
- Imphal in Manipur
- Gangtok, Jorhang in Sikkim

**Infrastructure:**

The basic infrastructure required are :

Land	:	5,000 sq.ft.
Building	:	1,500 sq.ft.
Power	:	20 KW
Water	:	1,000 Ltr. Per day.
Manpower	:	15 Nos. (Administrative (4), Factory Staff (11),

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 27.70 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 26.30 lakhs.

**A. Fixed Capital: (Rs in lakh)**

Land		Rented
Building		Rented
Machinery		20.00
Miscellaneous fixed assets		3.50
Preliminary and pre-operative expenses		<u>1.50</u>
	<b>Total (A)</b>	<b>25.00</b>
		=====

**B. Working Capital:**

Raw materials & Packing material	1 month	0.40
Finished goods	2 weeks	0.70
Working expenses	1 month	0.70
Receivables	2 week	<u>0.90</u>
	<b>Total (B)</b>	<b>2.70</b>
		=====
	<b>Total (A)+(B)</b>	<b>27.70</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 1.40 lakhs
Margin Money	.....	Rs <u>1.30 lakhs</u>
		<b>Rs 2.70 lakhs</b>
		=====

**Means of Finance:**

The project cost of Rs 26.30 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 9.20 lakhs
Term Loan (65%)	....	Rs <u>17.10 lakhs</u>
		<b>Rs 26.30 lakhs</b>
		=====

### Operating Expenses:

The annual operating expenses are estimated at Rs 18.30 lakhs (70% capacity utilization) as given below:

	(Rs in lakhs)
1. Raw materials	5.00
2. Utilities	1.00
3. Wages & Salaries	6.00
4. Overheads	0.80
5. Selling expenses @ 2.5% on annual sales	1.00
6. Interest on term loan (13.50%)	2.30
7. Interest on Bank Finance for Working Capital (12%)	0.20
8. Depreciation @10%	<u>2.00</u>
	<b>18.30</b>
	=====

### Sales Realization:

The basis on which average ex-factory sales realization from the sale of plastic disposable cups at 100% capacity utilization is as follows:

Items	Nos.	Unit Sales Price (Rs)	Annual Sales Price (Rs)
Plastic Disposable Cups	60,00,000	0.50	30,00,000
Sale of re-cycle materials	L.S.	--	2,00,000
TOTAL			32,00,000

Based on this the annual sales realization is estimated to be Rs 32.00 lakhs and at 70% capacity utilization the same is Rs 22.40 lakhs.

### Profitability :

Based on the sales realization and the operating expenses, the profit would be Rs 4.10 lakhs per year (70% capacity utilization). This works out to a return on investment of 17%. The plant will break even at 51% of the rated capacity.

### Highlight:

The major highlights of the project are as follows::	Rs 27.70 lakhs
Promoter's contribution	: Rs 9.20 lakhs
Annual sales realization (70% cap.)	: Rs 22.40 lakhs
Annual operating expenses (70% cap.)	: Rs 18.30 lakhs
Annual profit (pre-tax)	: Rs 4.10 lakhs
Pre-tax Return on Sales	: 18 %
Break Even Point	: 51%
No.of persons employed	: 15

### List of Machinery Suppliers:

1. M/s Klockner Windsor India Ltd.  
E-6-UZ Road, Wagle Industrial Estate,  
Thane (Maharashtra)  
PIN\_ 400 604
2. M/s Wonderpack Industries P.Ltd.  
72, 1st floor, Shivalaya Mansion,  
Hamington Road, Mumbai- 400 008

### List of Raw Materials Suppliers:

1. M/s Polychem Ltd.,  
7, Jamshedji Tata Road,  
Churchgate Reclamation,  
Mumbai – 400 020
2. M/s East Englio Plastics (India) Ltd.  
23, Camac Street,  
Kolkata – 700 016



3. M/s Isimat India Screen Printing Machinery Pvt. Ltd.  
29, Apurva Industrial Estate,  
Makvana Road, Andheri Kurla Road,  
Andheri (East), Mumbai – 400 059
3. M/s Hindustan Polymers Ltd,  
Copalapatnam,  
Vishakhapatnam – 530 027
4. M/s Solex Machines,  
C, 1/510, GIDC, Gundlav,  
396 035 Distt. Valsad,  
Gujarat
4. M/s Forenko, Govt. Industrial Estate,  
Plot No. 8, Kandivaili (West),  
Mumbai – 400 067.

## HAWAI CHAPPAL

### Introduction:

Hawai chappals are used by practically all cross-sections of people, including the young and old, urban and rural, poor and rich. While the lower middle class uses it as utility footwear, the more affluent sections use it for casual wear.

### Market Potential:

Since hawai chappals are used by a large cross-section of the population, it may be assumed that of the total population of 365 lakhs in the north-eastern region, about 60% i.e. about 219 lakhs would be using hawai chappals. The demand for hawai chappals would mainly depend on the rate of wear for the users. In the case of those who use it for daily wear, namely the poorer sections and rural folk, the life may be shorter whereas for others it may be longer. On an average it may be assumed that a user would require one pair of hawai chappals in a year. On this basis, the demand for hawai chappals in the north eastern region is estimated at 219 lakhs pairs per year. There are at present only two units manufacturing hawai chappals in the north eastern region. Bulk of the demand is being met by established brands like Bata, Lakhani, Carona and a host of small manufacturers outside the region, who sell the products in the north eastern market. If new tiny units are able to capture even 5% of the market, they have adequate market opportunity to the tune of 11 lakh pairs per year. Considering the capacity of a typical tiny unit as 150,000 pairs there is scope for over 7 tiny units to be set in the north eastern region.

### Plant Capacity:

A typical unit would have a capacity of 150,000 pairs and produce 105,000 pairs on the following basis:

Effective working hours	:	8 hrs/day (1 shift)
Capacity utilization	:	70%
Daily production at 70% of rated cap.	:	350 pairs
Working days/year	:	300
Annual production	:	105,000 pairs.

The product-mix would include chappals with plastic strap as well as chappals with rubber strap. The following product-mix is suggested.

		<u>Qty./Year</u>
Plastic strap chappal	:	35,000 pairs
Rubber strap chappal	:	70,000 pairs

### Raw Materials:

The raw materials required are rubber sole, plastic strap, rubber strap and packing materials. Rubber sheets are required for making rubber sole. These sheets normally come in standard size from which 35 pairs of soles can be made. On this basis the annual requirements are –

		<u>Per year</u>
Rubber sole sheet	:	3,010 Nos.
Plastic strap	:	35,000 pairs
Rubber strap	:	70,000 pairs
Packing materials	:	105,000 Nos.

### Process:

The main process steps involved in the making of hawai chappal are –

- i) Cutting of sole
- ii) Polishing of sole upper
- iii) Punching of sole
- iv) Fitting strap
- v) Packaging in cartoons.

**Machinery:**

The main machinery required are –

i)	Sole cutting machine	:	2 Nos.
ii)	Polishing machine	:	2 Nos.
iii)	Punching machine	:	2 Nos.
iv)	Size plate machine	:	2 Nos.
v)	Electric motor	:	1 No.

**Infrastructure:**

The main infrastructure facilities required are –

Shed	:	1000 sq.ft.
Power	:	Negligible

**Location:**

The suggested locations are –

Assam	:	Guwahati, Dibrugarh, Tezpur, Silchar, Bongaigaon, Dhubri.
Manipur	:	Imphal, Ukhrul, Churachandpur
Nagaland	:	Dimapur, Tuensang, Wokha
Meghalaya	:	Shillong, Tura, Williamnagar
Arunachal Pradesh	:	Itanagar, Zero, Pasighat, Along
Mizoram	:	Aizawl, Lunglei
Sikkim	:	Gangtok, Jorthing

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 4.07 lakhs as follows:

		(Amount Rs lakh)	
A.	<u>Fixed Capital:</u>		
	Land and building		On rent
	Machinery		2.00
	Misc. Fixed Assets		0.50
	Preliminary & pre-op. expenses		<u>0.30</u>
	Total (A)		2.80
B.	<u>Working Capital:</u>		
		Amount (Rs lakh)	
	Raw materials and packing materials	½ month	0.38
	Stock of finished goods	1 week	0.30
	Working expenses	1 month	0.17
	Receivable	1 week	<u>0.42</u>
	Total (B)		1.27
	Total (A + B)		4.07

Note: Working capital may be financed as –

Bank Finance	:	0.83
Margin money	:	<u>0.44</u>
		1.27

**Means of Finance:**

The project cost of Rs 3.24 lakhs could be financed as under (merely indicative and subject to change by SFCs/Banks):

Promoter's contribution(35%)	:	1.05
Term loan(65%)	:	<u>2.11</u>
		3.24

### Operating Expenses:

The annual operating expenses are estimated at Rs 13.30 lakhs as below:

	Amount (Rs lakh)
Raw materials	
Rubber sole sheet	
@ Rs 190/- per sheet 3,010 Nos.	: 5.72
Rubber strap	
@ Rs 1.80 per pair 70,000 Nos.	: 1.25
Plastic strap	
@ Rs 1.50 per pair 35,000 Nos.	: 0.53
Packing materials	
@ Rs 1.00 1,05,000 packets	: 1.05
Utilities	: 0.20
Wages & salaries	: 1.50
Rent	: 0.36
Other overheads	: 0.25
Selling expenses @ 20% on annual sales	: 3.57
Interest on Term Loan	: 0.25
Interest on bank finance for working capital	: 0.12
Depreciation 10% on m/c.	: <u>0.20</u>
	<u>15.00</u>

### Sales Realization:

The market price of established brands of hawai chappals such as Bata, Carona, Lakhani etc. varies between Rs 40/- and Rs 60/- depending on size while lesser known brands sell their products for Rs 25/- to Rs 35/-. Based on this, ex-factory price of Rs 18/- per pair for plastic strap chappals and Rs 15 per piece for rubber strap chappals has been considered. On this basis the total sales realization is estimated at Rs 17.85 lakhs as under.

	<u>Nos./year</u>	<u>Rs/pair</u>	<u>Rs in lakh</u>
Rubber strap chappals	70,000	18/-	12.60
Plastic strap chappals	35,000	15/-	<u>5.25</u>
			17.85

### Profitability:

Based on the sales realization and the operating expenses, the pre-tax profit at 70% working capacity would be Rs 2.85 lakhs per year. This works out to a return on investment of 70%. The plant would break even at about 34% of the rated capacity.

### Highlights:

The major highlights of the project are as follows:

Total Capital requirement	Rs. 4.07 lakhs
Promoter's contribution	Rs 1.13 lakhs
Annual Sales realization	Rs. 17.85 lakhs
Annual Operating Expenses	Rs. 15.00 lakhs
Annual Profit	Rs. 2.85 lakhs
Return on sales	16%
Break-even point	34%
No. of person employed (direct)	8 Nos.

**Machinery Suppliers:**

M/s Elder Mechanical Works,  
A- 59, Sham Nagar,  
New Delhi – 110 018

M/s G.G. Engineering Works,  
5/1 – B, Industrial Estate,  
Kirti Nagar,  
New Delhi – 110 015  
M/s Haria Engineering Works,  
Shankar Tekri Industrial Estate,  
Post Box No. 643  
Jamnagar

M/s Kelachandra Iron & Steel Works,  
Chingawanam,  
Kerala – 686 537

M/s Major Machine Tools,  
B – XXX-94 Sherpur Khurd,  
Byepass Road,  
Ludhiana

M/s Sant Rubber Machines (P) Ltd.,  
Bassi Road,  
Sirhind – 140 406

## MOSQUITO NET

### Introduction:

Mosquito net is considered as an essential item for human living. It is a protective item used by people to ward off mosquito bites during sleep with people become more health and hygiene conscious, mosquito nets have found preference over mosquito repellent which is a chemical preparation and is hazardous to health in the long run.

### The product:

Mosquito net is an essential item of the bedding used by people to protect themselves from mosquito bites during sleep. Though other protective items like mosquito repellent coils and mats, ointments are available yet people prefer mosquito nets as there are no side effects as may be present in the chemically prepared item. Hence, the demand for mosquito nets is always on the increase. With the introduction of nylon nets, the preference for cotton nets is decreasing as nylon nets have more durability, are easier and lighter to wash with better air circulation.

### Market potential:

Mosquito net is an essential item for human use. Its demand is not seasonal but exists throughout the year. Apart from domestic consumption, there is demand in hotels, hospitals and defence sector, who are bulk purchasers of the item through rate contracts.

### Raw Materials & its availability:

The raw materials required for the unit is Nylon Net which is available in the market. It can be procured in bulk from the wholesaler at reduced price. Other accessories required are lining cloth, cotton tape and sewing threads which are readily available in the market.

### Suggested Location:

The unit may be located in any urban area preferably near to the market place.

### Production Process:

The manufacture of Nylon net is very simple. A piece of net is cut in rectangular size varying in size whether it is a double or a single net. Another piece is stitched with cotton tape and lining making it into a rectangular tent to fit the bed.

### Plant capacity:

Production per day at rated capacity	:	50 nets/day
Capacity utilization	:	100%
Average daily production envisaged	:	50 Nets
Working days/year	:	300
Annual production	:	15,000 nets.

### Raw materials:

<u>Item</u>	<u>Qty.</u>	<u>Amount (Rs)</u>
1. Nylon net	150000 mtr. @ Rs 20/mtr	30,00,000
2. Cotton tap, sewing thread, lining cloth etc.	Lining with 37500 mtrs cotton tape +threads (LS)	3,75,000
3. Packing materials	L.S.	<u>12,000</u>
	<b>Total</b>	<b>Rs 33,87,000</b>

**Machinery:**

The major equipment required are –

<u>Description</u>	<u>Qty.</u>	<u>Amount (Rs)</u>
Sewing machine 103K complete set with all fittings	5 Nos. @ Rs 8,000/-	40,000/-
Scissor, Scale, Tape and accessories	L.S.	<u>5,000/-</u>
<b>Total</b>		<b>45,000/-</b>

**Infrastructure:**

The major infrastructural requirement are –

Covered area	:	750 sq.ft.
Power	:	2 KW
Water	:	500 ltrs/day

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 6,34,621 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 2,64,369 lakhs.

**A. Fixed Capital:**

	<b>(Rs in lakh)</b>
Land building	Rented
Machinery	45,000
Miscellaneous fixed assets	15,000
Preliminary and pre-operative expenses	<u>5,000</u>
<b>Total (A)</b>	<b>65,000</b>
	=====

**C. Working Capital:****D.**

Raw materials & Packing material	15 days	1,69,350
Finished goods	15 days	1,72,685
Working expenses	1 month	21,336
Receivables	15 days	<u>2,06,250</u>
<b>Total (B)</b>		<b>5,69,621</b>
		=====

**Total (A)+(B) 6,34,621**

Note: Working capital may be financed as:

Bank Finance	.....	Rs 3,70,254
Margin Money	.....	<u>Rs 1,99,367</u>
		<b>Rs 5,69,621</b>
		=====

**Capital Cost of Project:**

Fixed capital	:	Rs 65,000
Margin Money for Working Capital	:	Rs <u>1,99,367</u>
		Rs.2,64,367
		=====

**Means of Finance:**

Promoter's contribution (35%)	Rs 92,528
Term Loan (65%)	<u>Rs 1,71,839</u>
	<b>Rs 2,64,367</b>
	=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 39,16,648 as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials:	33,75,000
2.	Packing materials	12,000
3.	Utilities	15,360
4.	Wages & Salaries	1,98,000
5.	Rent, Insurance	18,000
6.	Other overheads	15,,000
7.	Selling expenses @ 5% on annual sales	2,06,250
8.	Interest on term loan@ 12.50%	21,480
9.	Interest on Bank Finance for Working Capital@13.25%	49,058
10.	Depreciation @10% on machinery__	<u>6,500</u>
		<b>39,16,648</b>
		=====

**Sales Realization:**

Sl.No.	Particulars	No.	Rate (Rs)	Value (Rs)
1.	Mosquito nets	15000 p.a. @ Rs 275/-	275/-	41,25,000
<b>TOTAL</b>				<b>41,25,000</b>

**Profitability :**

Based on the sales realization of Rs 41,25,000 and the operating expenses, the profit would be Rs 39,16,648 the profit at rated capacity utilization would be Rs 2,08,352 per year. This works out to a return on investment of 33%. The plant will break even at 60% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs	6,34,621
Promoter's contribution	:	Rs	92,528
Annual sales realization (70% cap.)	:	Rs	41,25,000
Annual operating expenses (70% cap.)	:	Rs	39,16,648
Annual profit (pre-tax)	:	Rs	2,08,852
Pre-tax Return on Sales	:		5%
Break Even Point	:		60%
No.of persons employed	:		8

**Suppliers of Machinery**

All machineries and equipment are available in the local market.



## PLASTIC COMB, MUG, BUCKET, CONTAINERS ETC.

### Introduction:

Thermo-plastic materials like High Density Polythene (HDPE), Poly-Vinyl Chloride (PVC) can be blow moulded into containers of different sizes and shapes. Some of the common items that are produced include buckets, mugs and jerry cans. Buckets, cans and mugs are produced from PVC and that of Jerry cans from HDPE. Their light weight, flexibility, corrosion and chemical resistance have made these plastic products popular for storage and handling of water, petrol, diesel etc.

Combs are an item of daily necessity. In earlier days, combs were made out of ivory, horns of cows and buffaloes, which has now becomes costly affairs. In recent years, plastic combs are being used increasingly it being convenient to handle and economic. Plastic combs are being produce by using injection moulding machine.

### Market Potential:

Plastic comb, mug, bucket and containers are considered as necessity items for every household. As per 2001 census the population of North Eastern region is 3.90 crores. Considering that five persons constitute a household the total household in the region is 78,00,000. Again considering that every year there is a replacement demand to change these items by at least 30% of total number of households, the requirement of these items on this basis becomes 23,40,000 numbers. This may be in addition to the new demand for these items by at least 15% of total number of household every year which stands at 11,70,000. Therefore, every year at least 35,10,000 numbers of these items are required by the households in the North Eastern Region.

To meet the above demand there exist around 10 numbers of related units in the region in Guwahati, Dibrugarh and Dimapur. The production of these units is limited and bulk of the requirement is being met from outside sources, the leading brands being "Brite" and "Prince". Again plastic combs are of normal size and pocket size combs. The leading brands the market are *Lily*, *Brite*, *Joy* and *Dill*. Therefore there is a scope for additional around 10 numbers of such units with capacity to produce 3 lakh number of plastic mug, bucket, containers and 3 lakh number of plastic combs.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 300
Annual Production capacity	: 3,00,000 Nos: Mug (1,80,000), Bucket (70,000), Containers (50,000 Nos.) Plastic comb (3,00,000 Nos. comprising normal size comb 1,40,000 Nos. and pocket size comb 1,60,000 Nos.)

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw materials required are PVC and injection moulding grade polypropylene. The requirement of raw materials for producing Mug, Bucket and Container is estimated to be 30.7 tonne per annum on the following basis:

Items	Nos required	Approx. weight (gm)	Total weight (tonne/year)
Mug	1,80,000	40	7.2
Bucket	70,000	300	21.0
Container	50,000	50	2.5

PVC is manufactured by a number of companies including PIL, Shriram, Chemplast and NOCIL. When the proposed gas cracker project comes up in Assam, PVC will be available within the region.

The annual requirement of injection moulding grade polypropylene for producing plastic combs of capacity 3,00,000 nos. is estimated at 6 tonnes. The raw materials will be available from IPCL under the trade name "Koylene". It is also available from Haldia Petro-Chemical Complex.

**Process:**

Mug, bucket and container are manufactured on a semi-automatic extrusion blow moulding machine. The main process steps involved are –

- Plastic material in the form of granules is subjected to heat and pressure in an extruder.
- Semi-molten plastic in extruder passed through the nozzle known as Parison. Adjustments have to be made in the machine to vary the wall thickness of the parison.
- Suitable parison is then inserted in a female mould and air is blown into parison to force the molten plastic against the sides of the mould.
- The material is then cooled before removal from the mould.
- The article is then trimmed to remove flashes.

The main process steps for plastic combs are as follows:

- Polypropylene is fed into the hopper of the injection moulding machine, which essentially has an injection unit and a multicavity mould system.
- The mould is held between the two platens which are kept closed by the locking pressure.
- The material which gets plasticized in the barrel is injected under higher pressure into the mould which results in a molded article i.e. comb.
- The combs are then finished by removing the injection feed etc.
- The second stage processing operations i.e. buffing, polishing and printing are carried out on the combs.
- The combs are then kept inside plastic water proof paper cover and packed.

**Machinery:**

The major equipment required by the unit for producing mug, bucket and container are as follows: The equipment has been selected keeping in view the capacity and other process considerations.

- Semi – automatic extrusion blow moulding machine consisting of:
  - 500 mm screw extruder with 10 HP motor, variable speed drive and electrical control cabinet.
  - Cross head dies (single, double and triple cores) and spanner.
  - Mould closing and opening unit with hydraulic system
- Compressor with 5 HP motor.
- Water pump with 1 HP motor.
- Moulds, dies tools etc.

The main equipment required for producing plastic combs are as follows:

- 120 gram semi automatic hydraulic injection moulding machine complete with all accessories. Average capacity 15 kg per hour, fitted with motor of 1.5 HP.
- Scrap grinder with 3 HP motor.
- Buffing, polishing and hot stamping machine.
- Moulds (4 sets)
- Small hand-tools, greasing and cooling equipment.
- Testing instruments such as micrometer, balance etc.

**Location:**

The suitable locations for the project may be –

- Guwahati, Tinsukia, Silchar, Bongaigaon in Assam.
- Jorabat/ Byrnihat in Meghalaya.
- Naharlagun in Arunachal Pradesh.

- Dimapur in Nagalan.
- Imphal in Manipur
- Agartala in Tripura
- Gangtok, Jorhang in Sikkim

#### Infrastructure:

The basic infrastructure required are :

Land	:	9,000 sq.ft.
Building	:	3,000 sq.ft.
Power	:	30 KW
Water	:	5,000 Ltr. Per day.
Manpower	:	14 Nos. (Administrative (4), Factory Staff (10),

#### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 47.10 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 41.70 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		3.00
Building		12.50
Machinery		18.00
Miscellaneous fixed assets		3.00
Preliminary and pre-operative expenses		<u>2.20</u>
	<b>Total (A)</b>	<b>38.70</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	3.20
Finished goods	2 weeks	1.60
Working expenses	1 month	0.90
Receivables	1 week	<u>2.70</u>
	<b>Total (B)</b>	<b>8.40</b>
		=====
	<b>Total (A)+(B)</b>	<b>47.10</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 5.40 lakhs
Margin Money	.....	<u>Rs 3.00 lakhs</u>
		Rs 8.40 lakhs
		=====

#### Means of Finance:

The project cost of Rs 41.70 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 14.60 lakhs
Term Loan (65%)	....	<u>Rs 27.10 lakhs</u>
		Rs.41.70 Lakhs
		=====

#### Operating Expenses:

The annual operating expenses are estimated at Rs 35.15 lakhs (70% capacity utilization) as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials	22.20
2.	Utilities	1.00
3.	Wages & Salaries	3.80

4.	Overheads	1.65
5.	Selling expenses @ 1.5% on annual sales	0.70
6.	Interest on term loan	3.70
7.	Interest on Bank Finance for working capital (13%)	0.75
8.	Depreciation @10%	<u>2.00</u>
		<u>35.15</u>

#### Sales Realization:

The basis on which average ex-factory sales realization from the sale of Mug, Bucket, Container & Plastic Combs are based is provided below:

Items	Nos.	Unit Sales Price (Rs)	Annual Sales Price (Rs)
Mug	1,80,000	12/-	21,60,000
Bucket	70,000	30/-	21,00,000
Container	50,000	15/-	7,50,000
Plastic Combs	3,00,000	5/-	15,00,000
<b>TOTAL</b>			<b>65,10,000</b>

Based on this the annual sales realization is estimated to be Rs 65.10 lakhs and at 70% capacity utilization the same is Rs 45.50 lakhs.

#### Profitability :

Based on the sales realization and the operating expenses, the profit would be Rs 10.35 lakhs per year (70% capacity utilization). This works out to a return on investment of 24%. The plant will break even at 52% of the rated capacity.

#### Highlight:

The major highlights of the project are as follows:

Total capital requirement	:	Rs 41.70 lakhs
Promoter's contribution	:	Rs 14.60 lakhs
Annual sales realization (70% cap.)	:	Rs 45.50 lakhs
Annual operating expenses (70% cap.)	:	Rs 35.15 lakhs
Annual profit (pre-tax)	:	Rs 10.35 lakhs
Pre-tax Return on Sales	:	22%
Break Even Point	:	52%
No.of persons employed	:	14

#### List of Machinery Suppliers:

#### List of Raw Materials Suppliers:

1.	M/s R.H. Windsor (India) Ltd. E-6 – UZ Road, Thane Industrial Estate, Thane – 400 604	1.	M/s Mittal Station Works, 12/3297, Agrapura Roshampura Road, Subji Mandi, New Delhi – 110 007
2.	M/s British Plastic & Engineering Works 89.2, Block – A, Naraina Industrial Area, Phase-1, New Delhi – 110 028	2.	M/s R.K. Traders, 43, A, Dilshad Garden, G.T. Road, Sahodora, New Delhi
3.	M/s Oswal Engineering Corpn. 142/48 S.V. Road, Ghaswala Industrial Estate, Jogeswari (West) Mumbai – 400 102	3.	M/s Indian Petrochemicals Corpn.Ltd. 33A, Chowringhee Road, 3 <sup>rd</sup> floor, Kolkata – 700 071
4.	M/s Kwalitiy Engineering works, 48A, Muktarlam Babu Street, Kolkata – 700 007	4.	M/s Swastic Plastics, 24/25, Roopchand Roy Street, Kolkata – 700 001

## BLOW-MOULDED PLASTIC PRODUCTS

### INTRODUCTION

Plastic have played a vital role in the growth phase of the Indian economy and continue to do so. From packaging to agriculture, automobiles and electronics plastics have revolutionized all areas because of its functionality, economics, aesthetics and reliability. Plastic have made all products affordable to the Indian consumer and have helped in raising the lifestyle of the common man. Consequently, a lot more products manufactured in India today either contain plastics or are contained in plastics.

Thermo-plastic materials like High Density polythene (HDPE), Poly-vinyl chloride (PVC) can be blow molded into containers of different sizes and shapes. Some of the common items that are produced include buckets, mugs, jugs, & jerry cans. In bulk quantity is stored in over-head tanks made of concrete, galvanized steel sheet and mild steel in case of very big tank. Due to heavy load of such tank, the supporting structures have to be strong and are consequently very costly. Plastic tank, being very light as well corrosion resistant and available in ready to use condition, can be installed at a nominal cost on any roof top.

### PRODUCT USES

Plastic containers up to 5 liters capacity are generally used for domestic purpose. The plastic tank between 500-2000 ltrs. has also widening use such as water storage tank, Chemical storage tank, grain storage tank etc.

### MARKET POTENTIAL

From a modest beginning in the late 1950's the plastic industry in India has acquired a great deal of versatility and sophistication. The industry has especially taken off in the post liberalization era. The new found business environment and abundant domestic availability of raw materials has aided the double-digit growth for plastics consumption in the country.

Keeping in view the pattern of uses of jug, mug, bucket and jerry can in urban and rural areas, there is a substantial demand of about 60 to 65 lakhs numbers for assorted products. On the other hand the water storage tank for domestic purpose, it is estimated that at present about 60,000 MT of plastic tank equivalent to 10, 80,000 pcs. of 1000 ltrs. capacity are required annually. There are 8-10 blow moulding units in the north eastern region. The production of these units is limited and bulk of the requirement is being met from outside sources, the leading brands being "Brite" and "Prince".

### SUGGESTED CAPACITY

To assessing the proposed plant capacity due consideration is given on availability of raw materials, availability of electricity, skilled manpower and market. At initial stage the unit will produce only four main items they are Jugs, Mugs, and Buckets. The suggested size of the Project and the production at different capacity utilization per annum will be as follows:

Items	Installed Capacity in numbers per year	Approximate weight (in gm.)	Total weight (tones /year)
Jugs	80,000	50	4.00
Mugs	2 lakhs	40	8.00
Buckets	50,000	300	15.00
			<b>27.00</b>

#### Basis:-

No. of working days	=	25 days per month
	=	300 days per year
No. of shifts	=	1 per day.
One shift	=	8 hours

## INFRASTRUCTURE REQUIRED

The main Infrastructural facilities required are:

Covered shed area (processing hall/storages/office)	3000 sq. ft.
Power requirement	30 kw.
Water Requirement	5000 ltrs/day

## RAW MATERIALS REQUIRED AND AVAILABILITY

The major raw material required is HDPE. About 27.00 MT of HDPE is required per year. HDPE is being manufactured by a Polyofelins Industries Ltd. in Mumbai. After setting up of Gas Cracker in Assam, both HDPE and PVC will be available within the state.

## SUGGESTED LOCATION

The suggested locations are:

Assam	:	Tinsukia, Dibrugarh, Sibsagarh & Silchar
Nagaland	:	Dimapur
Manipur	:	Imphal
Tripura	:	Agartala

## PRODUCTION PROCESS

The main product is manufactured on a semi automatic extrusion blow moulding machine. The main process steps involved are:

- o Plastic material in the form of granules is subjected to heat and pressure in an extruder.
- o Semi-molten plastic in extruder passed through the nozzle known as parison. Adjustments have to be made in the machine to vary the wall thickness of the parison.
- o Suitable parison is then inserted in a female mould and air is blown into parison to force the molten plastic against the sides of the mould.
- o The material is then cooled before removal from the mould.
- o The article is then trimmed to remove flashes.

## PROJECT ECONOMICS

### Total Capital Requirement

The total capital requirement including fixed capital and working capital is estimated at Rs. lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs. lakhs.

A.	Fixed Capital	(Rs. in lakhs)
	Land	Own/Lease
	Land Development Cost	1.00
	<u>Building /Civil works:</u>	
	i) Work shed 1000 sq.ft	6.00
	ii) Office/Store 800 sq.ft.	4.80
	iii) Toilet/Bathroom/Cemented open space, Drainage facilities etc.	1.50
	Plant & Machinery	8.50
	Misc. Fixed Assets	1.50

(Water arrangement/Overhead reservoir/pump set/power line connection/water & electrical fittings/office equipment)		
Preliminary & Pre-operative Expenses		0.80
Contingency provision		1.15
	Total	25.25

**B. Working Capital:**

Raw materials/consumables,	15 days	0.74
Working expenses	1 month	1.04
Finished goods	10 days	1.00
Receivable	7 days	0.97
		<u>3.75</u>

Note: Working capital to be financed as –

Margin Money	:	1.75
Bank Finance	:	<u>2.00</u>
		3.75

**Means of Finance:**

Promoter's Equity(25%)	:	6.75
Term Loan (75%)	:	<u>20.25</u>
		27.00

**Cost of Production & Profitability: (Rs in lakh)**

Raw material/consumables	:	14.76
Wages & Salaries	:	9.77
Utilities	:	2.67
Repair & Maintenance	:	0.30
Administrative overhead	:	0.40
Selling expenses 10% on sales		4.60
Depreciation	:	1.50
Interest	:	<u>3.74</u>
		37.74

**Sales Realisation:**

Based on the prevailing market prices and providing for dealers commission, sales tax etc. net ex-factory prices are considered as under:

Items	Market Price(Rs.)	Ex-factory price(Rs.)
Jugs	25.00	18.00
Mugs	10.00	6.00
Buckets	60.00	40.00

Based on the above prices, the annual sales realization is estimated as follows:

Items	Quantity Nos. Yr.	Price Rs/unit	Sales Realization Rs.lakh/yr.
Jugs	80,000	18.00	14.40
Mugs	2,00,000	6.00	12.00
Buckets	50,000	40.00	20.00
<b>Total</b>			<b>46.40</b>

**Break Even Analysis:**

A. Variable Cost:	(Rs in lakh)
Raw materials/Consumables	14.76
Utilities	2.67
Selling expenses	<u>4.60</u>
	22.03

B. Semi-Variable Cost:

Wages & Salaries	9.77
Repair & Maintenance	0.30
Administrative overhead	0.40
Depreciation	1.50
Interest	<u>3.74</u>
	15.71

C. Sales Realization	Rs. 46.40 lakhs
D. Contribution	Rs. 24.37 lakhs
E. Break-Even Point B/D x 100%	64 %

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs.	29.00 lakhs
Promoter's contribution	Rs.	6.75 lakhs
Annual Sales realization	Rs.	46.40 lakhs
Annual Operating Expenses	Rs.	37.74 lakhs
Annual Profit	Rs.	8.66 lakhs
Return on sales		19%
Break-even point		64%
No. of person employed(direct)		14

**Machinery & Equipment:**

The main equipment required are –

	<u>Rs.in Lakhs</u>
i) Semi-Automatic extrusion blow moulding machine consisting:	
a) 50 mm screw extruder motor, variable speed drive and electrical control cabinet 10 H.P	7.40
b) cross head dies(single,double and triplecores) and spacer	
c) Mould closing and opening unit with hydraulic System	
ii) Compressor with motor 5 H.P.	
iii) Water Pump with 1 H.P.	
iv) Moulds, dies, tools etc.	
Add. Taxes,insurance, transport, loading and unloading Erection and commissioning	1.10
	----- 8.50

**Raw Materials/Consumable (Annually):**

Item	Quantity	Rates	Annual Requirement (Rs in lakh)
1. HDPE	9.00 MT	70,000/MT	6.30
2. PVC	18 MT	42,000/ MT	7.56
3. Colours/Pigments and others	L.S.	-	0.90
<b>TOTAL</b>			<b>14.76</b>



**Manpower:**

Category	No.of person	Salary per person per month(Rs)	Monthly Salary Bill (Rs )
Production Manager/Chemist	2	10,000	20,000
Skilled worker	2	6000	12,000
Semi-Skilled workers	3	5000	15,000
Unskilled workers	5	3000	15,000
Accountant/Store keeper	2	6000	12,000
<b>Total Manpower Cost</b>			<b>74,000</b>

Salary Bill Rs 8.88 Lakhs+ Benefits @ 10% annually i.e. Rs 0.89  
Total Annual Salary Bill : Rs 9.77 Lakh.

**Utilities:**

Power for Machinery	16 H.P.
General Lighting	<u>10 H.P.</u>
	26 H.P.
Electricity Bill (annual)	
26 H.P X 0.746 KW X 6 Hrs. X 300 days X Rs. 5.50	= Rs.1.92 Lakhs
Water charges 2000 ltrs. per day(L.S)	=Rs.0.05 Lakhs
Fuel(furnace oil/natural gas) 50 kl. Per annum	<u>= Rs.0.70 Lakhs</u>
	Rs.2.67 Lakhs

**Machinery Suppliers:**

1. M/s Ahura Industrial Engineers, 4 . M/s Universal Machinery Services  
18, Sidhpura Industrial Estate, Tarun Compound,  
SV Road, Goregaon, Andheri (East)  
Mumbai – 400 062 Mumbai – 400 069
2. M/s Boolani Engineering Corporation,  
402, Prabhadevi Industrial Estate,  
Savarkar Road,  
Mumbai – 400 018
3. M/s Brimco Plastic Machinery,  
Corporation,  
Plot 55, Govt. Kandivli Industrial Estate,  
Kandivli (West),  
Mumbai – 400 067

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## FORMAT

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2. About the Product
3. Market Potential
4. Suggested Capacity
5. Infrastructure requirement
6. Covered Area
7. Utilities
8. Raw Materials and its availability
9. Suggested Location
10. Production process(step wise)
11. Project Economics
  - I. Capital Cost.
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  - V. Sources of Finance
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  - XII. Break Even Point

Addresses of machinery suppliers/manufacturers

## RUBBER FOOTWEAR

### Introduction :

Rubber Footwears are more popular because of light weight, longer life, resistance to water and moisture and low price. Among the rubber footwears chappals are the most common variety.

The demand for chappals in India is presently more than 630 million pairs and the production is more than 350 million pairs, which leaves a demand, supply gap of 280 million pairs. Apart from this the demand is increasing at the rate of 4-5%.

The present annual demand in North Eastern Region is as follows :

State	Demand in Lakh Pair
Arunachal Pradesh	5.00
Assam	20.00
Manipur	11.00
Meghalaya	10.50
Mizoram	4.00
Nagaland	9.00
Tripura	14.50
<b>Total</b>	<b>174.00</b>

### Process :

The natural rubber and other compounding ingredients are mixed in a two roll mixing mill. The stock is then sheeted out and cooled. After 24 hours maturation, it is pre-warmed in a mixing mill. The compound is then filled in the mould and cured in a hydraulic press for about 6-7 minutes at 145°C.

The sheets after moulding are subjected to post curing for 2-3 hours at 100°C. in a hot chamber to give dimensional stability to the sheet. Moulding of hawai straps are carried out in a screw press.

The soles are cut into different sizes, holes are drilled and then assembled.

### Infrastructure :

#### Land

The unit may require about 200 m<sup>2</sup> developed land for setting up this project.

#### Building and Civil Work

About 100 Sq.Mtr. floor space is sufficient for running the plant conveniently.

#### Suggested Capacity :

A production capacity of 4,60,000 pair Hawai type Rubber Chappals per annum is suggested for a viable unit.

#### Equipment :

The main equipment required are –

1. Dispersion kneader – 90 litre 1 No.
2. Mixing Machine 2 Nos.
3. Sheeting Mill. 1 No.
4. Conveyor and cutting machine 1 No.

5.	Hydraulic press – 250 T	1 No.
6.	Post cutting chamber	1 No.
7.	Cutting, Grinding and sealing machine	1 No.
8.	Air compressor	1 No.
9.	Boiler – 450 Kg. 14 Kg/Sq.m.	1 No.
10.	Work table & tools.	LS

### Raw Materials

		(Qty.Kgs.)	
1.	Ethylene Vinyl Acetate	100	
2.	Natural Rubber	70	
3.	Zinc Oxide	8	@Rs15,000/- (per day the annual cost is estimated . at Rs 45.00 lakhs (Rs 15,000 X 300 days = Rs 45.00 lakhs).
4.	Stearic Acid	3	
5.	Calcium Carbonate	110	
6.	SBR 1953	12	
7.	China Clay	15	
8.	Sulphur	8	
9.	Titanium Dioxide	8	
10.	Pigment	5	
11.	Paraffin Wax	5	

### Utilities :

#### Power

Total power requirement will be in the range of 40 to 50 KW.

#### Water

Water requirement is estimated at about 3.5 KL per day.

### Locations :

Keeping in view the easy accessibility of raw materials and market centers the suggested locations are :

Assam	Lakhimpur, Barpeta, Haflong, Silchar, Karimganj, Nowgoan, Nalbari, Bongaigaon, Kokrajhar.
Meghalaya	Shillong, Tura.
Manipur	Imphal, Churachandpur.



**Operating Expenses :**

The annual operating expenses are estimated at Rs.86.57 lakhs as given below :

		<b>Rs. lakhs</b>
Raw materials	:	45.00
Utilities	:	5.00
Wages & salaries	:	10.50
Other Overheads	:	6.00
Selling expenses		
@ 10% of annual sales.	:	9.20
Interest	:	3.77
Depreciation.	:	<u>7.10</u>
<b>Total</b>	:	<b><u>86.57</u></b>

**Sales Realisation :**

Based on the present market prices and after providing for taxes and duties etc., selling prices assumed and annual sales realization are as below :

Item	Quantity	Price/Pc.	Sales realization/annum
Rubber Chappals.	4,60,000 pairs	Rs.20/-	92.00 lakhs.

**Profitability :**

Based on sales realization and the operating expenses, the profit at the level of 100% production would be Rs.5.43 lakhs ( Rs.92.00 lakhs – Rs. 86.57 lakhs ) per year. This works out to a return on investment of 18%. The plant would break-even at about 58% of the targeted annual production.

**Break Even Point Analysis :**

**(At 100% Capacity Utilisation)**

Sl. No.	Particulars	Amount (Rs. In lakhs)
<b>A.</b>	<b>Variable Cost</b>	
	1.Raw materials	45.00
	2.Utilities	5.00
	3.Interest on Working Capital	1.01
	<b>Sub-Total (A)</b>	<b>51.01</b>
<b>B.</b>	<b>Semi-Variable &amp; Fixed Costs</b>	
	1.Wages & salaries	10.50
	2. Depreciation	7.10
	3. Administrative Expenses.	6.00
	<b>Sub-Total (B)</b>	<b>23.60</b>
<b>C.</b>	<b>Annual Revenue</b>	<b>92.00</b>
<b>D.</b>	<b>Contribution (C-A)</b>	<b>40.99</b>
<b>E.</b>	<b>B.E.P. <math>\frac{B}{D} \times 100\% = \frac{23.60}{40.99} \times 100\%</math></b>	<b>58%</b>

**Highlights :**

The highlights of the project are as follows :

Total capital requirement	Rs. 30.74 lakhs
Promoter' contribution	Rs 7.68 lakhs
Annual sales realization	Rs. 92.00 lakhs
Annual operating expenses	Rs. 86.57 lakhs
Annual profit (Pre-tax)	Rs. 5.43 lakhs
Pre-tax return on sales	6%.
Break-Even Point	58%.
No. of persons employed.	12

**Machinery Suppliers :**

1. M/s. Elder Mechanical Works,  
A-59, Shyam Nagar,  
New Delhi-110018.
2. M/s G.G.Engineering Works,  
5/1- B, Industrial Estate,  
Kirtinagar, New Delhi-110015
3. M/S Haria Engg. Works,  
Shankar Tekari Industrial Estate,  
Post Box No 643
4. M/S Kelachjandra Iron & Steel Works.  
Chingawanam,  
Kerala-686 537
5. M/s Major Machine Tools,  
B-XXX-94 Sherpur Khurd  
Bypass Road  
Ludhiana

## WIRE NETTING

### Introduction:

Wire nettings are used in various applications such as embankments, concrete highways anchorage, grizzly, primary screen, dividers, guards of machines/gardens/houses and sheds for poultry/cattle farms. These nettings are more suitable in terms of its resistance and durability.

### The product:

Wire netting are made in different sizes and cross-sectional shapes, mainly hexagonal or square. The popular sizes ranges from 10 mesh to 40 mesh for square wire netting and ½ " to 1½" for hexagonal wire netting woven wires can be made of different materials including mild steel, cooper and brass. For majority of applications, galvanized MS wire are used.

### Market Potential:

In North Eastern Region, the main sectors from which demand for wire nettings emanates are, Flood Control Department, the Irrigation Department, Oil India Ltd., Oil & Natural Gas Commission, Tea gardens, Industrial Estate & Growth Centers, Poultry & cattle farms etc. As a whole demand for wire netting is estimated at 9800 tones at present in N.E. Region.

There are 5 – 6 major units in the region manufacturing wire nettings and these units are running in full capacity in view of the substantial take off from various individual departments and each unit is selling worth Rs 70 to Rs 90 lakh per year. In view of the above there are scope for another 25 such units to be set up keeping in mind the growth of institutions and households.

### Suggested Capacity:

A typical unit of the following capacity would be as follows:

Hourly production	:	30 pcs.
Working hours	:	8 (per shift)
Production rate/day	:	240/day
Average weight	:	6.3 Kg.
Working days/year	:	300 days.
Annual production	:	72,000 pcs. i.e. 453.6 Tonnes.

### Infrastructure requirement:

a) Covered area	:	1500 sq.ft.
b) Power	:	8 KW

### Raw Materials and its availability:

The major raw material required for wire nettings is GI wire. There are few wire drawing units in Assam. Significant quantities of wire still come to the region from outside. Hence, GI wires are to be procured from locally as well as through dealers. GI wire in the size range of 10 to 20 gauge may be largely required. It is estimated that 318 tonnes of GI wire will be required for this unit.

### Suggested Locations:

The suggested location are –

Assam	:	Guwahai, Tezpur, North Lakhimpur, Jorhat, Dibrugarh, Dhubri, Silchar.
Arunachal Pradesh	:	Itangar, Doimukh
Meghalaya	:	Shillong, Tura, Williamnagar,
Manipur	:	Imphal, Bishnupur.
Tripura	:	Dharmangar, Agartala.
Sikkim	:	Gangtok, Jorthan

### Production Process:

The major production process involves are –

- Twisting of wire.
- Putting the wire on bobbin winding machine through a spiral coiling machine.
- Packing.



**Capital Cost :**

A.	<u>Fixed Capital :</u>	(Rs. lakhs)
	Land & Building	Own
	Plant & Machineries	3.30
	Misc. Fixed Assets	0.40
	Preliminary & Pre-operative exp.	<u>0.30</u>
		4.00
B.	Working Capital:	<u>38.42</u>
		42.42
		=====

**Working Capital requirement:**

(Amount Rs. Lakh)

Raw materials	1 month	12.75
Finished goods	½ month	15.77
Receivable	1 month	<u>9.90</u>
		38.42

**Cost of production & Profitability:**

(Amount Rs lakh)

Raw materials	153.04
Utilities & overheads	0.70
Wages Bill	2.64
Other overheads	1.80
Selling expenses @ 10% on sales	21.60
Depreciation	0.33
Interest on Term Loan	0.36
Interest on Working Capital	<u>4.32</u>
	184.79

**Profitability:**

Sales realization	216.00
Profit	<u>31.21</u>

**Turn Over:**

The market price at present for hexagonal wire nets is Rs 3300/- per piece. Considering retailer/distributor margin, an ex-factory price of Rs 3,000/- per piece has been taken. Beside on annual production of R2,000 piece of wire nettings, the annual sales realization is estimated at Rs 2,16,000/- (As the sale price is on weight basis, the sales for square woven wire nets will not differ).

**Source of Finance:**

The source of finance is being estimated at the basis of 75% Bank/ Institutional finance and 25% as promoters' contribution, which is as follow

		Amount (Rs lakh)
A.	Bank Finance(75%)	31.81
B.	Promoters contribution (25%)	<u>10.61</u>
		42.42

**Note:** Bank finance has been estimated both for term & working capital loan.

**Plant & Machinery:**

The major machineries required are –

- Hexagonal Wire Netting machine – 1 No.  
(Max. width. Cap. (M) – 2 mtr, capacity 6 – 8  
Rolls of 45 Mtrs, Size 3.2 x 2 x 1.1,  
Power 3 HP)

- b) Universal wire netting machine with 2 HP motor & Electricals ) - 1 No.
- c) Spiral wind machine – 1 No.  
(Power – 1 HP.)
- d) Bobbin winding machine – 1 No.  
(Power – 1 HP)
- e) Bobbin Stand – 2 Nos.  
(200 bobbins)
- f) Beaming Carriage – 1 No.

**Cost of Raw materials & Consumables:**

Amount (Rs Lakh)

1.	G.I. wire <sup>3</sup> – 318 tonne:	
	a) Rs 33,000/tonne	149.04
	b) Packing materials	<u>4.00</u>
		<u>153.04</u>

**Cost of Utilities & Overheads:**

1.	Power	0.60
2.	Oil, Lubricant etc.	<u>0.10</u>
		0.70

**Manpower requirement & Wages Bill:**

Sl.No.	Category	No.	Salary per person Per month (Rs)	Total Wages Bill Per annum (Rs lakh)
1.	Manager	1	3,000	0.36
2.	Skilled workers	4	2,500	1.20
3.	Semi-Skilled workers	3	2,000	0.72
4.	Helper	3	1,000	0.36
	TOTAL			2.64

Profit Sales Ratio	=	14.44%
Profit Investment Ration	=	73.57%
Break Even point at 100%	=	30.27%

**Machinery Suppliers:**

- 1. M/s Acme Metal Industries,  
15/8, Narkeldanga North Road,  
Kolkata – 700 011
- 2. M/s Jain Engg. Works,  
147, Netaji Subhas Road,  
Kolkata – 700 001
- 3. M/s Unity Wire Products,  
40, Chetha Road,  
Kolkata – 700 027

## PLASTIC WATER STORAGE TANK

### Introduction:

Plastic tanks and water tanks store substances utilized in industrial processes, such as water, sewage, petroleum and chemicals. They are utilized in numerous industries, such as the agricultural, oil/gas, water, waste treatment, medical, scientific and pharmaceutical industries. The structure of the plastic tank varies. Common tank shapes include cylindrical, square, rectangular, hexagonal and octagonal. The heads and bottoms of plastic tanks also differ, according to their function. Tanks can vary shape and size, even within the same type of application; for example, water tanks can be cylindrical, square, or funnel-shaped, and can hold anywhere from a couple gallons of water to tens of thousands.

The rotational moulding process is the most versatile area of the plastic processing industries. Rotational moulding can be used for making stress free mouldings consisting of several layers of even different material. The rotational moulding process is adaptable to a wide range of plastic raw materials. Raw materials used for rotomoulded process are synthetic polymers in powder form or synthetic resin paste. With rotomoulding, parts can be moulded economically in a variety of shapes and sizes, many of them being impossible to produce by any other process. Common rotationally moulded products include shipping drums, storage tanks, material handling pins, fuel tanks etc.

Plastic tanks have several advantages over the traditional steel tanks. Their seamless construction provides them with greater impact strength and superior resistance to rust, corrosion and fuel additives. These virtually indestructible tanks have a longer lifespan than steel tanks, which can fracture and leak. Plastic tanks can easily be moulded to fit tank compartments, unlike metal tanks, and are simple to install. This characteristic provides savings in size, weight and cost. Plastic tanks also cost less overall than steel tanks.

### Market Potential:

The rotationally moulded tank has following field of applications:

- Agriculture (Sprayer tank, Mineral Feed tank, Grain hoppers, Waterier, Nurse tank, Tractor fuel tanks, Vegetable growing trays, Soil composter etc.)
- Industry ( Chemical storage tank, Plating tank, Brine tank etc.)
- Transportation and Storage of Milk.
- Overhead water Storage tank mfg.

Considering only the water storage for domestic purpose, it is estimated that by the end of 2008 AD about 65,000 MT of plastic tank equivalent to 11,80,000 pcs of 500 Ltrs. & 1000 ltrs capacity will be required annually. The demand with in seven states of N.E. Region is estimated at the rate of 33,000 pcs per annum for the next 5 years which latter on will grow at the rate of 1.5% per annum. At present there are about 40 units both in organized and SSI sector, manufacturing plastic tank by conventional moulding as well as by Roto Moulding method. The total installed capacity of these units together is estimated at 38,000 TPY.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 300
Annual Production capacity	: 500 ltrs. Tank : 2000 pcs. 1000 ltrs. Tank : 1000 pcs.

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw materials required for manufacturing water storage tank are LDPE/LLDPE/HDPE (175 MT per annum), carbon black and other colourants,(5 MT per annum), hinges and inserts.

**Process:**

The rotational moulding process for manufacturing water storage tank consists of the following major process steps.

- Loading of raw material
- Moulding of the part
- Cooling or curing
- Unloading of finished part

Cycle time generally varies from 6 to 10 minutes. Cycle as low as 2 minutes can be achieved and extremely large part with heavy wall requires 15 minutes for each moulding cycle.

**Loading:** Raw material in the form of powder (35 to 40 mesh) or liquid state, is loaded into the mould or cavities and mould halves are mechanically locked together. Loading is generally accomplished before the machine has completed its previous cycle and ready to accept the mould.

**Moulding the part:** The prepared mould is next placed in a closed chamber where it is subjected to intense heat upto 400°C while rotating the mould bi-axially. Rotation is at low speed generally in the range of 1 – 40 rpm on the minor axis and 1 – 12 rpm on the major axis. A 4:1 rotation is common however both variable speeds and variable ratios are used for moulding unusual configuration.

**Cooling or curing:** The mould containing formed part is then transferred to a second enclosed chamber where it is subjected to a combination of water spray and forced air cooling while continuing to rotate biaxially. This causes the part to cure evenly and mould to reach handling temperature.

**Unloading:** Like loading this can be accomplished manually by simply opening the mould and physically removing the parts or automatically by using forced air to facilitate the ejection of the part.

**Machinery:**

The major equipment required by the unit for manufacturing water storage tanks are as follows:

- Rotational moulding machine.
- Thermoforming machine.
- Raw material preparation plant consisting of pulveriser, mixer etc.
- Compressor.
- Cooling water tank.
- Gas fired heating system.
- Inert gas system.

**Location:**

The suitable locations for the project may be –

- Kokrajhar, Tinsukia, Silchar in Assam.
- Dimapur in Nagaland.
- Naharlagun in Arunachal Pradesh.
- Agartala in Tripura.
- Barapani in Meghalaya.

**Infrastructure:**

The basic infrastructure required are :

Land	:	10,000 sq.ft.
Building	:	5,000 sq.ft.
Power	:	30 KW
Water	:	1,000 Ltr. Per day.
Manpower	:	12 Nos. (Administrative (3), Factory Staff (9),

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 38.70 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 35.70 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		Rented
Building		Rented
Machinery		28.00
Miscellaneous fixed assets		4.00
Preliminary and pre-operative expenses		<u>1.50</u>
	<b>Total (A)</b>	<b>33.50</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	1.40
Finished goods	2 weeks	1.40
Working expenses	1 month	0.80
Receivables	2 weeks	<u>1.60</u>
	<b>Total (B)</b>	<b>5.20</b>
		=====
	<b>Total (A)+(B)</b>	<b>38.70</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 3.00 lakhs
Margin Money	.....	<u>Rs 2.20 lakhs</u>
		<b>Rs 5.20 lakhs</b>
		=====

#### Means of Finance:

The project cost of Rs 35.70 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 12.50 lakhs
Term Loan (65%)	....	<u>Rs 23.20 lakhs</u>
		<b>Rs 35.70 lakhs</b>
		=====

#### Operating Expenses:

The annual operating expenses are estimated at Rs 32.40 lakhs (70% capacity utilization) as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials	16.50
2.	Utilities	1.00
3.	Wages & Salaries	7.00
4.	Overheads	0.60
5.	Selling expenses @ 2.5% on annual sales	1.00
6.	Interest on term loan (13.50%)	3.10
7.	Interest on Bank Finance for Working Capital (12.75%)	0.40
8.	Depreciation @10%	<u>2.80</u>
		<b>32.40</b>
		=====

#### Sales Realization:

The basis on which average ex-factory sales realization from the sale of water storage tank at 100% capacity utilization is as follows:

Items	Nos.	Unit Sales Price (Rs)	Annual Sales Price (Rs)
Water storage tank- 500 ltrs.	2000	1400/-	28,00,000
Water storage tank – 1000 ltrs	1000	2800/-	28,00,000
<b>TOTAL</b>			<b>56,00,000</b>

Based on this the annual sales realization is estimated to be Rs 56.00 lakhs and at 70% capacity utilization the same is Rs 39.20 lakhs.

**Profitability :**

Based on the sales realization and the operating expenses, the profit would be Rs 6.80 lakhs per year (70% capacity utilization). This works out to a return on investment of 20%. The plant will break even at 49% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 38.70 lakhs
Promoter's contribution	:	Rs 12.50 lakhs
Annual sales realization (70% cap.)	:	Rs 39.20 lakhs
Annual operating expenses (70% cap.)	:	Rs 32.40 lakhs
Annual profit (pre-tax)	:	Rs 6.80 lakhs
Pre-tax Return on Sales	:	17%
Break Even Point	:	49%
No.of persons employed	:	12

**List of Machinery Suppliers:****List of Raw Materials Suppliers:**

1.	M/s Brimco Plastic Machinery Pvt. Ltd., "Brimco House", 55, Govt. Industrial Estate, Charkop, Kandivili (West), Mumbai- 400067: for Extruders.	1.	M/s Hoechst Dues and Chemicals Ltd., Hoechst House, 193, Backbay Reclamation, Nariman Point, Mumbai-400021: for HDPE.
2.	M/s R.H. Windsor (India) Ltd. E-6 – UZ Road, Thane Industrial Estate, Thane – 400 604	2.	M/s Indian Petrochemical Corporation Ltd., Badodara, Gujrat: for LDPE
3.	M/s Oswal Engineering Corpn. 142/48 S.V. Road, Ghaswala Industrial Estate, Jogeswari (West) Mumbai – 400 102	3.	M/s Chika Limited, Mehta Chambers, 13, Mathew Road, Mumbai – 400 001
4.	M/s Kwaliti Engineering works, 48A, Muktaram Babu Street, Kolkata – 700 007	4.	M/s Indian Dyestuff Industries Ltd., Mafatlal Centre, Nariman Point, Mumbai – 400 021

## PVC PIPE MANUFACTURING UNIT

### Introduction:

Polyvinyl-Chloride (PVC) is a plastic product which has matchless versatility. It effectively replaces wood, paper and metal in several applications. As such plastic pipes have been progressively replacing conventional pipes like G.I., Cast Iron, Asbestos Cement or Stone-ware for a number of important and uses. Among the various types of plastic pipes which are commonly used for such applications PVC pipes are the most widely used all over the world on account of their most favourable balance of properties. PVC pipes are light in weight, rates for use under pressure, easy to install, low frictional loss, low on maintenance cost, and have low frictional loss. Rigid PVC pipes have wide variety of uses in fields like city/town/rural water supply scheme, spray irrigation, deep tube well schemes and land drainage schemes.

### Market Potential:

PVC pipes are used for a variety of purposes e.g. water supply schemes, spray irrigation, deep tube well schemes and land drainage schemes. PVC slotted and corrugated pipes are ideal systems for drainages of water from land where water logging is inevitable. It is widely used by various utility services now-a-days too. The major consumer of PVC pipes are the Public Health Engineering Department (PHED) and Irrigation Departments. Besides these two, it is used by the Municipal Corporations, Tea estates as well as in N.E. Region. The usage of PVC pipes also depends upon the size of these pipes too. It is manufactured in different sizes having innumerable usage value.

The World Bank has recently given top priority in rural water supply in developing and under-developed countries. India has also received large amounts from World Bank aid for Rural Water Supply Schemes. However, due to the acute shortage of appliances including pipes this money could not be utilized to a large extent in our country. Thus PVC/HDPE pipe manufacturing industry has received higher priority. The requirement of PVC pipes in N.E. Region is around 10,000 MT out of which the requirement in Assam is more than 50% followed by Tripura and other five states of N.E. Region. At present there exist around 5 PVC pipes manufacturing units in the region.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 300
Annual Production capacity	: 150 MT PVC Pipes as follows:

Sl.No.	Dia of the pipe (mm)	Production in length (meter)	Weight per running meter (Kgs.)	Total production (MT)
1.	90	75,000	1,000	75.00
2.	110	53,571	1,415	75.00

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

**Raw Material:**

The main raw material required is compounded PVC resin. Presently both PVC & Polyethylene plastics raw materials are indigenously manufactured. Other compounding materials like plasticizers, stabilizers, lubricants and fillers are also manufactured in India. No problem is envisaged for procurement of PVC resin and the other required compounding materials. The raw materials required are as follows:

• PVC resin	:	150.00 MT
• DOP	:	6.80 MT
• Stabilizer	:	3.20 MT
• Processing acids	:	1.20 MT
• Colourant	:	0.70 MT
• Filler	:	10.20 MT

**Process:**

The various process steps involved in the manufacture of rigid PVC pipes are as follows:

- Extrusion
- Sizing
- Traction
- Cutting

**Extrusion:** PVC uncompounded resin, unlike some other thermoplastics is not suitable for direct processing. To confer the required processing and end instability, it is necessary to mix additives to the PVC resin. Following are some of the additives which are generally used for the manufacture of rigid PVC pipes.

**Plasticizers:** The common plasticizer in use are DOP, DIOP, DBP, DOA, DEP, Reoplast, Paraplex etc.

**Stabilizers:** The common stabilizers are lead, barium, cadmium, tin, stearate etc.

**Lubricants:** Widely used lubricants are Buty-Stearate, Glycerol Moni-Stearate, Epoxidised Monoester of oleic acid, stearic acid etc.

**Fillers:** Fillers are also used for producing special quality product (e.g. calcined clay is used to improve the electrical properties of cable compounds).

Before the extrusion operation PVC resin is to be compounded with plasticizers, stabilizers, lubricants and fillers to improve processibility and improve the endure stability. PVC resin is compounded with other ingredients in a high speed mixer. The compound resin is fed to the double screw extruder where the inserts and die body for the required pipe diameter are fitted. The PVC compounds are then passed through a heated chamber and they get melted under the compression of the screw and temperature of the barrel. The marking on the pipe is done at the time of extrusion.



**Sizing:** The pipes coming out from the extruder is cooled in the sizing operation. There are basically two types of sizing used for manufacturing of pipes. They are (i) Pressure sizing & (ii) Vacuum sizing.

**Traction:** The next operation needed after sizing is traction. The tube traction unit is required for continuous haulage of the pipes being extruded by the extruder.

**Cutting:** The last operation needed is cutting. There are basically two cutting techniques for rigid PVC pipes viz. manual and automatic. The pipes are then tented for ISI marks and are ready for dispatching.

**Machinery:**

The major equipment required for the unit are as follows:

- Windsor Model TSC-80 Rigid PVC Pipe plant for pipes 90 and 110mm OD – 1 No.
- High speed mixer capacity 100 kgs with controls and cooling arrangement – 1 No.
- Heavy duty scrap grinder – 1 No.
- Overhead water tank – 1 No.
- Air compressor 2 HP – 1 No.
- Pipe storage racks – 10 Nos.

**Location:**

The suitable locations for the project may be –

- Tinsukia, Bongaigaon in Assam.
- Jorabat/ Byrnihat in Meghalaya.
- Naharlagun in Arunachal Pradesh.
- Dimapur in Nagaland.
- Agartala in Tripura
- Gangtok and Jorthing in Sikkim

**Infrastructure:**

The basic infrastructure required are :

Land	:	6,000 sq.ft.
Building	:	1,800 sq.ft.
Power	:	25 KW
Water	:	1,500 Ltr. Per day.
Manpower	:	10 Nos. (Administrative (3), Factory Staff (7),

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 45.00 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 39.00 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land & Building		Rented
Machinery		30.00
Miscellaneous fixed assets		3.30
Preliminary and pre-operative expenses		<u>2.20</u>
	<b>Total (A)</b>	<b>35.50</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	4.60
Finished goods	2 weeks	2.50
Working expenses	1 month	0.90
Receivables	1 week	<u>1.50</u>
	<b>Total (B)</b>	<b>9.50</b>
		=====
	<b>Total (A)+(B)</b>	<b>45.00</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 6.00 lakhs
Margin Money	.....	<u>Rs 3.50 lakhs</u>
		Rs 9.50 lakhs
		=====

#### Means of Finance:

The project cost of Rs 39.00 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 13.65 lakhs
Term Loan (65%)	....	<u>Rs 25.35lakhs</u>
		Rs 39.00 lakhs
		=====

#### Operating Expenses:

The annual operating expenses are estimated at Rs 71.95 lakhs (70% capacity utilization) as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials	55.00
2.	Utilities	1.00
3.	Wages & Salaries	6.00
4.	Overheads	1.50
5.	Selling expenses @ 1% on annual sales	1.10
6.	Interest on term loan (14%)	3.55
7.	Interest on Bank Finance for working capital (13%)	0.80
8.	Depreciation @10%	<u>3.00</u>
		<u>71.95</u>
		=====

### Sales Realization:

The basis on which average ex-factory sales realization from the sale of PVC pipe is based is provided below:

Items	Production (Meter)	Unit Sales Price (Rs per Meter)	Annual Sales Price (Rs)
PVC pipe 90mm	75,000	75/-	56,25,000
PVC Pipe 110mm	53,571	100/-	53,57,100
<b>TOTAL</b>			<b>109,82.100</b> <b>Say : Rs 110.00 lakh</b>

Based on this the annual sales realization is estimated to be Rs 110.00 lakhs and at 70% capacity utilization the same is Rs 77.00 lakhs.

### Profitability :

Based on the sales realization and the operating expenses, the profit would be Rs 5.05 lakhs per year (70% capacity utilization). This works out to a return on investment of 13%. The plant will break even at 54% of the rated capacity.

### Highlight:

The major highlights of the project are as follows:

Total capital requirement	:	Rs 45.00 lakhs
Promoter's contribution	:	Rs 13.65 lakhs
Annual sales realization (70% cap.)	:	Rs 77.00 lakhs
Annual operating expenses (70% cap.)	:	Rs 71.95 lakhs
Annual profit (pre-tax)	:	Rs 5.05 lakhs
Pre-tax Return on Sales	:	8%
Break Even Point	:	54%
No. of persons employed	:	10

### List of Machinery Suppliers:

1. M/s R.H. Windsor (India) Ltd.  
E-6 – UZ Road,  
Thane Industrial Estate,  
Thane – 400 604
2. M/s British Plastic & Engineering Works  
89.2, Block – A,  
Naraina Industrial Area,  
Phase-1,  
New Delhi – 110 028
3. M/s Oswal Engineering Corpn.  
142/48 S.V. Road,  
Ghaswala Industrial Estate,  
Jogeswari (West)  
Mumbai – 400 102
4. M/s Kwaliti Engineering works,  
48A, Muktaram Babu Street,  
Kolkata – 700 007

### List of Raw Materials Suppliers:

1. M/s National Organic Chemical Industries Ltd.,  
Mafatlal Centre, Nariman Point,  
Mumbai – 400 021
2. M/s Shriram Chemical Industries,  
Shriram Nagar, Kota -4,  
Rajasthan
3. M/s Calico Chemicals, Plastics & Fibres Division, Anik Chamber,  
Mumbai – 400 074
4. M/s Indofil Chemicals Ltd.  
Nirlon House,  
Dr. Annie Besant Road,  
Mumbai – 400 025
5. M/s Chika Limited,  
Mehta Chambers, 13, Mathew Road,  
Mumbai – 400 001
6. Indokem Limited,  
Fort House, 221 D.N. Road,  
Mumbai – 400 001
7. M/s Indian Dyestuff Industries Ltd.,  
Mafatlal Centre, Nariman Point,  
Mumbai – 400 021

## AGRICULTURAL MACHINERY & EQUIPMENT REPAIRING & SERVICING UNIT

### Introduction:

There has been historic change in the agricultural sector. Now, people hardly use bullocks for cultivation of agricultural land. Tractors and power tillers are being used for cultivation of land and shallow pump for irrigation.

### Market Potential:

As the use of tractor and power tiller is increasing in the country, the need for servicing units for agricultural implements is also increasing. Now-a-days shallow machines are used for running the country boats every where. The demand for repairing and servicing units of tractor, power tiller and shallow pumps are increasing in the rural areas. So, there is enormous scope for setting up of repairing & servicing units of agricultural implements.

### Plant Capacity:

Capacity Utilization	:	70%
Working Days/year	:	25 days per month & 300 days per year.
No. of shifts	:	1 (one)

### Raw materials:

(Rs. lakh)

i)	Lubricant	:	0.80
ii)	Car-bate 120 kg @ Rs 80/kg	:	0.10
iii)	Gas Rod – 120 kg @ Rs 100/kg	:	0.12
iv)	Brass Rod – 120 kg @ Rs 300/kg	:	0.36
v)	Misc. materials	:	<u>0.30</u>
	<b>Total</b>	:	<b><u>1.68</u></b>

### SUGGESTED LOCATION :

Major centres of NER including Sikkim

### Machinery:

The major equipments required are –

<u>Sl.No.</u>	<u>Particulars</u>	<u>No.</u>
xix)	Air compressor	1 No.
xx)	Car washing equipment	1 set
xxi)	Lift	1 No.
xxii)	Greasing equipment	1 No.
xxiii)	Oil spray gun	1 No.
xxiv)	Gas welding set	1 set
xxv)	Chain pulley block	1 set
xxvi)	Electric bench grinder	1 No.
xxvii)	Electric drill machine	1 No.
xxviii)	Misc. tools & accessories	3 sets.

### Infrastructure:

The major infrastructure requirements are –

Land	:	2500 sq.ft
Building	:	1500 sq.ft.
Power	:	5 KW
Water	:	500 ltr/day

### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 6.36 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 5.96 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		On lease
Building		2.50
Plant & Machinery		0.40
Preliminary and pre-operative expenses		<u>0.10</u>
	<b>Total (A)</b>	<b>5.75</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	15 days	0.08
Working expenses	1 month	0.14
Receivables	15 days	<u>0.39</u>
	<b>Total (B)</b>	<b>0.61</b>
		=====
	<b>Total (A)+(B)</b>	<b>6.36</b>

Note: Working capital may be financed as:

Bank Finance (65%)	.....	Rs 0.40 Lakhs
Margin Money (35%)	.....	<u>Rs 0.21 Lakhs</u>
		<b>Rs 0.61 lakhs</b>
		=====

### Capital Cost of Project:

1. Fixed Cost	.....	Rs 5.75 Lakhs
2. Margin money for W.C.	.....	<b>Rs 5.96 Lakhs</b>
		=====

### Means of Finance:

Promoter's contribution (35%)		Rs 2.09 lakhs
Term Loan (65%)		<u>Rs 3.87 lakhs</u>
		<b>Rs 5.96 lakhs</b>
		=====

### Operating Expenses:

The annual operating expenses are estimated at Rs. 5.82 lakhs as given below:

		<b>(Rs. lakhs)</b>
1. Raw materials:		1.68
2. Utilities		0.36
3. Wages & Salaries		2.40
4. Other overheads		0.30
5. Consumables		0.25
6. Interest on term loan @ 13.25%		0.51
7. Interest on Bank Finance for Working Capital @ 11%		0.04
8. Depreciation @ 10% on m/c		<u>0.28</u>
	<b>Grand Total</b>	<b>5.82</b>
		=====

### Sales Realization:

Sl.No.	Particulars	Value (Rs Lakhs)
1.	Major servicing works of 4 tractors per day @ 100/tractor	1.20
2.	Major repairing works 2 tractors per day @ Rs 500/tractor	3.00
3.	Major servicing of 4 power tiller per day @ Rs 100/tiller	1.20
4.	Major repairing works of 4 power tiller @ Rs 100/tiller	1.20
5.	Repairing & servicing of 4 shallow pump sets per day @ Rs 100/pump	1.20
	<b>TOTAL</b>	<b>7.80</b>

**Profitability :**

Based on the sales realization of Rs 7.80 lakhs and the operating expenses of Rs. 5.82 lakhs the profit would be Rs 1.98 lakhs per year. This works out to a return on investment of 31%. The plant will break even at 52% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs	6.36 Lakhs
Promoter's contribution	:	Rs	2.09 "
Annual sales realization (70% cap.)	:	Rs	7.80 "
Annual operating expenses (70% cap.)	:	Rs	5.82 "
Annual profit (pre-tax)	:	Rs	1.98 "
Pre-tax Return on Sales	:		25%
Break Even Point	:		52%
No.of persons employed	:		8 Nos.

**Suppliers of Machinery**

All machineries & equipments etc. are available in the local market.

## ASSEMBLING OF INVERTERS & VOLTAGE STABILIZER

### Introduction:

An inverter is an electronic device that produces alternating current (AC) from direct current (DC). It is used to convert direct current electricity by cell. It allows consumer to run electrical equipment. A power supply that produces an AC out put, usually from a DC input used to convert independent DC power into standard household AC current. An Inverter output drives the critical load. An Inverter is used in wide range of application, from small switching power supplies to large electric utility applications that transport bulk power.

From the nineteenth century through the middle of the twentieth century, DC to AC power conversion was accomplished using rotary converters or motor-generator sets. In the early twentieth century, vacuum tubes and gas filled tubes began to use as switches in inverter circuits.

Voltage stabilizers are devices to regularize and control the variation and fluctuations in supply voltage within a desired range. This device is used in voltage stabilizing in a twin manner, i.e. controls voltage supply and prevents the peak voltage to go beyond a fixed limit.

### Product Uses:

An inverter is an electronic circuit that converts direct current (DC) to alternating current (AC). Inverter can be used for a great many things if they have the correct power output. Inverter can be used for television, refrigerator, micro-oven, lights around the house, air compressor and much more. Lighting is useful for many things from children being able to study at night to parents being able to make a few more works.

The voltage stabilizer finds the use in television, other sophisticated home appliances as well as laboratory equipments, refrigeration and air conditioning and other electrical appliances.

### Market Potential:

Very few nos. of manufacturers have launched the assembling of inverter and voltage stabilizer unit in northeastern region. Most of unbranded products are coming from outside the region. Digital Inverters, which save up to 70 per cent of electricity while charging the battery and ensure longer battery life and power backup. Digital inverters, with latest technology and excellent performance, offer the safety and protection of the gadgets and precious home appliances of the consumer because inverter does not affect the life span of the home appliances.

There is a great demand for this product at present, which is normally used in protecting and using electrical appliances from any fluctuations as well as power cut looking into the present power supply position in this region, because of erratic supply and frequent power cut in the region. Inverter and voltage stabilizer are invariably very useful in these days with television and other sophisticated home appliances as well as laboratory equipments, refrigeration and air conditioning etc. With increase of emergence and demand of such items, the demand of Inverter and Voltage Stabilizer increases proportionally. Thus few assembling units of inverter and voltage stabilizer may come up in northeast India.

### Services & Capacity (per annum):

The capacity of the proposed assembling unit has been estimated as under:

Services	Capacity in nos.	Avg. price Per unit (Rs.)	Turnover (Rs.)
Inverters	900	5000	45,00,000
Voltage Stabilizer	2000	950	19,00,000
Annual Turn Over			64,00,000

**Basis:**

No. of working days:	300 days per year
No. of Shifts:	one per day
One shift:	8 hours

**Infrastructure Requirement:**

The main Infrastructure facilities required are:

Working shed	400 Sq.ft.
Front Office cum store:	200 sq.ft.
Power requirement:	10 KW
Water	general purpose

**Raw Materials/consumables:**

Inverters- Commutating capacitors, transformers, filter chokes, filter capacitors, power diodes, thyristors, saturable reactors, high speed and HRC fuses, transistors, resistors, laminations, chassis etc.

Voltage Stabilizer- To assemble voltage stabilizer the components required are assembled PCB, transformer, voltmeter, metallic printed cabinet, switches, fuse, and fuse holder, socket & plug, screws & washers, rubber pad and 5 amp, flexible copper wire.

Most of these components are to be brought from outside the region-from reputed agencies of Kolkata, Delhi or Bangaluru.

**Process:**

Inverter- The raw materials required are thyristors, commutating capacitors, transformers, filter chokes, filter capacitors, power diodes, saturable reactors, high speed and HRC fuses, transistors, resistors, laminations, chassis etc. Various components are assembled on the printed circuit board as per the design. The wave forms and output voltage and power are checked, and the necessary adjustments are made. The chassis is then enclosed in a cabinet, and the connections are completed. Inverters of different capacity (power) are made with input voltage of 12 V/ 24 V DC and output of 230 V AC.

Voltage Stabilizer- A stabilizer is constructed as a single integrated unit and is enclosed in a sheet metal enclosure. The major and heaviest component is the multiwinding mains transformer. The cabinet is fitted with a front panel meter, sockets, controls and lamps. The transformer and the control circuit board as well as relays are mounted inside the enclosure and wired up as per the circuit diagram. The unit is then put to test at the lowest and highest input voltages with a specified load at the output. Then the enclosure cover is placed in position and tightened with screws. While designing a voltage stabilizer the following points should be taken care off-

- a) The output selector switch should be a heavy one. The motion over the different tapping should be smooth and there should be no wiring.
- b) The transformer should be properly earthed and provision should be made for ventilation so that it does not get excessive heat.
- c) A monitoring meter with selector switch should be provided to measure input and output voltages.
- d) A pilot lamp should be provided as an external indication as to when the stabilizer is in operation.



### Suggested Location:

The preferred locations based on techno-economic considerations, the typical unit may be set up in the capital cities, big towns or in major urban areas preferably nearby marketing centers of North Eastern region including Sikkim.

### PROJECT ECONOMICS

The total capital requirement estimated is Rs.16.48 Lakhs as given below:

<b>Fixed Capital:</b>		<b>Rupees</b>
Land		Own/lease
Building/Civil Works		
a.) Working shed 400 sq.ft. @ Rs. 700/sq.ft.		2,80,000
b.) Front office cum store 200 sq. ft. @ Rs 700/ sq.ft.		1,40,000
c.) Toilet/bathroom		60,000
Plant and Machinery		1,60,000
Miscellaneous Fixed Assets & Other equipments (Electrical fittings, furniture & office equipments)		1,50,000
Preliminary and pre-operative expenses		60,000
		<b>8,50,000</b>
<b>Working Capital:</b>		
	<b>(Norms)</b>	<b>(Rupees)</b>
Raw Materials/Consumables	1 month	2,90,000
Working Expenses	1 month	70,000
Finished Goods	15 days	2,24,000
Receivables	10 days	2,14,000
		<b>7,98,000</b>

Note: Working capital to be financed as:-

Margin Money :	2,98,000
Bank Finance :	5,00,000
	<b>7,98,000</b>

### Capital Cost of Project:

1. Fixed Cost	.....	Rs 8,50,000
2. Margin money for W.C.	.....	Rs 2,98,000
		<b>Rs 11,48,000</b>

### Means of finance

Promoter's contribution (35%)	Rs 4,02,000
Term Loan (65%)	Rs 7,46,000
	<b>Rs 11,48,000</b>

### Operating Expenses:

	(Rupees)
Raw Materials/Consumables	34,80,000
Wages & Salaries	7,40,000
Utilities	1,00,000
Repair & Maintenance	60,000
Administrative Overheads	50,000
Selling Expenses 5% on sales	6,40,000
Depreciation	55,000
Interest	<u>1,83,000</u>
	<b>53,08,000</b>

**Profitability:**

Based on the sales turn over and the production expenses, the profit would be Rs. 10.92 Lakhs per year. This works out to a return on capital investment of 66 %. The Unit would break-even at about 50% of the rated capacity.

**Break Even Analysis:**

A. Variable Cost:	(Rupees)
Raw Materials/Consumables	34,80,000
Utilities	1,00,000
Selling Expenses	6,40,000
	42,20,000
B. Semi-Variable Cost:	(Rupees)
Wages & Salaries	7,40,000
Repair & Maintenance	60,000
Administrative Overheads	50,000
Depreciation	55,000
Interest	1,83,000
	10,88,000
C. Sales Turnover:	64,00,000
D. Contribution:	21,80,000
E. Break Even Point:	50%

**Manpower Requirement:**

Personnel	Nos.	Salary per person (Rs.)	Salary Bill (Rs)
Technician	1	7000	7000
Assistant Technician	4	6000	24000
Marketing Personal	2	6000	12000
Accountant cum store	1	5000	5000
Manager	1	8000	8000
			56,000

Salary Bill Rs. 6.72 Lakhs + Benefits @ 10% annually i.e. Rs. 0.68  
Total Annual Salary Bill: Rs. 7.40

**List of Machinery& Equipments:**

Sl. No.	Particular	Nos
1	Shearing Machine	4
2	Bending Machine	6
3	Drill Machine with drill bits	4
4	Testing equipment	
	I) Oscilloscope	5
	II) Digital Multimeter	6
	III) RMS voltmeter	6
	IV) Distortion analyzer	3
	V) Transient Recorder	6
	VI) R.F. Interference meter	4
	VII) Frequency Counter Etc.	4
	VIII) Analog Multimeter	6 sets
	IX) Logic probes	4
5.	DC power supply Rectifier etc.	2
6	Assembly tools	6 sets

**Utilities:**

1.	Power:-	
	For Machine	8 KW
	For other purpose	2 KW
		10 KW
	10 KW X 6 effective working hours X 300days X 5.50	
		= Rs. 99,000
		Say Rs.1.00 lakhs

**Highlights:**

The Major highlights of the project are as follows:

Total Capital Requirement	Rs. 16.48 Lakhs
Promoter's Contribution	Rs. 2.88 Lakhs
Annual Sales Realization	Rs. 64.00 Lakhs
Annual Operating Expenses	Rs. 53.08 Lakhs
Annual Profit	Rs. 10.92 Lakhs
Return on Sales	17%
Break-even Point	50%
No. of person employed	9

**Address of Machinery & Equipment Suppliers:**

- 1) M/S Graphics (India)  
Shantiniketan  
Flat no.17, 6th Floor  
8, Camac Street,  
Kolkata-700 017
- 2) M/S Sunny Electricals,  
B-11, Sector-1  
Noida,UP.
- 3) M/S Industrial equipments  
A.T.Road  
Guwahati

## AUTOMOBILE BODY BUILDING

### Introduction :

Automobile body (Bus Body) building is an important activity. The chassis are supplied by Automobile manufacturers, and body is built by automobile body builders as per the requirements of the customer and specifications of the different State Transport Undertakings.

### About Services

Bus/Truck is used as the most common public transport vehicle in our country. Different State Transport Undertakings are plying their buses for commuting public from one place to another and from one State to another. Apart from these Undertakings, Private Bus Operators, travel agencies etc. are also operating buses on permit basis.

### Market Potential

With rapid changes in the society, now a days it has become necessary to provide good and efficient transport service to the public. Also with the rapid industrialization, public and goods are moving very frequently from one place to another using public transport. Since more and more development in the coming years, it is expected that demand of public transport, private transport and luxury transport in the form of buses/Trucks will increase in the coming years.

### Suggested Capacity (per annum):

The automobile body building per annum will be as follows:

A.	Quantity Bus Body Building (complete)	:	75 Nos.
	Value of each bus body building	:	Rs. 4,00,000
	Turnover (Rs. in Lakhs)	:	Rs. 300.00
B.	Quantity Bus/Truck Body Building (minor)	:	200 Nos.
	Avg. Value for each bus/truck body building	:	Rs. 20,000
	<b>Turnover (Rs. in Lakhs)</b>	:	<b>Rs. 40.00</b>
	<b>Total Turnover (A+B)</b>	:	<b>Rs. 420.00</b>

### Basis:-

No. of working days	=	300 days per year
No. of Shifts	=	1 per day.
One shift	=	10 hours

### Infrastructure Requirement:

The main Infrastructure facilities required are:

Required area	800 Sq.ft.
Power requirement	25 kW.
Water (required in every working day)	2000 Ltrs.

### Raw Materials and its availability:

The typical unit being a service industry, the amount required for working materials is calculated at Rs.249.00 lakh. All material & consumable items can be procured from local agencies in the open market.

### Suggested Location:

Automobile Bus/Truck Body Building units can be located near big cities, big towns and as well as in large urban areas preferably near National High way in the region, including Sikkim.

**Process of Manufacture:**

Metal sheets are cleaned and derusted for grease/oil if any. Then sheets are cut to size for forming different parts and these parts are formed on press brake. Now different parts and their subassemblies are fabricated as per their design and size. These parts and subassemblies are fabricated together to make them a complete bus body. The complete body is painted as per the requirements of the customer. Shower test is carried out for leakage etc.

**PROJECT ECONOMICS**

The total capital requirement estimated as under :-

<b>Fixed Capital</b>		<b>(Amount Rs. in lakhs)</b>
<b>Land &amp; Building</b>		Own/Lease
<b>Civil Works</b>		
i.)	Factory Shed 600 sq.ft. @ Rs. 700/sq.ft.	4.20
ii.)	Office building/ Godown 200 sq.ft. @ Rs.800/sq.ft.	1.60
	<b>Plant &amp; Equipments</b>	20.75
	<b>Other misc. Fixed Assets</b> (Water arrangement, Electrical fittings & Other Equipments)	0.75
	<b>Preliminary &amp; Pre-operative Expenses</b>	<u>0.50</u>
	Sub Total (A) Rs.	<u>27.80</u>
<b>B. Working Capital</b>		
	(Norms)	(Amount Rs. in lakhs)
Raw Materials/Consumables	15 days	12.45
Working Expenses	1 month	1.20
Finished Goods	10 days	9.60
Receivable	7 days	<u>7.90</u>
	Sub Total (B) Rs.	<u>31.15</u>
	Note: Working Capital to be financed as:	
	Margin Money	Rs. 10.20
	Bank Finance:	<u>Rs. 20.95</u>
		<u>Rs. 31.15</u>
<b>Capital Cost of Project:</b>		
1.	Fixed Cost	..... Rs 27.80 Lakhs
2.	Margin money for W.C.	..... <u>Rs 10.20 Lakhs</u>
		<b>Rs 38.00 lakhs</b>

<b>Means of Finance</b>	(Rs. in Lakhs)
Promoter's Equity(25%)	9.50
Term Loan(75%)	28.50
	<b>38.00</b>

<b>Production Expenses</b>	(Rs. in Lakhs)
Raw materials	249.00
Wages & Salaries	11.22
Utilities	2.90
Repair & Maintenance	0.50
Administrative Overhead	0.80
Depreciation	2.44
Selling expenses 5% on sales	17.00
Interest	<u>6.94</u>
	<b><u>290.80</u></b>

**Profitability:**

Based on the sales turnover and the operating expenses, the profit would be Rs. 49.2 lakhs per year. This works out to a return on capital investment of 84%. The unit would break-even at about 27% of the rated capacity.

**Machinery and Equipments:**

Description	Qty	Rupees
1. Motorized Guillotine Sheet Shearing Machine Capacity 2500x4 mm with 5 HP electric motor and starter etc. also fitted with front and back side gauges, sheet holding devices etc	1	4,00,000
2. Power operated Press Brake bending capacity 1200 x 2 mm, 50 Ton with 10 HP Main Motor and 2 HP raw adjustment Motor	1	7,00,000
3. Suspension type M.I.G. Welding system 150 Amp. along with power source, wire feeder, Torch and flow Calibrated Co2 regulator and Co2 heated with core assembly OPC.	1	1,00,000
4. Gas Welding set with all the Accessories etc.	1	20,000
5. Arc welding machine 300 Amps. 15 kVA Air Cooled complete with all the accessories	2	80,000
6. Air Compressor with painting equipment and accessories for painting	1	1,50,000
7. Different types of power/Air operated tools like Nut runner, drilling gun etc.	L.S.	2,00,000
8. Drilling Machine 1½" capacity	1	50,000
9. Metal cutting bandsaw for cutting Aluminium sections complete with 2 HP Electric motor and accessories	1	75,000
10 Other miscellaneous equipments	L.S.	2,00,000
11 Pollution Control Equipment	-	1,00,000
<b>Total plant and m/c cost</b>		<b>12,75,000</b>

**Raw Materials (per month)**

Sl. No.	Particulars	Qty.	Rate (Rs.)	Amount (In Rs.)
1.	M.S. Channel 75 x 40 to x 50 mm	4 MT	40,000	1,60,000
2.	M.S. Equal Angle 25x 25x3 to 50x50x6 mm	6 MT	40,000	2,40,000
3.	M.S. Flat 50 to 70 mm wide	1 MT	40,000	40,000
4.	Aluminium chequered Plate 8 mm to ½ inch	1 MT	2,00,000	2,00,000
5.	CR/BP Sheet 10 to 26 SWG	20 MT	50,000	10,00,000
6.	M.S. Pipe ¾" to 1" Dia	1 MT	40,000	60,000
7.	Aluminium Rolled Sections	0.5 MT	2,50,000	1,25,000
8.	Bought out items and hardware items	L.S.		1,00,000
9.	Other bought out items such as Raxine Ply,. PVC. Sheet. Foam OTC, Electrical fittings and fixtures, emblem etc.	L.S.		1,50,000
<b>Total Rs.</b>				<b>20,75,000</b>
<b>Annual Requirements Rs. 249.00 Lakhs</b>				

**Utilities:****Power Requirement:**

For Plant & Machinery	45 H.P.
For General Lighting	2 H.P.
Total	<u>47 H.P.</u>

**Annual power consumption:**

47 H.P. X 0.746 X 5 hrs. X 300 days. X Rs5.50

**Annual Electric Bill Rs.= 2,90,000**

## Break Even Analysis

<b>A. Variable Cost:</b>	(Rs. in Lakhs)
Raw Materials	249.00
Utilities	2.90
Selling Expenses	<u>17.00</u>
	<u>268.90</u>
<b>B. Semi-Variable Cost:</b>	(Rs. in Lakhs)
Wages & Salaries	11.22
Repair & Maintenance	0.50
Administrative Overhead	0.80
Depreciation	2.44
Interest	<u>6.95</u>
	<u>19.01</u>
C. Sales Turnover:	Rs. 340.00 Lakhs
D. Contribution:	Rs. 71.1 Lakhs
E. Break Even Point B/D X 100%	27 %

## Manpower:

Category	No. of Person	Salary Per Person Per Month(Rs)	Monthly Salary Bill (Rs.)
Production manager,	1	10,000	10,000
Maintenance engineers	2	8,000	16,000
Technical (Skilled Worker)	3	7,000	21,000
Technical (Semi-skilled Worker)	5	6,000	30,000
Chowkidar/Watchman	2	4,000	8,000
			<b>85,000</b>

Salary Bill Rs 10.20 Lakhs + Benefits @ 10% annually i.e. Rs 1.02

**Total Annual Salary Bill: Rs. 11.22**

## Highlights:

The major highlights of the project are as follows:

Total Capital requirement	Rs.	58.33 lakhs
Promoter's contribution	Rs.	9.50 lakhs
Annual Sales realization	Rs.	340.00 lakhs
Annual Operating Expenses	Rs.	290.80 lakhs
Annual Profit	Rs.	49.20 lakhs
Return on sales		14%
Break-even point		27%
No. of person employed		13

## AUTOMOBILE ELECTRICAL WORKS, BATTERY RE-CHARGING WORKS

### Introduction:

The battery is the main part of the electric system in an automobile. Without the battery, the engine cannot be started with the starting motor. The battery supplies current for starting a motor which is normally called a self-starter. The ignition system cannot work without a battery for firing the engine. It will also supply current for various lights and control such as head and rear lights, the door, cabin and bonnet lights, the indicators and control lights and switches. Besides these, some other accessories such as heater, radio or stereo are also operated on the battery. The function of a battery is to store electricity in the form of chemical energy and when required, convert back into electrical energy. Motor vehicles use lead-acid batteries which are interspersed. The plates are immersed in a solution of dilute sulphuric acid called "electrolyte". For compactness, the plates are placed close together and separators are used to reduce the chance of shorting their places. The capacity of the battery to store electricity can be increased by having more parts or by increasing the area. To make use of all the surface of the positive plates, the negative plates outnumber the positive plates by one so that each cell contains an uneven number of plates, like seven, nine, eleven etc.

The other automobile electrical works include repairing of dynamo, AC pump and any electrical fault leading to non-functioning of lights fitted in the vehicles.

### Market Potential:

With constant increase of vehicles such as trucks, cars, jeeps, etc. the demand for battery is increasing. The easy availability of car loans further aggravated the increase in number of private vehicles. Since each and every vehicle is liable to develop fault with the battery of the vehicle and other electrical fault at some point or other, this necessitates existence of a number of automobile electrical repairing and battery re-charging units at some strategic locations in each and every township in the region.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	:	8 (1 shift)
Working days in a year	:	300
Capacity	:	Battery re-charging: 15 Nos./day Electrical repairing : 20 vehicles/day

### Raw Material:

For smooth conduct of battery re-charging and electrical repairing the unit should have sufficient stock of distilled-water, battery-acid, battery-plates, electrical wires and related automobile electrical spare parts worth Rs 2.50 lakhs per annum.

### Process:

Depending upon the nature of automobile electrical repairing works and battery re-charging the concerned skilled workers has to operate/rectify the same accordingly. For example the battery charging/re-charging is done with the help of rectifier transformer which provides the required DC supply at the rated voltage and current. The rectifier transformer could be provided with different tapings of 6.36 volts for charging the various sizes of batteries. Batteries from 6V 20Ah to 24 V 180 Ah could be charged in this set up. On receipt of the faulty battery, the same is checked thoroughly for its charge condition, then re-charging is done. Normally, 8 – 10 hours is required for one full charge. After the recharging, batteries are tested for their voltage and charge condition with a HRD tests. In addition minor repairs for the batteries like replacement of terminals, change of battery plates, change of electrolyte, checking the charge condition etc. could also be done.

### Machinery:

The major equipments required for the unit are as follows:

- Battery charger 6/72 Volt – 4 Nos.
- Cell Tester - 2 Nos.
- Carbide tank – 2 Nos.
- Armature tester – 2 Nos.
- Volt meter – 2 Nos.
- Ohm Ampere Meter – 2 Nos.
- Battery capacity tester – 1 No.
- Hydrometer – 1 No.



- Pole Screw Remover – 2 Nos.
- Regulator Tester – 2 Nos.
- Regulator Cleaner – 1 No.
- Die set four connecting - 5 Nos.
- DR test Bench – 1 No.
- Battery High Rate Discharge Test plant – 1 No.
- Compressor – 1 No.
- Vibration tester – 1 No.
- Grinding machine – 1 No.
- Drill Machine – 1 No.
- Brass charger-cum-engine starter – 1 No.
- Hand tools – 3 sets.

**Location:**

The suitable locations for the project may be –

- Guwahati & other major towns in Assam
- Shillong & other major towns in Meghalaya
- Kohima & other major towns in Nagaland.
- Agartala & other major towns in Tripura.
- Itanagar & other major towns in Arunachal Pradesh.
- Imphal & other major towns in Manipur.
- Gangtok & other Dist. Towns in Sikkim.

**Infrastructure:**

The basic infrastructure required are :

Land	:	1,000 sq.ft.
Building	:	250 sq.ft.
Power	:	5 KW
Water	:	500 Ltr. Per day.
Manpower	:	6 Nos. [Skilled (3), Helper (3)]

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 7.90 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 7.50 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		Rented
Building		Rented
Machinery		3.50
Miscellaneous fixed assets		2.00
Preliminary and pre-operative expenses		<u>1.50</u>
	<b>Total (A)</b>	<b>7.00</b>
		=====
<b>B. Working Capital:</b>		
Consumables & Stores	1 month	0.20
Working expenses	1 month	0.30
Receivables	2 weeks	<u>0.40</u>
	<b>Total (B)</b>	<b>0.90</b>
		=====
	<b>Total (A)+(B)</b>	<b>7.90</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 0.40 lakhs
Margin Money	.....	<u>Rs 0.50 lakhs</u>
		Rs 0.90 lakhs
		=====

**Means of Finance:**

The project cost of Rs 7.50 lakhs including margin money for working capital may be financed as under :

Promoter's contribution (35%)	....	Rs 2.60 lakhs
Term Loan (65%)	....	<u>Rs 4.90 lakhs</u>
		Rs 7.50 lakhs

**Operating Expenses:**

The annual operating expenses are estimated at Rs 7.50 lakhs as given below:

	<b>(Rs in lakhs)</b>
1. Consumable & stores	2.50
2. Utilities	0.50
3. Wages & Salaries	2.50
4. Overheads	0.50
5. Promotional expenses (L.S)	0.50
6. Interest on term loan (13.25%)	0.60
7. Interest on Bank Finance for working capital (11%)	0.05
8. Depreciation @10%	<u>0.35</u>
	<b>7.50</b>

=====

**Income Receipt:**

The basis on which the income receipt of the unit has been calculated is as follows:

Items	Nos./ annum	Unit service charge (Rs)	Annual Income (Rs)
Battery re-charging	4,500	30/-	1,35,000
Automobile electrical repairing	6,000	150/-	9,00,000
<b>TOTAL</b>			<b>10,35,000</b>

**Profitability :**

Based on the income receipt and the operating expenses, the profit would be Rs 2.85 lakhs per year. This works out to a return on investment of 40%. The plant will break even at 57% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows :

Total capital requirement	:	Rs 7.90 lakhs
Promoter's contribution	:	Rs 2.60 lakhs
Annual Income receipt	:	Rs.10.35 lakhs
Annual operating expenses	:	Rs 7.50 lakhs
Annual profit (pre-tax)	:	Rs 2.85 lakhs
Pre-tax Return on income receipt	:	28%
Break Even Point	:	57%
No.of persons employed	:	6

**List of Machinery Suppliers:**

The above mentioned equipment as well as consumables & stores are available with a number of automobile parts dealers based at Guwahati particularly in Tokobari area of Guwahati.

## AUTOMOBILE REPAIRING AND SERVICING

### INTRODUCTION

The railway network does not extend to the whole of the north-eastern region and is mainly confined to Assam. Consequently, mass transport in the region is through road and there is large population of different types of vehicles including buses, lorries, jeeps and cars. In view of the hilly terrain and the damage caused to roads by ravaging floods which are regular phenomenon, the wear and tear of vehicles is therefore correspondingly heavy. The existing number of repairing and servicing units in the region is not adequate and there are good prospects for such units.

### MARKET POTENTIAL

The population of vehicles in Assam alone is over 3 lakhs. Assuming the population of vehicles in other parts of the region as 30% of that of Assam, the total vehicle population in the north-eastern region would be around 4,00,000. It is understood that the number of vehicles is increasing by 10% to 11% per year according to a recent study conducted by the Central Road Research Institute. This itself will throw open opportunities for additional units.

Most of the repairing and servicing units are in urban centres and there are few units along highways. In view of the significant inter-town/city flow of traffic, there is scope for many units to come up along various national and state highways.

Another avenue for new units is the field of painting of vehicles. There are a few organized painting shops and those units carry out painting with obsolete techniques. Based on the above, it would be seen that there are good prospects for new automobile repairing and servicing units:

- (i) If they can establish themselves at strategic locations.
- (ii) If they can cater to requirements of newer type of vehicles.
- (iii) If they can provide painting facilities.

### TARGET OUTPUT

A typical tiny unit should be equipped to carry out –

- i) Servicing of vehicles
- ii) Major repair/overhauling work of engines of different types of vehicles, welding gear box, realignment, brake checking, carburetor overhauling etc.
- iii) Minor repair work.
- iv) Painting

The capacity can be taken as follows:

	<u>No./Yr.</u>
Servicing @ 4 vehicles/day	1200
Major repairing work @ 2 vehicles/month	24
Minor repairing work @ 3 vehicles/day	900
Painting @ 5 vehicles/month	60

### RAW MATERIALS

The annual requirement of raw materials consumables are given below:

	<u>Quantity/Yr.</u>
Carbate	120 Kg
Gas rod	120 Kg
Brass rod	120 Kg
Gas cylinder	24 Nos
Plain sheet	120 Kg.
Painting materials	Rs.4,50,000 worth
Lubricant stock for servicing	Rs.1,37,000 worth

All the above materials are available locally.

## EQUIPMENT

The main equipment and tools required:

Quantity/Nos.		
	Air compressor	1
	Car washing equipment	1 set
	Lift	1
	Greasing equipment	1
	Oil spray gun	1
	Gas welding set	1 set
	Chain pulley block	1 set
	Spray painting set	1 set
	Electric bench grinder	1
	Electric drill machine	1
	Misc. tools and accessories	3 sets

## INFRASTRUCTURE

The infrastructure facilities required are:

Land	2500 Sq.ft.
Building	1500 Sq.ft.
Power	5 KW
Water	500 Ltr./day

## LOCATION

The suggested locations are:

Assam	: Guwahati, Dibrugarh, Tezpur
Meghalaya	: Shillong
Tripura	: Agartala
Manipur	: Imphal
Nagaland	: Kohima, Dimapur
Arunachal Pradesh	: Itanagar, Pasighat
Sikkim	: Gangtok & all Dist. H. Q

## TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital for the project is estimated at Rs.8.40 lakhs as given below. Of this, the project cost comprising fixed capital and margin money on working capital is Rs.7.75 lakhs.

<b>A. Fixed Capital:</b>		(Rs. in lakh)
Land		On lease
Building		3.50
Plant & Machinery		2.90
Miscellaneous fixed assets		0.60
Preliminary and pre-operative expenses		0.20
	Total (A)	7.20
		=====
<b>B. Working Capital:</b>		
Raw materials	½ month	0.24
Working expenses	1 month	0.33
Receivables	½ month	0.63
	Total (B)	1.20
		=====
	Total (A) + (B)	8.40
		=====

Note: Working capital may be financed as :

Bank Finance	...	Rs. 0.65 lakh
Margin Money	...	Rs. 0.55 lakh
<b>MEANS OF FINANCE</b>		
Equity Capital(35%)	...	Rs. 2.72 lakhs
Term Loan(65%)	...	Rs. 5.03 lakhs

Rs. 7.75 lakh

### OPERATING EXPENSES

The annual operating expenses are estimated at Rs.12.26 lakhs as given below:

	Rs. lakhs
Raw Materials –	
Painting materials for 60 vehicles @ Rs. 7500/-	4.50
Lubricants	0.75
Carbate 120 Kg @ Rs.60/Kg	0.07
Gas rod 120 Kgk. @ Rs.80/Kg.	0.10
Brass rod 120 Kg @ Rs.375/Kg	0.45
Utilities	0.40
Wages and salaries	3.50
Rent	0.30
Other overheads (including business development)	0.45
Selling expenses @ 5% of annual sales	0.75
Interest on Term Loan @ 12%	0.60
Interest on Bank Finance for W.C. @ 15%	0.10
Depreciation @ 10% on Machinery	0.29
<b>Total:</b>	<u>12.26</u> =====

### ANNUAL RECEIPTS

Based on prevailing market rates, the annual income is estimated at Rs.15.00 lakhs.

Servicing of 4 vehicles per day @ Rs.200/vehicle	2.40
Major repairing work of 24 vehicle @ Rs.15,000/vehicle (Rs.15,000×24)	3.60
Minor repairing work for 900 vehicles @ Rs. 250/vehicle (Rs.250×900)	2.25
Painting of 60 vehicles/annum @ Rs. 9000/vehicle (Rs.9,000×60)	5.40
By sale of lubricants in servicing section	<u>1.35</u>
<b>Total:</b>	<u>15.00</u> =====

### PROFITABILITY

Based on the annual receipts and the estimated operating expenses, the profit before tax is estimated at the Rs.2.70 lakh per year. This works out to a pre-tax return on investment of 35%. The unit would break-even at about 44% of the targeted annual output.

### HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 8.40 lakhs
Equity Capital	Rs. 2.72 lakhs
Annual Sales realization	Rs. 15.00 lakhs
Annual operating expenses	Rs. 12.26 lakhs
Annual profit (pre-tax)	Rs. 2.74 lakhs
Pre-tax return on sales	18%
Break-Even Point	44%
No. of persons employed	12

## **MACHINERY SUPPLIERS**

1. M/s. Atlas Copco (India) Ltd.  
22 A, shivaji Marg,  
New Delhi – 110 015
2. M/s. Bharat Jyotee Mechanicals,  
B-18, Focal Point,  
Ludhiana – 141 010
3. M/s. Perfect Machine Tools Co. (P) Ltd.,  
Bell Building,  
Sri P.M. Road,  
Mumbai – 400 001
4. M/s. Sugga Engineering Works,  
8/39, South Industrial Area,  
Kirti Nagar,  
New Delhi – 110 015

## BEAUTY SALOON/FITNESS CENTRE

### Introduction:

A beauty saloon has become an almost iconic image in Western culture. It is a place where people go for beauty treatments and to purchase beauty products. Women go frequently to beauty salon to get their hair trimmed and nails polished.

Today's people are more conscious in the field of fitness, beauty and fashion, which turns the beauty industry in a promising position. With the rising in standards of living, the requirement of services like beauty salon is on the increase. Moreover the status of women in society improving and their lifestyle is changing. Economic independence makes them to resort to these types of services. It is in this prospective that development of beauty care assumes significant importance. New challenges and new opportunities for investing in this sector have arisen.

### Services:

Beauty care & fitness services are gaining increasing importance in recent years. The concept of beauty care is emerging from providing beauty treatment to various services for improvement of overall status and also maintenance of good health. Some of the services offered by beauty salon are skin care specialized services, beauty care specialized services, hair care specialized services and hand & feet specialized services. Apart from these, fitness services have also included in modern beauty salon.

### Market Potential:

Although several small & medium size beauty parlour both local or branded are flooded in big cities, but a beauty salon in world class standard has a tremendous market in growing cities in northeast India. With an average growth rate of 12 per cent, this industry is bound to generate a high employment potential along with the need for related services in the years ahead.

Presently most of the ladies, members of business community and as well as service professional become beauty and health conscious and these community are now more and more inclined towards multi various services in leading beauty based salon. With the modernization beauty based salon from overseas are also finding their way into the Indian Market.

Beauty Salons are available at locations in cities and towns. The typical unit must offer a differentiated salon experience through consistent quality, competitive prices and professionally trained beauty experts.

### Suggested Capacity (per annum):

The proposed typical unit will provide a comprehensive range of services. The Traffic per day and the range of services as proposed are stated below:

Range of Services	Annual Traffic per day (in nos.)	Avg. Value per Bill (Rs.)	Turn over per day (Rs.)
A. Skin care specialized services.	3	400.00	1200.00
B. Beauty care specialized services.	6	300.00	1800.00
C. Hair care specialized services.	10	250.00	2500.00
D. Hand & feet specialized services	10	150.00	1500.00
E. Leg/hand massaging	4	150.00	600.00
F. Body shaping, Figure beautifying & Anti ageing treatment/therapy.	2	500.00	1000.00
G. Other Essential Services Like:	1	2	
1. Bridal services,	4	500.00	500.00
2. Mehendi		250.00	500.00
3. Hena etc.		200.00	800.00
	36	-	10400.00

**Basis:-**

No. of working days	=	300 days per year
No. of Shifts	=	1 per day 10 hours

**Infrastructure Requirement:****The main Infrastructure facilities required are:**

- 1.) Required area 900 Sq.ft. Air conditioning/ventilation Rooms.
- 2.) Waiting Lounge 300 Sq.ft. Air conditioning with audio visual system.
- 3.) Power requirement 5 kW. and heavy duty Inverter.
- 4.) Water (with proper treatment) 2000 Ltrs. required in every working day.
- 5.) Sewage, sanitation and waste disposal.

**Raw Materials/Consumables and its availability:**

The Major raw materials required for running a beauty parlour are lotion, herbal cream, soap (assorted), shampoo (assorted), Facial cream (assorted), Face pack, Hair oils, Massage oil, Mehendi, hena powder and other cleaning materials like napkins/towels etc. that estimated an amount of Rs. 60,000 will be required per month.

Suggested Location:

Beauty salon and fitness center can be located in up coming cities, state capitals, big towns and as well as in large urban areas in the region.

**SUGGESTED LOCATION :**

Major centres in NER & Sikkim.

**Process/Steps of services:**

Beauty Salons offer a full range of the latest beauty and grooming services in the areas of hair care, skin care and beauty. The services include specialized services for skin (facials), hair (colouring, cuts, styles, perms etc), hands & feet (advanced manicures and pedicures) as well as essential beauty services (waxing, pedicures, manicures).

**PROJECT ECONOMICS****(Amount Rs. in lakhs)**

The total capital requirement is estimated as under : -

A. Fixed Capital	Own/Lease
<b>Land</b>	

**Building/Civil Works**

i.) Required area 900 Sq.ft. Air conditioning and ventilation Rooms with interior decoration.	9.00
ii) Waiting Lounge 300 Sq.ft. Air conditioning with interior decoration.	3.60

**Plant & equipments** 10.50

**Other misc. Fixed Assets**

(Water arrangement with water treatment facilities, Electrical fittings, furniture & fixture & Other Equipments) 2.75

**Preliminary & Pre-operative Expenses** 0.80

Sub Total (A) Rs. 26.65



**B. Working Capital**

	(Norms)	(Amount Rs. in lakhs)
Raw Materials/Consumables	1 month	0.60
Working Expenses	1 month	0.90
Receivable	3 days	<u>0.30</u>
	Sub Total (B) Rs.	<u>1.80</u>

Note: Working Capital to be financed as:-

Margin Money:	Rs. 1.25
Bank Finance:	<u>Rs. 0.55</u>
	<u>Rs. 1.80</u>

**Means of Finance**

(Rs. in Lakhs)

Promoter's Equity(25%)	7.00
Term Loan(75%)	<u>20.90</u>
	<u>27.90</u>

**Production Expenses**

(Rs. in Lakhs)

Raw materials/consumables	7.20
Wages & Salaries	7.80
Utilities	0.90
Repair & Maintenance	0.20
Administrative Overhead	0.50
Depreciation	1.20
Selling expenses 5% on sales	1.55
Interest	<u>2.70</u>
	<u>22.05</u>

**Profitability:**

Based on the sales Turnover and the operating expenses, the profit would be Rs. 9.15 lakhs per year. This works out to a return on capital investment of 32%. The unit would break-even at about 58% of the rated capacity.

**Machinery and Equipments:**

Description	Nos.
1. Vapour Beauty Machine (Hot & Cold Steam)	2 sets.
2 Black head extractor	2 sets.
3. Magnifying glass(skin test)	2 sets
4. Vibrator face and body massager	2 sets
5. Hair Dryer Automatic	4 nos.
6. Hair Holding clip	6sets
7. Hair Scissors	5 sets
8. Hair Dyer/Henna Brush	3 sets
9. Hair Straighter	2 nos.
12 Eyebrow washing m/c	5 sets
13. Pedicure set	3 sets
14. Manicure set	3 nos
15. Nail polish sets	3 sets
16. Trolley	3 nos
17 Tarizers	4 nos.
18 Facial Chairs	2 nos.
19 Facial Tanners	2 nos.
20 Folding Cosmetology bed	2 nos.
21. Massage bed	2 nos.
22. Massage Belt	2 sets.

23. Mini Crystal Skin Refreshing equipment	1 nos.
24. Photon Slimming System with Negative Air Pressure (body Shaping + Figure beautifying + anti aging)	1 nos.
25. Three-in-one brush (lipstick, eye shadow, blossom)	5 sets.
26. Vibrissa trimmer	2 nos.
27. Audio Visual System	1 Set
28. Air conditioning M/c	4 nos.
29. Inverter (heavy duty)	2 nos.
30. Leg massager	2 sets.
31. Makeup kits	2 sets.
32. Razor	4 sets
33. Multifunctional beauty equipment	2 nos.
34. Monopolar equipment	1 nos.
35 Beauty bed	2 nos.

### Break Even Analysis

<b>A. Variable Cost:</b>	(Rs. in Lakhs)
Raw Materials/consumables	7.20
Utilities	0.90
Selling Expenses	<u>1.55</u>
	<u>9.65</u>
<b>B. Semi-Variable Cost:</b>	(Rs. in Lakhs)
Wages & Salaries	7.80
Repair & Maintenance	0.20
Administrative Overhead	0.50
Depreciation	1.20
Interest	<u>2.70</u>
	<u>12.40</u>
C. Sales Turnover:	Rs. 31.20 Lakhs
D. Contribution:	Rs. 21.55 Lakhs
E. Break Even Point B/D X 100%	58 %

### Manpower:

Category	No. of Person	Salary Per Person Per Month (Rs)	Monthly Salary Bill (Rs.)
Reception cum manager	1	8,000	8,000
Trained Beautician	3	7,000	21,000
Assistants (semi Skilled)	4	5,000	20,000
Accountant/storekeeper	1	6,000	6,000
Security	1	4,000	4,000
			<b>59,000</b>

Salary Bill Rs 7.08 Lakhs + Benefits @10%. annually i.e. Rs 0.71

**Total Annual Salary Bill: Rs. 7.80**

### Highlights:

The major highlights of the project are as follows:

Total Capital requirement	Rs.	28.45 lakhs
Promoter's contribution	Rs.	7.00 lakhs
Annual Sales realization	Rs.	31.20 lakhs
Annual Operating Expenses	Rs.	22.05 lakhs
Annual Profit	Rs.	9.15 lakhs
Return on sales		29%
Break-even point		58%
No. of person employed		10

## CELL PHONE SERVICING & REPAIRING

### INTRODUCTION

With the advancement in the IT sector, there are introduction of a number of gadgets in the market which have made electronic communication easier. Mobile or Cell phone is one such device which has made our world smaller in terms of communication. It is no longer a luxury but a necessity for businessmen, students and people of all profession to communicate with each other.

### MARKET POTENTIAL

These electronic gadgets are vulnerable and tend to go out of order if handled roughly, with nearly every person possessing a mobile set, the market potential for repairing and servicing unit is bright. Moreover, most of the younger generation is interested in down loading of music in their mobile as ring tones etc.

### PLANT CAPACITY

Annual Production:

Mobile Repairing	Minor	3000 Sets
	Major	1500 Sets
Selling Mobile Covers and casings		4200 Nos.
Selling of Mobile Set		600 Nos.
Song Downloading		15000 Nos.
Working Days/year		300 Days

### RAW MATERIALS (Per month)

Items	Quantity	Total Amount (Rs.)
Diode transistor and resistant	L.S.	300/-
Shouldering paste	3 Pkts	100/-
Extra Circuit	2 Sets	2,000/-
Manuals	2 Sets	3,000/-
Mobile covers (plastic)	250 Nos. @ Rs.10/-	2,500/-
Mobile Covers (leather)	50 Nos. @ Rs.50/-	2,500/-
Mobile casing	50 Nos. @ Rs.75/-	3,750/-
Mobile	50 Sets @Rs2000/-	1,00,000/-
<b>Total:</b>		<b>1,14,150/-</b>
<b>Total annual requirement</b>		<b>13,69,800/-</b>

### MACHINERY

The major equipment required are :

Sl. No.	Particulars	Qty.	Rate (Rs.)	Amount (Rs.)
1.	Computer with accessories	1	30,000/-	30,000/-
2.	Software	2 Set	20,000/-	20,000/-
3.	Digital eciliscop	2 Nos.	@ 8,000/-	16,000/-
4.	SMD circuit maker	2 Nos.	@ 7,000/-	14,000/-
5.	Data Code Kit	2 Nos.	@ 5000/-	10,000/-
6.	Shouldering Iron	4 Nos.	@ 300/-	12,000/-
7.	Digital Multimeter	2 Nos.	@ 1500/-	3,000/-
8.	Tool Kit	2 Nos.	@ 1000/-	2,000/-
9.	Misc. tools	L.S.		2,000/-
	<b>Total:</b>			<b>1,09,000/-</b>

## INFRASTRUCTURE

The major infrastructural requirement is:

Covered Area	...	200 Sq.ft.
Power	...	1 KW

## LOCATION

The suggested locations are:

Assam	:	All district headquarter and urban & semi-urban areas.
Meghalaya	:	
Nagaland	:	
Tripura	:	
Manipur	:	
Arunachal Pradesh	:	

## TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs.2,95,880/- as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs2,13,408/-.

		(Rs.)
<b>A. Fixed Capital:</b>		
Land and Building		On rent
Plant and Machinery		1,09,000/-
Miscellaneous fixed assets		50,000/-
Preliminary and pre-operative expenses		10,000/-
	<b>Total (A) :</b>	<b>1,69,000/-</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & packing materials	½ month	8,490/-
Working expenses	1 month	11,890/-
Receivables	15 Days	1,06,500/-
	<b>Total (B)</b>	<b>1,26,880/-</b>
		=====
	<b>Total (A) + (B)</b>	<b>2,95,880/-</b>
		=====

Note: Working capital may be financed as:

Bank Finance	...	Rs.82,472/-
Margin Money	...	Rs.44,408/-
		<b>Rs. 1,26,880/-</b>
		=====

## MEANS OF FINANCE

Promoter's Contribution (35%)	...	Rs. 76,493/-
Term Loan (65%)	..	Rs.1,36,915/-
		<b>Rs.2,13,408/-</b>
		=====

## OPERATING EXPENSES

The annual operating expenses are estimated at Rs.16,58,207/- as given below:

		(Rs.)
1.	Raw materials	13,69,800/-
2.	Utilities	7,680/-
3.	Wages & Salaries	96,000/-
4.	Rent	24,000/-
5.	Other overheads	12,000/-
6.	Selling expenses @ 5% on annual sales	1,06,500/-
7.	Interest on term loan	16,430/-
8.	Interest on bank finance for working capital	9,897/-
9.	Depreciation	15,900/-
	<b>Total:</b>	<b>16,58,207/-</b>
		=====

## SALES REALISATION

Sl. No.	Particulars	Qty.	Rate (Rs.)	Amount (Rs.)
1.	Minor Repair of Mobile	250 Nos.	@ 50/-	12,500/-
2.	Major Repairing	125 Nos.	@ 200/-	25,000/-
3.	Selling of Mobile covers (Plastic)	250 Nos.	@ 20/-	5,000/-
4.	Selling of Mobile (leather) covers	50 Nos.	@ 75/-	3,750/-
5.	Mobile casing	50 Nos.	@ 100/-	5,000/-
6.	Downloading songs	1250 songs	@ Re.1/-	1,250/-
7.	Mobile Sets	50 Nos	@ 2500/-	1,25,000/-
			<b>Total:</b>	<b>1,77,500/-</b>
	<b>Total annual sales realization</b>			<b>21,30,000/-</b>

## PROFITABILITY

Based on the sales realization of Rs.2,95,880/- and the operating expenses of Rs.16,58,207/-, the profit at rated capacity utilization would be Rs. 4,71,793/- per year. The unit will break even at about 27% of the targeted annual production.

## HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 2,95,880/-
Promoter's contribution	Rs. 76,493/-
Annual Sales realization	Rs. 21,30,000/-
Annual operating expenses	Rs. 16,58,207/-
Annual profit (pre-tax)	Rs. 4,71,793/-
Pre-tax return on sales	22.15%
Break-Even Point	27%
No. of persons employed	4

## COLOUR PROCESSING STUDIO

### INTRODUCTION

In recent years colour photography has made rapid strides. This has been largely due to greater availability of colour films at lower cost, growing consumer awareness and consequent preference for better quality glossy, attractive photographs at reasonable rate.

### MARKET POTENTIAL

There are very few processing photo studios in the north – east. In Guwahati, which is the largest city in the region, there are hardly 10 independent units equipped colour photography, developing and printing facilities. Colour processing studio is a unit which generates demand for its services once the facility is established and this is supported by experience in other urban centers in India where colour studios have mushroomed in recent years. Demand would emanate from the needs of passport size photographs for students, job applicants, group photographs of families, Photographs during functions organized by various institutions etc.

The demand for colour photographs is estimated to range from about 150 per day in a small town like Aizawl to about 1500 per day in a city like Guwahati. Considering an average of three (3) copies per photograph the potential market for colour photographs is estimated to be in the range of 1,35,000 to 13,50,000 per year per urban center.

### TARGET PRODUCTION

A colour studio would be equipped to process passport size photographs, quarter size photographs, half size and full size photographs. Besides, it would also engage itself in separate developing and printing works. The annual production and product-wise envisaged at 70% capacity utilization would be as follows:

Item	Snaps	Copies	Total copies
Passport size	490	3	1470
Quarter size	1190	3	3570
Half size (5/7")	210	3	630
Full size	70	1	70
Developing	70	-	70
Printing	-	-	2625

### RAW MATERIAL

The main raw materials for a colour photo studio are:

1. Colour films of various qualities and size
2. Enlargement wallets
3. Negative Wallets
4. Process chemicals

### PROCESS

As is well-known, the main process steps in photography are:

1. Photographing with camera
2. Developing and obtaining negatives
3. Printing

The differences between black & white and colour photography mainly relate to the films and camera used. It is considered that an entrepreneur venturing into this line obtains training in a reputed colour processing laboratory before taking up this venture.

### EQUIPMENT

The major equipment required would be as follows:

1. OCL 300 Additive Printer Back Loading
2. OCL Paper processor, single track
3. Paper Cutter for Roll (3y x 10" size)

### INFRASTRUCTURE

Shed	...	500 Sq. ft.
Power	...	3 KW

### LOCATION

Colour photo studios at the following places would have encouraging prospects:

Assam	: Guwahati, Dibrugarh, Tezpur, Jorhat, Silchar
Meghalaya	: Shillong
Arunachal Pradesh	: Itanagar, Pasighat
Tripura	: Agartala
Mizoram	: Aizawl
Manipur	: Imphal
Nagaland	: Dimapur, Kohima
Sikkim	: Gangtok & all Dist. H. Q.

### TOTAL CAPITAL REQUIREMENT

The total capital requirement including fixed capital and working capital is estimated at Rs. 7.14 lakh as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs. 6.40 lakh.

		( Rs. lakhs)
<b>A.</b>	<b>Fixed Capital:</b>	
	Land & Building	On rent
	Plant & Machinery	5.40
	Misc. fixed assets	0.50
	Preliminary and pre-op. expenses	<u>0.10</u>
	<b>Total (A)</b>	<b>6.00</b>
		=====
<b>B.</b>	<b>Working Capital:</b>	
	Raw materials	1 month 0.50
	Finished goods	15 Days 0.40
	Working expenses	1 month 0.09
	Receivables	3 Days 0.12
	Total (B)	<u>1.14</u>
		=====
	<b>Total (A) + (B)</b>	<b>7.14</b>
		=====

Note: Working Capital may be financed as under:

Bank Finance	..	Rs. 0.74 lakh
Margin Money		Rs. 0.40 lakh
	Total:	<u>Rs. 1.14 lakh</u>
		=====

<b>C.</b>	<b>Capital Cost of Project :</b>	
	Fixed Capital	Rs. 6.00 lakh
	Margin Money for Working Capital	Rs. 0.40 lakh
	Total:	<u>Rs. 6.40 lakh</u>
		=====

### MEANS OF FINANCING

The project cost of Rs. 6.40 lakh, including margin money for working capital may be financed as follows:

		( Rs. lakh)
Promoter's contribution(35%)		2.24
Term Loan (65%)		4.16
	<b>Total:</b>	<u><b>6.40</b></u>
		=====

### OPERATING EXPENSES

The annual operating expenses are estimated as given below:

		(Rs. lakhs)
Raw materials (Refer Annexure)		6.34
Utilities		0.06
Wages & Salaries (3 persons)		0.96

Rent	0.24
Additional Overheads	0.18
Interest on Term Loan (@ 13.25%)	0.55
Interest on Bank Loan (@ 12%)	0.09
Depreciation @ 10% on M/c.	0.54

Total: 8.96  
=====

### SALES REALISATION

The annual sales realization is estimated at Rs. 12.33 lakh as under:

Particulars	Quantity	Unit Price (Rs.)	Amount (Rs. lakh)
Passport size	17640 (5880 snaps each of 3 copies)	@ Rs.30.00 per 3 copies	1.76
Quarter size	42,840 Nos. (14280 snaps each of 3 copies)	@ Rs.40.00 per 3 copies	5.71
Half size (5/7")	7560 copies (2520 snaps each of 3 copies)	@ Rs. 80.00 per 3 copies	2.02
Full size	840 copies (840 snaps)	@ Rs.200.00 per copy	1.68
By developing	840 snaps (1050 rolls)	@ Rs. 20.00 per roll	0.21
By printing	31,500 copies	@ Rs.3.00 per copy	0.95
<b>Total:</b>			<b>12.33</b>

### PROFITABILITY

Based on the sales realization and the operating expenses, the profit at the annual production envisaged would be Rs.3.37 lakh per year. This works out to a return of 47% on the capital employed. The plant would break even at about 26% of the rated capacity.

### HIGHLIGHTS

The major highlights of the project are given below:

Total capital requirement	Rs. 7.14 lakh
Pro`oter's equity	Rs. 2.24 lakh
Annual Sales realization	Rs. 12.33 lakh
Annual operating expenses	Rs. 8.96 lakh
Annual Profit (Pre-tax) at rated Cap.	Rs. 3.37 lakh
Pre-tax return on sales	27%
Break-Even Point	26%
No. of persons employed	3

### EQUIPMENT SUPPLIERS

1. M/s. agfa Gevaert India Ltd.,  
Merchant chamber,  
41, New Marine Line,  
Mumbai – 400 020
2. M/s. Central Camera Co.,  
195, Dr. D.N. Road,  
Mumbai – 400 001
3. M/s. Hindustan Photo Film,  
Manufacturing Co.,  
Indunagar, Ootacamund – 643 005
4. M/s. Photophone Industries Ltd.,  
7, Shakti Vihar Road,  
Mumbai – 400 072



**ANNEXURE  
RAW MATERIALS & CONSUMABLES**

Sl.No.	Items	Quantity	Rate/year (Rs.)	Amount (Rs. lakhs)
1.	Kodak Colour Gold 100 – 120 size	168 Rolls	100.00	0.17
2.	Konica Colour SRV-100 – 135/36	168 Rolls	100.00	0.17
3.	Konica Colour SRV-200 – 110/24	168 Rolls	90.00	0.15
4.	Kodak Colour paper roll 5 x 575"	42 Rolls	3000/roll	1.26
5.	Kodak colour paper roll 8 x 275"	17 Roll	4,500/roll	0.77
6.	Agfa papers 7 x 9"	42 Pkts	600/pkt	0.25
7.	Agfa papers 7 x 9"	42 Pkts.	1000/Pkt	0.42
8.	Colour Print Wallets Qss size	25200 Pcs.	600/pc	0.15
9.	Enlargements wallets (a) 8y x 10y size	1680 pcs	800 per 1000 pcs	0.02
	(b) 10 x 12" size	1680 pcs	800 per 1000 pcs	0.02
10.	Negative Wallets (a) 135/120 size	4200 pcs	800 per 1000 pcs	0.03
	(b) 110 size	4200 pcs	800 per 1000 pcs	0.03
11.	Chemicals			
	(a) C-41 Kits 2 Ltrs.	84 Pkts	450/Pkt	0.38
	(b) EP – 2 Developer 15L	84 Pkts	450/Pkt	0.38
	(c) EP-2 Developer Replenisher 15 Ltr.	42 Pkts	450/Pkt	0.19
	(d) EP-2 Blix. 50 Ltr.	17 Pkts	1500/Pkt	0.26
	(e) Developer Start 1 Ltr pkt	17 Pkts	70/Pkt	0.01
	(f) Kodat Colour Roll Paper 3Y x 575	84 Rolls	2000/Roll	1.68
<b>Total:</b>				<b>6.34</b>

## CYBER CAFÉ / XEROX / LAMINATION

### Introduction:

The fast growing of the IT sector there has raised great demand for Cyber Cafes for receiving and sending communication through Electronic mail. Apart from mails the clients can visit various sites to gather information on topics of interest, it is also a source of entertainment as movies can be watched and songs can be downloaded and online shopping. It very much addresses the needs of the more demanding generations.

### Market potential:

A survey has indicated that Cyber Cafes have caught the imagination of the youth and these centres are the busiest due to the fact that information needs of the users today are fulfilled. They have users of all ages, genders and of various background, experience and interests. There are also creative uses of these centres like vedio conferencing, surfing the nets etc. Students find it specially useful. The café will also have provision for xerox.

### Plant capacity:

Production per day at rated capacity	: 3000 hrs of netting (p.a.) 150000 pages xerox (p.a) 6000 pcs lamination (p.a)
Working days/year	: 300

### Raw materials:

Sl.No.	Particulars	Unit	Rate (Rs)	Amount (Rs) Per annum
1.	Papers of various sizes	625 reams	130/-	81,250
2.	Film rolls for lamination	500 rolls of various sizes	20/-	10,000
3.	Internet connection charges	4000 per month	--	48,000
4.	Misc. (Ink cartridge CSs etc.)	L.S	500/-	60,000
	<b>TOTAL</b>			<b>1,99,250</b>

### Machinery:

The major equipment required are –

Sl.No.	Particulars	Unit	Rate (Rs)	Amount (Rs) Per annum
1.	Multimedia Desktop Computer Including all accessories	8 Nos.	40,000	3,20,000
2.	Servers (Pentium III 1GHz, 128 MB PC, 133SD RAM, 20GB, ATA/100 HDD, 15" colour monitor	1 No.	20,000	20,000
3.	Scanner	1 No.	5,000	5,000
4.	Desk Jet Colour Printer	1 No.	5,000	5,000
5.	Xerox machine with accessories	1 No.	1,20,000	1,20,000
6.	Lamination machine	1 No.	10,000	10,000
	<b>TOTAL</b>			<b>4,80,000</b>

### Infrastructure:

The major infrastructural requirements are –

Covered Area	:	500 sq.ft.
Power	:	2 KW
Water	:	500 ltrs/day .

**Location:**

The suggested locations are –

Assam	:	Including Sikkim all state capitals of the N.E. region and district headquarters.
Meghalaya	:	
Nagaland	:	
Tripura	:	
Manipur	:	
Arunachal Pradesh	:	
Sikkim	:	

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 5,84,820 as follows. Of this, the project cost comprising fixed capital and margin money for working capital is Rs 5,62,187.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land building		Rented
Machinery		4,80,000
Miscellaneous fixed assets		50,000
Preliminary and pre-operative expenses		<u>20,000</u>
	<b>Total (A)</b>	<b><u>5,50,000</u></b>
<b>B. Working Capital:</b>		
Raw materials	½ month	10,000
Working expenses	1 month	<u>24,820</u>
	<b>Total (B)</b>	<b><u>34,820</u></b>
	<b>Total (A)+(B)</b>	<b><u>5,84,820</u></b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 22,633
Margin Money	.....	<u>Rs 12,187</u>
		<b><u>Rs 34,820</u></b>

**Means of Finance:**

Promoter's contribution (35%)	Rs 1,96,765
Term Loan (65%)	<u>Rs 3,65,422</u>
	<b><u>Rs 5,62,187</u></b>

**Operating Expenses:**

The annual operating expenses are estimated at Rs 4,78,294 as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials	1,99,250
2.	Repairing & maintenance	10,000
3.	Utilities	10,200
4.	Wages & Salaries	1,02,000
5.	Rent	24,000
6.	Other overheads	18,000
7.	Selling expenses @ 1%	10,440
8.	Interest on term loan	44,688
9.	Interest on Bank Finance for Working Capital	2,716
10.	Depreciation @10%	<u>48,000</u>
		<b><u>4,78,294</u></b>
	Operating Profit = Rs 3,01,706 p.a.	<b><u>=====</u></b>

**Sales Realization:**

Sl.No.	Particulars	Value (Rs)
1.	Internet browsing @ Rs 20/hr x 10 x 8 x 300 days	4,80,000
2.	Printing of documents @ Rs 6/ page	1,90,000
3.	Xerox @ Re 1/- x 500 pages per day x 300	1,50,000
4.	Lamination avg. 20 pieces @ Rs 10 x 300	60,000
	<b>TOTAL</b>	<b>7,80,000</b>

**Profitability :**

Based on the sales realization of Rs 7,80,000 and the operating expenses, the profit would be at Rs 4,78,294 the profit at rated capacity utilization would be Rs 3,01,706 per year. This works out to a return on investment of 38.68%. The plant will break even at 45.25% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 5,84,820
Promoter's contribution	:	Rs 1,92,500
Annual sales realization (70% cap.)	:	Rs 7,80,000
Annual operating expenses (70% cap.)	:	Rs 4,78,294
Annual profit (pre-tax)	:	Rs 3,01,706
Pre-tax Return on Sales	:	38.68%
Break Even Point	:	45.25%
No.of persons employed	:	3

**Suppliers of Machinery**

All tools and equipments are locally available.

## DESK TOP PUBLISHING

### Introduction:

Desk top publishing (DTP) unit is an electronic system used for composing texts, designing layouts, preparing design and data processing for printing. The DTP is an improvement over Photo Type Setting (PTS) and has several advantages in terms of cost efficiency, time efficiency and variety. With rapid improvements in printing technology, modern printing presses with offset machines find it appropriate to have processed text for their printing machines. A DTP unit can be set up independently and it is not essential to install offset printing press along with a DTP unit.

### Market Potential:

The potential for DTP is directly linked with the volume of printing activities and the awareness regarding the excellent quality of DTP material. For instance, the output of printed material comprising text books, journals, magazines, reports etc. in the State of Assam is placed at around Rs 520 lakhs per year. Based on a rate of Rs 600 per thousand printed pages the volume of output would correspond to about 865 lakhs printed pages per year. Assuming 15% of this quantity to be constituted by offset printing, the volume of offset printing material is estimated at 130 lakh pages per year. It may be assumed that the demand for DTP would be of the order of 10% of the total volume of offset printed material. On this basis, the demand for DTP printed material is estimated at about 13,00,000 pages per year. Considering the capacity of a typical tiny DTP unit as 12,000 pages per year there appears to be scope for setting up 100 such units in Assam. At present, there are 25 units in Guwahati and keeping this in view and the level of technology involved, there may be scope for additional 25 to 30 units in the State. Similarly, there would be scope for 1 to 2 DTP units in places like Shillong and Agartala.

### Target Output:

A typical unit would produce 12,000 pages per annum on the following basis:

No. of working days per annum	:	300 days
Output per day	:	40 pages
Output per annum	:	12000 pages

### Raw materials:

The major raw materials required are composing paper, bond paper, typewriter ribbon and printing ink. There is a wide choice of brands available in the market with regard to these materials. Typewriter ribbons would be of nylon/polyester material.

### Process:

The main process steps are –

- i) Preparing draft of the matter to be printing on computer word processor.
- ii) Checking/comparing drafted matter.
- iii) Correcting draft on computer screen.
- iv) Obtaining printout of material.

Depending on the software used there would be variation in processing speed, print quality, letter size etc.

### Equipment:

The main equipment required are –

- Multimedia Desk top Computer.
- Scanner
- Desk Jet coloured Printers
- Laser Jet coloured printers
- CD writer
- Networking
- Software : Microsoft office 2000,  
Abode Page Maker,  
Abode Photo Shop

**Suggested Location** : Major Centres of Assam, Meghalaya, Tripura, Gangtok & Dist. H.Q of Sikkim.

**Infrastructure:**

The main infrastructure facilities required are –

- i) Shed : 200 sq.ft.
- ii) Power : 3 KW

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 6.64 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 6.19 lakhs.

<b>A. Fixed Capital:</b>	<b>(Rs in lakh)</b>
Land building	Rented
Machinery	3.60
Software	1.40
Miscellaneous fixed assets	0.75
Preliminary and pre-operative expenses	<u>0.20</u>
<b>Total (A)</b>	<b>5.95</b>
	=====
<b>B. Working Capital:</b>	
Raw materials	1 month 0.04
Working expenses	1 month 0.15
Receivables	1 month <u>0.50</u>
<b>Total (B)</b>	<b>0.69</b>
	=====
<b>Total (A)+(B)</b>	<b>6.64</b>
Note: Working capital may be financed as:	
Bank Finance	..... Rs 0.45
Margin Money	..... <u>Rs 0.24</u>
	<b>Rs 0.69</b>
	=====
<b>Means of Finance:</b>	
Promoter's contribution (35%)	Rs 2.17
Term Loan (65%)	<u>Rs 4.02</u>
	<b>Rs 6.19</b>
	=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 3.30 lakh as given below:

		<b>(Rs)</b>
1.	Raw materials:	
	Composing paper 30 ream	
	@ Rs 560/ream	16,800
	Bond paper & computer sheet	
	50 ream @ Rs 140/ream	7,000
	Ribbon 30 Nos. @ Rs 180/ribbon	5,400
	Printing ink 30 litre @ Rs290/ltr.	8,700
	Other materials	5,600
2.	Utilities	23,040
3.	Wages & Salaries	1,01,000
4.	Rent	13,400
5.	Other overheads	50,000
6.	Selling expenses @ 2% on sales turnover	12,000
7.	Interest on term loan @ 12.50%	50,250

8.	Interest on Bank Finance for Working Capital@11%		8,300
9.	Depreciation @10% on machinery	-	<u>43,000</u>
			3,44,490
			=====
		<b>Say :</b>	<b>Rs 3.45 lakhs</b>

#### **Sales Realization:**

On the basis of a composing rate of Rs 50 per page, the annual sales realization for 12,000 pages would be Rs 6.00 lakh.

#### **Profitability:**

Based on the sales realization and the operating expenses, the profit at the annual production envisaged would be Rs 2.55 lakhs per annum. This works out a return on investment of 51%. This plant would break-even at about 34% targeted annual output.

#### **Highlights:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 5.28 lakhs
Promoter's contribution	:	Rs 1.69 lakhs
Annual sales realization	:	Rs 6.00 lakhs
Annual operating expenses	:	Rs 3.45 lakhs
Annual profit (pre-tax)	:	Rs 2.70 lakhs
Pre-tax Return on Sales	:	45%
Break Even Point	:	34%
No.of persons employed	:	3

#### **Suppliers of Machinery**

Air-Conditioner:

1. M/s Bluestar, Rajgarh Road, Guwahati.
2. M/s Voltas Ltd., GNB Road, Chandmari, Guwahati.

#### **DTP Hardware & Software:**

1. M/s Systems & Appliances, Dealer: Wipro Infotech Ltd., Near Meghdoot Cinema Halls, Paltan Bazar, Guwahati-8
2. M/s Hindustan Computers Ltd.(HCL), Ulubari, Guwahati.

## DIAGNOSTIC CENTRE

### INTRODUCTION

Health care is gaining increasing importance in recent years. The concept of health care is emerging from providing treatment to the diseased for improvement of overall health status and also maintenance of good health. In order to achieve the target of improving the health status of people in the country, tremendous efforts are required to be made not only by the government but also by the people.

### MARKET POTENTIAL

It is in this perspective that development of health care assumes significant importance. New challenges and new opportunities for investing in health care i.e. in hospitals, diagnostic centers and nursing homes etc. have arisen. Diagnostic centers have very good potential in upcoming cities, and towns of the North East.

A full fledged diagnostic center will provide a comprehensive range of services. the range of services are stated below:

- Ultrasound
- X-Ray
- EMG
- ECG, EEG Simple X-Ray/ Skiagrams
- Special X-Ray
- Ultrasonography
- Pathological Tests

### MACHINERY AND EQUIPMENT

Spiral CT Scanner  
Advanced MRI,  
Ultrasound  
X-Ray with image intensifier  
Advanced Cardiac cath lab.  
EEG, ECG, LFT, EMG, Endoscopes,  
Pathology lab items including auto-analyzer and other sundry equipment.

### INFRASTRUCTURE

The major infrastructural requirements are :

Building	...	1000 Sq.ft.
Power	...	30 KW
Water	...	2000 litres/Day

### LOCATION

This unit can be set up at any urban place in NER including Sikkim having all the required infrastructure.

### TOTAL CAPITAL REQUIREMENT

The project cost comprising fixed capital and margin money on working capital is Rs. 26.42 lakhs.

		( Rs. In lakh)
<b>A.</b>	<b>Fixed Capital:</b>	
	Land and Building	5.46
	Plant and equipment	16.40
	Miscellaneous fixed assets	3.00
	Preliminary and pre-operative expenses	<u>1.25</u>
	<b>Total (A) :</b>	<b><u>26.11</u></b>



## B. Working Capital:

Consumables & stores	3 month	0.60
Finished goods	7 Days	0.13
Working expenses	1 month	0.17
Receivables	10 Days	0.33

**Total (B)** 1.23

Note: Working capital may be financed as:

Bank Finance	...	Rs. 0.92 lakh
Margin Money	...	Rs. 0.31 lakh

**Rs. 1.23 lakh**

## MEANS OF FINANCE

The project cost of Rs. 26.42 lakhs including margin money for working capital may be financed as under :

Promoter's Contribution(35%)	...	Rs. 9.25 lakh
Term Loan (65%)	...	Rs. 17.17 lakh

**Rs. 26.42 lakh**

## OPERATING EXPENSES

The annual operating expenses are estimated at Rs. 7.72 lakhs as given below:

	(Rs. In lakhs)
1. Consumables, stores and spares	2.40
2. Utilities	0.50
3. Wages & Salaries	1.00
4. Other overheads	0.20
5. Selling expenses @ 2% on annual sales	0.20
6. Interest	1.82
7. Depreciation @ 10%	1.60

Total: 7.72

## SALES REALISATION

The income of a diagnostic center may be as follows:

Total working days	:	300 Days
1. Assuming 100 days earning @ Rs.4000/day	:	Rs. 4.00 lakhs
2. 150 days earning @ Rs.3000/day	:	Rs. 4.50 lakhs
3. 50 days @ Rs.2500/-	:	Rs. 1.25 lakh

**Total: Rs. 9.75 lakhs**

## PROFITABILITY

Based on the sales realization and the operating expenses, the profit at 100% capacity utilization would be Rs. 2.03 lakhs per year. This works out to a return on investment of 4%. The unit will break even at about 55% of the rated capacity.

## HIGHLIGHTS

The major highlights of the project are as follows:

Total Capital Requirement	Rs. 26.42 lakhs
Promoter's contribution	Rs. 9.25 lakh
Annual Sales realization	Rs. 9.75 lakhs
Annual operating expenses	Rs. 7.72 lakhs
Annual profit (pre-tax)	Rs. 2.03 lakhs
Annual Pre-tax return on sales	21%
Break-Even Point	55%
No. of persons employed	5

## MACHINERY SUPPLIERS

1. M/s. Indo Foreign Surgico,  
Panbazar,  
Guwahati (Assam)
2. M/s. Assam Surgicals Pvt. Ltd.  
Panbazar,  
Guwahati-781001

## DIGITAL PHOTOGRAPHY/COLOUR PHOTO PROCESSING/VIDEOGRAPHY & EDITING

### Introduction:

Photography was first invented in the 1840s, it could only record black and white images. The search for colour was a long and arduous process, and a lot of hand coloring went on in the interim, one major breakthrough was James Clerk Maxwell's 1860 discovery that color photographs could be created using black and white film and red, blue, and green filters. Colors in a photographic image are usually based on the three primary colors red, green, and blue (RGB).

The word digital has been derived from the Latin term 'digitus'- meaning finger. The word digital was formerly used for the act of counting on the finger. The invention of digital camera has revolutionized the field of photography by eliminating the tedious procedure of loading films and print development. The thrill of instant gratification in seeing and showing pictures immediately after clicking them far exceeds the pleasure of reel photography. More and more people are now able to take up photography as a profession, because of the user friendliness of digital cameras.

### About Services:

Digital Photography is an image that can be viewed on a computer screen, it is a process of recording images using a digital camera or a conventional camera with a digital adapter, it records on a disk or on a microchip which can be downloaded directly to a computer in tiff or in picture format. It is interesting to see how digital cameras work. A digital camera is often defined, as an electronic gadget, which is used to encode an image. It stores photographs in the form of digital data. The digital images, which are encoded by this kind of a camera, can also be stored to make copies at a later point of time. Digital data can be understood as a bank of still images, which are captured and stored by the camera.

A digital camera does not require a roll of film. One does not need to buy the film, snap up pictures, and then wait for the studio to develop the rolls.

A digital camera stores images on an internal memory chip, removable personal computer (PC) cards, or other digital media. The images can be transferred electronically to a computer for manipulation, emailing or Web site creation, or can be printed through a printer.

The built-in storage chip called 'Flash Memory' in an amateur digital camera has a capacity of 2MB, 4MB or 6MB, and can store 50 to 100 small resolution pictures. There are memory chips of various capacities too. For instance, a 64 MB chip can store around 300 pictures that can be printed in the size of an Indian postal card.

### Market Potential:

Digital technology has revolutionized the world of photography in recent years. A digital camera is a modern electronic device. The attractive features of digital camera, in addition to affordability, are driving the digital photography market in India.

### Services & Capacity (per annum):

The services and capacity of the proposed unit has been estimated as under:

Services	Nos.	Turnover (Rs.)
Digital Photography	30000 Pictures	15,00,000
Videography & editing	100 events (marriage/ birthday/ other functions)	8,00,000
Colour Processing Studio (developing/ Printing etc.)	15000 film roll	27,00,000
Total Annual Turn over		50,00,000

**Basis:**

No. of working days:	300 days per year
No. of Shifts:	one per day
One shift:	10 hours

**Infrastructure Requirement:**

The main Infrastructure facilities required are:

Laboratory Room:	300 sq.ft.
Front counter cum Office:	150 sq.ft.
Editing Room:	200 sq.ft.
Power requirement:	10 KW
Fuel for D.G.Set	1800 ltrs.
Water	general purpose

**Raw Materials/consumables:**

The main raw materials for this typical unit are:

1. Colour films of various qualities	3000 nos.	Rs. 3,00,000
2. Colour paper roll	600 nos.	Rs. 21,00,00
3. Chemicals for paper	20 ltrs.	Rs. 24,000
c)a RA Developer		
c)b RA Bleach Fixer		
c)c RA Stabilizer		
4. Chemicals for paper		
c)a RA Developer	30 ltrs.	Rs. 55,000
c)b RA Bleach	30 ltrs.	Rs. 67,500
c) RA fixer	30 ltrs.	Rs. 14,000
d) RA Stabilizer	30 ltrs.	Rs. 5,500
5. Computer disk & others	L.S	Rs. 10,000
		<u>Rs 26,76,000</u>

**Process:**

The digital photograph is a very interesting to understand the whole digital photography process. Digital cameras are very much like all earlier cameras. Beginning with the very first camera all have been basically black boxes with a lens to gather the light, a wheel to be turned to focus the image, an aperture that determines how bright the light is, and a shutter that determines how long the light enters.

Using a digital camera to electronically capture and produce image using a charge-coupled device (CCD). Scanners, software, computers and printers are used together with a camera to produce the finished image. Digital camera record images electronically and store them as an electronic film that is often manipulated later in a software program. A photographic method that stores the image digitally for later reproduction.

While taking a picture the shutter opens briefly and each pixel on the image sensor records the brightness of the light that falls on it by accumulating an electrical charge. The more light that hits a pixel, the higher the charge it records. Pixels capturing light from highlights in the scene will have high charges. Those capturing light from shadows will have low charges.

After the shutter closes to end the exposure, the charge from each pixel is measured and converted into a digital number. This series of numbers is then used to reconstruct the image by setting the color and brightness of matching pixels on the screen or printed page.

**Suggested Location:**

The typical unit may be set up in all the state capital cities, big towns and district towns of Northeastern region including Sikkim Such unit can also be set up in major urban centers preferable in Market area or tourist centers.

## PROJECT ECONOMICS

The total capital requirement estimated is Rs. 24.75 Lakhs as given below:

<b>A. Fixed Capital:</b>	<b>Rupees</b>
Land 1000 sq.ft.	Own/lease
Building/Civil Works	
a.) Laboratory Room 300 sq.ft. @ Rs. 800/sq.ft.	2,40,000
b.) Front counter cum Office 150 sq. ft. @ Rs 800/ sq.ft.	1,20,000
c.) Editing Room/Store 200 sq. ft. @ Rs. 700/sq.ft.	1,40,000
Plant and Machinery	10,12,000
Miscellaneous Fixed Assets & Other equipments (Interior decoration, venal flooring. Electrical fittings air conditioning, furniture & Fixture, office equipment)	3,50,000
Preliminary and pre-operative expenses	<u>1,00,000</u>
	<u>19,62,000</u>

<b>B. Working Capital:</b>	<b>(Norms)</b>	<b>(Rupees)</b>
Raw Materials/Consumables	1 month	2,23,000
Working Expenses	1 month	65,000
Finished Goods	5 days	58,000
Receivables	10 days	<u>1,67,000</u>
		<u>5,13,000</u>

Note: Working capital to be financed as:-

Margin Money:	1,98,000
Bank Finance:	3,15,000

Cost of the project including margin money for wc: Rs21.60 lakh

<b>Means of Finance:</b>	<b>(Rupees)</b>
Promoter's Equity(25%)	5,40,000
Term Loan (75%)	<u>16,20,000</u>
	<b><u>21,60,000</u></b>

<b>Operating Expenses:</b>	<b>(Rupees)</b>
Raw Materials/Consumables	26,76,000
Wages & Salaries	6,34,000
Utilities	1,45,500
Repair & Maintenance	30,000
Administrative Overheads	50,000
Selling Expenses 5% on sales	2,50,000
Depreciation	1,62,000
Interest	<u>2,60,000</u>
	<u>42,07,500</u>
	Say Rs 42.08 lakhs

### Profitability:

Based on the sales Turn over and the production Expenses, the profit would be Rs. 7.92 Lakhs per year. This works out to a return on capital investment of 35 %. The Unit would break-even at about 50 % of the rated capacity.

**Break Even Analysis:**

F. Variable Cost:	(Rupees)
Raw Materials/Consumables	26,76,000
Utilities	1,45,500
Selling Expenses	<u>2,50,000</u>
	<u>30,71,500</u>
G. Semi-Variable Cost:	(Rupees)
Wages & Salaries	6,34,000
Repair & Maintenance	30,000
Administrative Overheads	50,000
Depreciation	1,62,000
Interest	<u>2,60,000</u>
	<u>11,36,000</u>
H. Sales Turnover:	50,00,000
I. Contribution:	19,28,500
J. Break Even Point:	59%

**Manpower Requirement:**

Personnel	Nos.	Salary per person (Rs.)	Salary Bill (Rs)
Laboratory Technician	1	7000	7000
Laboratory Assistant	2	6000	12000
Video Operators/Photographers	2	5000	10000
Marketing Personal	1	5000	5000
Receptionist cum Accounts	1	6000	6000
Manager & Store	1	8000	8000
			<u>48,000</u>

Salary Bill Rs. 5.76 Lakhs + Benefits @ 10% annually i.e. Rs. 0.58 Lakhs

**Total Annual Salary Bill: Rs. 6.34 Lakhs**

**Plant & Machinery:**

Particular	Qty. Nos	(Rupees)
OCL 6001(RA 4 Chemistry) integrated printer processor to make 5 x 3.5" prints from 35 mm negative with following standard accessories (W/O lens) waterless system	1	3,70,000
Negative Carrier for 135 DF	1	
Paper Magazine	1	
Halogen Lamp	1	
Spare parts kit	1	
Lens 50 mm for 135-5R with adaptor	1	
Computer with Digital Printer complete sets	2 sets.	1,00,000
Digital Camera 64 MB chip	2 sets.	35,000
Heavy duty handy Cam	2 sets.	80,000
Editing M/C	1 set.	60,000
12 Volts Dry and uncharged battery with leads	1 set.	8,500
Antivibration mounting Pad	1 set	3,500
Sub-total		<b>6,57,000</b>
Add, Sales Tax, Forwarding charge, Fright charge etc. @ 20%		1,31,000
KIRLOSKAR make 20 KVA Diesel Gen Set ( Type RV-3PG, 28 HP at 1500 RPM) including all tax & others	1	2,24,000
<b>Total Rs.</b>		<b>10,12,000</b>

**Utilities:**

## 2. Power:-

For Machine	8 KW
For other purpose	<u>2 KW</u>
	<u>10 KW</u>

10 KW X 5 effective working hours X 300days X 5.50 = Rs. 82,500

## Fuel (diesel Oil):-

Per day requirement of Diesel oil	6 ltrs.
Annual Requirement of Diesel oil	1800 ltrs.

Annual expenditure(1800 ltrs. X 35.00) = Rs. 63,000

**Total utilities Rs. 1,45,500**

**Highlights:**

The Major highlights of the project are as follows:

Total Capital Requirement	Rs. 22.77 Lakhs
Promoter's Contribution	Rs. 5.77 Lakhs
Annual Sales Realization	Rs. 50.00 Lakhs
Annual Operating Expenses	Rs. 42.08 Lakhs
Annual Profit	Rs. 7.92 Lakhs
Return on Sales	16%
Break-even Point	59%
No. of person employed	8

## DRY CLEANING UNIT/LAUNDRY

### Introduction

With the growth of Urbanization, washing of cloths has turned out to be a commercial proposition and led to the establishment of modern dry cleaning units in the cities as well in big towns. The services of these units are very prompt and efficient. The occupation includes all types of cleaning, dyeing, bleaching and dry cleaning. The occupation has changed with the passage of time.

The laundering services in the past were rendered by *dhobis* who used to collect clothes, wash and iron them and deliver the clothes back to their customers. Nowadays the customers themselves go to deliver and collect clothes.

### About Services

People of today are very particular about their dress material, furnishing, linen etc, People prefer to wear and use expensive and well cleaned and ironed dress materials. Furnishing, linen etc. especially during public appearances. This has opened the scope for Dry Cleaning units.

Dry Cleaning unit is servicing industry. The process of conventional cleaning, prevailing in nook and corner of cities and towns is slowly refused by people and Dry Cleaning process is preferred instead. Disadvantage in conventional cleaning, like river or well cleaning causes damage to expensive synthetic dress material and furnishings.

### Market Potential

Developments taking in all spheres of human life have an effect on the cleanliness and decency of dress materials and other linen also. Lack of time and other factors has make people to get their dress, furnishing and linen materials washed and ironed in dry cleaners. Easy in removing strains, get original looking of repairing of turned cloths and smooth ironing in dry cleaning system are the desired aspect of mechanized dry cleaning.

Most people don't think about how their clothes are going to be cleaned when they drop them off at a neighborhood dry cleaner. They are only interested in receiving professionally cleaned and pressed clothing, at a reasonable price, within a short amount of time.

In cities and town of northeast India, the fashion & style and way of life are, like other parts of the country, cleaning fast and equally the dependence on service base industries is also growing.

### Suggested Capacity:

The proposed dry cleaning unit all kind of dress and furnishing will be washed dried and ironed without damaging its colour, shed or embroidery works. The dry cleaning services per annum will be as follows:

Cleaning and pressing per day:	100 KG
Cleaning and pressing per annum:	30,000 KG
Miscellaneous job (annually) like-	
colour dyeing:	300 Pcs.
patch repairing:	1,000 Pcs.
polishing	2,000 Pcs.

#### Basis:-

No. of working days	=	300 days per year
No. of Shifts	=	1 per day.
One shift	=	10 hours



**Infrastructure Requirement:**

The main Infrastructure facilities required are:

Required area:	500 Sq.ft.
Power requirement	5 kw.
Water (required in every working day)	6-7 KL of water

**Raw Materials and its availability:**

The typical unit being a service industry, the amount required for working materials is negligible. The main requirement are washing powder and cake soap, petrol, stain-removing chemicals, sewing threads and packaging materials. Total annual requirement is calculated at Rs. 0.50 lakh. All material & consumable items can be procured from local agencies in the open market.

**Suggested Location:**

Modern dry cleaning units can be located in the cities, big towns and as well as in large urban areas preferably near main marketing center in northeastern states, including Sikkim.

**Services/Process**

Services: Cleaning, Pressing, dyeing, bleaching, dry cleaning, patch repairing and polishing.

Process: A dry cleaning process in which the garments are cleaned by immersion in a solvent in one machine and physically transferred to another piece of equipment for drying. During the transfer, the opportunity exists for release of solvents to the work environment.

The process for cleaning sensitive textiles (i.e., wool, silk rayon, linen) and removing certain stains and dust by skilled professionals using water, detergents and additives to minimize the potential for adverse effects. Appropriate drying and restorative finishing procedures follow this process. Until recent years, this term involved primarily very skilled hand processing.

**PROJECT ECONOMICS**

The total capital requirement estimated is Rs.12.92 lakhs as given below: -

A. Fixed Capital		<b>(Amount Rs. in lakhs)</b>	
<b>Land &amp; Building</b>		Own/Lease	
<b>Civil Works</b>			
i.)	Counter/Store		2.80
ii.)	Built up of working shed 150 Sq. Ft.		1.10
	<b>Plant &amp; equipments</b>		5.00
	<b>Other misc. Fixed Assets</b>		
	(Water arrangement/Overhead-Reservoir/Pump-set		
	Water & Electrical fittings/Other Equipments)		1.20
	<b>Preliminary &amp; Pre-operative Expenses</b>		<u>0.50</u>
		Sub Total (A) Rs.	<u>10.60</u>
<b>B. Working Capital</b>			
		(Norms)	(Amount Rs. in lakhs)
Raw Materials/Consumables	2 months		1.00
Working Expenses	1 month		0.33
Finished Goods	10 days		0.17
Receivable	25 days		<u>0.82</u>
		Sub Total (B) Rs.	<u>2.32</u>

Note: Working Capital to be financed as:-

Margin Money:	Rs. 0.92
Bank Finance:	<u>Rs. 1.40</u>
	<u>Rs. 2.32</u>

**Means of Finance**

(Rs. in Lakhs)

Promoter's Equity(25%)	2.88
Term Loan(75%)	<u>8.64</u>
	<u>Rs.11.52</u>

**Production Expenses**

(Rs. in Lakhs)

Raw materials/consumables	0.50
Wages & Salaries	3.17
Utilities	0.74
Repair & Maintenance	0.12
Administrative Overhead	0.20
Selling expenses 5% on sales	0.49
Depreciation	0.40
Interest	<u>1.14</u>
	<u>6.76</u>

**Profitability:**

Based on the sales Turnover and the operating expenses, the profit would be Rs. 3.04 lakhs per year. This works out to a return on capital investment of 14%. The unit would break-even at about 41% of the rated capacity.

**Raw Materials/Consumables**

Items	Quantity	Amount (Rs.)
Washing Powder	250 KG	12,000
Petrol	500 Ltr.	23,000
Misc. Soap Cake, Chemicals, threads, stationeries, packing materials and others.	L.S.	15,000

**Plant & Machinery**

Plant & Machinery	No. Required	H.P. required	Amount in Rs.
Heavy duty Washing Machine	1	2 H.P.	96,000
Hydro Extractor	1	2 H.P.	60,000
Dry Cleaning Machine with motor	1	-	1,20,000
Drying Tumbler	1	4 H.P.	1,22,000
Pressing Machine	1	1 H.P.	28,000
Hand irons	5	-	3,000
Misc. equipments	L.S.		5,000
Add.15% towards tax, freights insurance. etc.			65,000
<b>Total Rs.</b>			<b>4,99,000</b>
Say Rs. 5.00 Lakhs			

**Raw Materials/Consumables**

Items	Quantity	Amount (Rs.)
Washing Powder	250 KG	12,000
Petrol	500 Ltr.	23,000
Misc. Soap Cake, Chemicals, threads, stationeries, packing materials and others.	L.S.	15,000

**Utilities:****Power Requirement:**

For Plant & Machinery	10 H.P.
For General Lighting	<u>2 H.P.</u>
<b>Total</b>	<b><u>12 H.P.</u></b>

**Annual power consumption:**

12 H.P. X 0.746 X 5 hrs.X 300 days.X Rs5.50  
Annual Electric Bill Rs.= 74,000

**Sales Turnover:**

Services	Annual services (pcs.)	Annual Turn Over (Rs. in Lakhs)
1. Cleaning and pressing	30,000 KG	6.00
2. Miscellaneous job like- colour dying: patch repairing: polishing	300 Pcs 1,000 Pcs. 3,000 Pcs.	0.30 0.50 3.00
<b>Total Rs.</b>		<b>9.80</b>

**Break Even Analysis****A. Variable Cost:**

	(Rs. in Lakhs)
Raw Materials/Consumables	0.50
Utilities	0.74
Selling Expenses	<u>0.49</u>
	<u>1.73</u>

**B. Semi-Variable Cost:**

	(Rs. in Lakhs)
Wages & Salaries	3.17
Repair & Maintenance	0.12
Administrative Overhead	0.20
Depreciation	0.40
Interest	<u>1.14</u>
	<u>5.03</u>

C. Sales Turnover:	Rs. 9.80 Lakhs
D. Contribution:	Rs. 8.07 Lakhs
E. Break Even Point B/D X 100%	62%

**Manpower:**

Category	No. of Person	Salary Per Person Per Month(Rs)	Monthly Salary Bill (Rs.)
a) Manager	1	6,000	6,000
b) Technician/ Skilled Worker	2	5,000	10,000
c) Semi skilled workers	2	4,000	8,000
<b>Total Manpower cost Rs.</b>			<b>24,000</b>

Salary Bill Rs 2.88 Lakhs + Benefits @10% annually i.e. Rs 0.29

**Total Annual Salary Bill: Rs. 3.17**

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs. 12.92 lakhs
Promoter's contribution	Rs. 2.90 lakhs
Annual Sales realization	Rs. 9.80 lakhs
Annual Operating Expenses	Rs. 6.76 lakhs
Annual Profit	Rs. 3.04 lakhs
Return on sales	31%
Break-even point	62%
No. of person employed	

## ELECTRICAL APPLIANCES REPAIRING AND SERVICING UNIT

### Introduction:

Consumer electrical & electronic products such as Air-conditioner, Refrigerator, Washing machine, Water filter, electric fan etc. has become the back bone of the consumer industry in the modern living society. To-day Air-conditioner, Refrigerator, Washing machine, Water filter, electric fan etc. have become a common item in every upper middle class and middle class families. The demand for these consumer durables have reached an all time high. These appliances are very often prone to faults for which servicing and repairing is required.

### About the service:

Air-conditioner, Refrigerator, Washing machine, Water filter, electric fan etc. have become very popular. These are used in Offices, Showrooms, Houses, and Hotels etc. Now - a - days, not only human beings but Machines, Computers, & Processors also require conditioned air for proper functioning e.g. CNC Machines, Testing Labs, Calibration Centre etc. The demand of Air Conditioners has emerged, in a big way.

### Market Potential:

Large Companies like Samsung, Voltas. Shri Ram, Carrier Aircon, Llyods, Jainson, L.G., Videocon, and Godrej etc. are doing very good business in Air-conditioning, Refrigeration, Washing machine, Water filter of different capacity. As the society is moving towards materialism and a lot of emphasis is put on purchasing modern utilities/amenities and domestic appliances with maximum facilities, the demand for servicing and repairing is bound to increase in times to come. Therefore, there is good demand for servicing and repairing unit in cities & towns.

### Production Capacity (per annum):

The capacity of the proposed unit has been estimated as under:

Services	Nos.	Charges per unit	Revenue Turnover
Air-conditioner servicing & Repairing (complete)	200	3000	6,00,000
Air-conditioner (annual maintenance)	500	1000	5,00,000
Refrigerator (major)	200	2000	4,00,000
Refrigerator (minor)	400	600	2,40,000
Washing machine (major)	100	800	80,000
Washing machine (minor)	200	400	50,000
Water ginger (major)	150	400	60,000
Water ginger (minor)	200	900	1,80,000
Electric fan	200	400	80,000
Annual Turn over Rs.			21,90,000

### Basis:

No. of working days: 300 days per year  
No. of Shifts: one per day  
One shift: 8-10 hours

### Infrastructure Requirement:

The main Infrastructure facilities required are:

Required area: 600 sq.ft.  
Power requirement: 5 KW (250 volt)  
Water required for servicing: 3 K.Ltrs. per day

**Raw Materials/consumables:**

Basic Raw Materials for typical Servicing units are Compressor, G.I. Sheet, Fan Motor, Blower, Condenser Fan, Starting Capacitor, Running Capacitor, Wires, Relay Knob, Switch, Plastic Grill, F-22/134 A Gas, thermo set switch, relay, bulb, holder, bulb switch, copper wire, motor of different capacity for washing machine, buffer, gearbox, timer switch, welding rods, paints etc.

**Suggested Location:**

Air-conditioner, Refrigerator, Washing machine, Water filter, electric fan repairing and servicing unit can be set up in all important cities and towns of northeastern region, including Sikkim such unit preferably should locate nearby market area.

**Various service steps:**

The main services involved in this typical servicing units are:

- 1) Testing & maintenance
- 2) Fault finding
- 3) Repairing & Servicing
- 4) Fabrication & Welding
- 5) Painting
- 6) Assembling
- 7) Charging of Gas
- 8) Final Testing.

**PROJECT ECONOMICS**

The total capital requirement estimated is Rs. 11.75 Lakhs as given below:

<b>C. Fixed Capital:</b>	<b><u>Rupees</u></b>	
Land 1000 sq.ft.	Own/lease	
Building/Civil Works		
a.) Working shed 400 sq.ft. @ Rs. 700/sq.ft.	2,80,000	
b.) Office cum store 200 sq. ft. @ Rs 700/ sq.ft.	1,40,000	
c) Water supply/ pump set/Overhead tank/ water pipe lining/Toilet& Septic tank etc.	1,80,000	
Plant and Machinery	2,20,000	
Miscellaneous Fixed Assets & Other equipments	80,000	
Preliminary and pre-operative expenses	- <u>60,000</u>	
	<u>9,60,000</u>	
<b>D. Working Capital:</b>		
	<b>(Norms)</b>	<b>(Rupees)</b>
Raw Materials/Consumables	1 month	72,000
Working Expenses	1 month	44,000
Finished Goods	5 days	26,000
Receivables	10 days	<u>73,000</u>
		<u>2,15,000</u>

Note: Working capital to be financed as:-

Margin Money	:	95,000
Bank Finance	:	1,20,000

**Means of Finance:**

	<b>(Rupees)</b>
Promoter's Equity (25%)	2,65,000
Term Loan(75%)	<u>7,90,000</u>
	<b><u>10,55,000</u></b>

**Operating Expenses:**

	<b>(Rupees)</b>
Raw Materials/Consumables	8,64,000
Wages & Salaries	4,75,000
Utilities	50,000
Repair & Maintenance	20,000
Administrative Overheads	40,000
Selling Expenses 10% on sales	2,19,000
Depreciation	60,000
Interest	<u>1,17,000</u>
	<b><u>18,45,000</u></b>

**Profitability:**

Based on the sales turn over and the production expenses, the profit would be Rs. 3.45 Lakhs per year. This works out to a return on capital investment of 29%. The Unit would break-even at about 67% of the rated capacity.

**Break Even Analysis:**

K.	Variable Cost:	(Rupees)
	Raw Materials/Consumables	8,64,000
	Utilities	50,000
	Selling Expenses	<u>2,19,000</u>
		<b><u>11,33,000</u></b>
L.	Semi-Variable Cost:(Rupees)	
	Wages & Salaries	4,75,000
	Repair & Maintenance	20,000
	Administrative Overheads	40,000
	Depreciation	60,000
	Interest	<u>1,17,000</u>
		<b><u>7,12,000</u></b>
M.	Sales Turnover:	21,90,000
N.	Contribution:	10,57,000
O.	Break Even Point:	67%

**Manpower Requirement:**

Personnel	Nos.	Salary per person (Rs.)	Salary Bill (Rs)
Supervisor (Technical)	1	8000	8000
Skilled Workers (Technical)	2	7000	14000
Helper	2	4000	8000
Accounts cum Store	1	6000	6000
Total Rs.			36,000

Salary Bill Rs. 4.32 Lakhs + Benefits @ 10% annually i.e. Rs. 0.43

**Total Annual Salary Bill: Rs. 4.75**

### Plant & Machinery:

Gas Welding Set, Painting Machine, Painting gun, Gas Cylinder, Gas charging Pipe, Switching Tools set, Flying tools set, Drilling Machine, Charging volt, Copper Pipe, Signal Generator, Pattern Generator, Soldering iron, AMP meter, Multi meter, Pressure Meter, Earth Meter, Frequency meter, Voltage Stabilizer, Digital Tachometer, Electronic Insulation Tester, Miscellaneous tools & equipments.

### Utilities:

3. Power:-

For Machine	4 KW
For other purpose	<u>1 KW</u>
	<u>5 KW</u>
5 KW X 6 effective working hours X 300days X 5.50	
	= Rs. 49,500
	<b>say Rs. 50,000</b>

### Highlights:

The Major highlights of the project are as follows:

Total Capital Requirement	Rs. 11.75 Lakhs
Promoter's Contribution	Rs. 2.65 Lakhs
Annual Sales Realization	Rs. 21.90 Lakhs
Annual Operating Expenses	Rs. 18.45 Lakhs
Annual Profit	Rs. 3.45 Lakhs
Return on Sales	16%
Break-even Point	67%
No. of person employed	6

### Address of Machinery Suppliers:

1. M/s. Fridge Tools  
Darya Ganj,  
Delhi – 110002
2. M/s. Avery India Ltd.  
Plot No. 50-59,  
Sector - 25, Ballabhgarh,  
Faridabad – 121004
3. M/s. Henco Corporation  
P.B. No. 1645, 308,  
Perin Nariman Street,  
Behind Reserve Bank,  
Fort, Mumbai – 400001
4. M/s. Parekh Machine Tools  
5, Khetra Das Lane,  
Beside Broadway Hotel,  
Kolkata – 700012

## ELECTRICAL PANEL BOARD AND ROOF TRUSSES

### Introduction:

Control panels are used to regulate functioning of electrical equipment. Electrical panels fitted with necessary relays are also used to protect electrical equipment from being damaged due to short circuit and over-loading. Light roof trusses are required for construction of ware-houses, community hall and light Industrial Sheds. These two fabricated items are widely used in engineering and construction industry.

### Market Potential:

The control panels are enclosures fabricated out of sheet metal which can be open, semi-enclosed or totally enclosed type. They direct and control electric power to equipment and appliances. Provision for indicating the parameters like voltage, current, frequency & PF will be available on the face of the panel. Regulation of the power supply is also possible with the help of switches/circuit breakers. Panel boards are mainly purchased by the Electricity Boards and large corporations like NEEPCO, Public Health Engineering Department as well as large factories. The purchases of the electricity boards are substantial, for instance, the electrical department of the State PWD in Arunachal Pradesh purchases LT panel boards to the tune of about Rs. 5.2 lakhs per month. Similarly, the Assam Electricity Board also requires panel boards worth Rs 10 lakhs per month. Panel boards required for high voltage applications are manufactured by leading companies like L&T, English Electric and Bharat Heavy Electricals Ltd. LT panel boards can be manufactured in tiny/small scale units. Such units basically procure the instruments and assemble the panel boards in their factories. In Guwahati, which is the premier city in the north-east, there are only 3 or 4 panel board manufacturers. Substantial portion of demand for LT panel Boards is being met from other states. The demand for panel boards in the north-east is placed at around Rs 450 lakhs per annum. Based on an average price of Rs 42,000 per panel board, and a capacity to produce 60 panels per annum, there is scope for more than 15 units to come up in the region.

For a typical light industrial shed of size 100' x 30' the requirement of roof trusses is estimated at 6000 kg. Assuming the total construction volume of 3 lakhs sq.m. per year of light industrial sheds, the demand for light roof trusses is estimated at about 6000 MT. On this basis, there is scope for 100 units with a capacity to fabricate 60 tonne of trusses. There are about 30 small units fabricating light roof trusses in Assam, and 1 or 2 units in other States of the north-east. Assuming a safety factor of 75%, there is scope for another 15 units to be set up for fabrication of light trusses. Hence, there exists scope for 10 composite units manufacturing both panel boards and roof trusses.

The panel boards and trusses are usually demanded together by the buyers like Electricity Boards and SIDCs. Hence, unit with capabilities to fabricate both thick and thin sections is being suggested.

### Target Production:

The annual production of typical unit is envisaged as follows:

No.of Electrical panel boards	:	60
(Control panels, power distribution		
Units, motor control centres, D.G. Set		
Panel, AMF panel etc.)		
Roof trusses	:	60

### Raw Materials:

The major raw materials required are:

- Cold rolled steel sheets of 2mm to 3mm thickness
- M.S. angles and flats
- Aluminium/copper bus bars, fittings etc.
- Door hinges, nuts and bolts, handles,
- Electrical instruments
- M.S. Tubes/pipes

The annual requirement of materials for manufacturing each units are as under:



**A. For Panel Boards**

	Quantity
a) Materials C.R. Sheets (2mm to 3mm thickness)	2.00 MT
b) Angles, flats etc. (Mild steel) (assorted size like 25mm x 25mm x 3mm and 35mm x 35mm x 4mm sizes etc.) (Considering 2% process loss) Fittings etc. bars,	0.50 MT      60 sets. Aluminium/copper bus
c) Misc. electrical fittings and Metering etc. as per order and specifications like –	
- 0-500 V Voltmeter	60 Nos
- 0-500 Amps Ammeter	60 Nos.
- Voltmeter rotary switch	60 Nos.
- Ammeter rotary switch	60 Nos.
- Electric starter	60 Nos.
- Single phase preventor	60 Nos.
- Isolator	60 Nos.
- Starter push button	120 Nos.
- Energy meter	60 Nos.
- Current transformer and potential Transformer	120 Nos.
- Relay (thermal overload, high Voltage, high current)	60 Nos.
d) MCCB (Moulded Case Circuit Breaker)	60 Sets.
e) Indicating lamps, Kit kat and other minor parts, wiring and equipments like triple pole fuse base with fuses etc.	60 sets
f) Other misc. spare parts and equipment	60 sets

**B. For Roof Trusses and other Tubular Structures:**

a) Black steel pipe (dia 30mm to 50mm)	30 MT
b) Plates, flats, angles, channels etc. (of assorted sizes) (Considering 5% process loss)	33 MT
c) Other misc. fittings like nuts and bolts and consumables like electrodes, paint, oxygen and acetylene gasses etc.	

**Process:**

The main process steps in fabrication of steel items are –

1. Measuring or marking as per specifications.
2. Cutting, drilling, pressing, bending as per specification.
3. Welding
4. Assembling the parts, testing and finishing.
5. Painting
6. Fittings of accessories as per specifications

## 7. Machinery:

The major equipment required are –

Particulars	Quantity
i) Arc welding set complete with all accessories 330/440 volts 350 Amp (7KW)	1 set
ii) Gas welding set with all accessories	1 set
iii) Gas cylinder rebits (spare)	2 Nos.
iv) Piller drill machine (25mm size) complete with 1 HP motor, pulley V-belt etc.	1 No.
v) Power hacksaw (150mm size) with 1 HP motor, starter and main Switch extra.	1 each
vi) Hand drill (12mm size) 100 watts	1 No.
vii) Sheering machine (300mm size) manual	1 No.
viii) Chain pulley block 2 tonne capacity	1 set
ix) Hydraulic pipe bending machine (50mm capacity) with die	1 No.

Particulars	Quantity
x) Table vice (No.6)	1 No.
xi) Sheet bending machine (7 size) manual	1 No.
xii) Spray painting equipment with compressor and spray gun and other misc. equipment with 1 HP motor.	1 No.
xiii) Misc. hand tools (set)	2 sets

### Infrastructure:

Land (with shed)	3500 sq.ft.
Power	20 KW

### Location:

The market for the products is mainly the construction and engineering industry. Units located to areas where industrial projects are likely to come up would be appropriate. Accordingly, the following locations are suggested:

Assam	:	Guwahati, Jorhat, Tezpur
Meghalaya	:	Shillong, Jowai
Arunachal Pradesh	:	Pasighat, Itanagar
Manipur	:	Imphal, Thoubal
Tripura	:	Dharmanagar, Agartala
Nagaland	:	Dimapur, Kohima
Mizoram	:	Aizawl, Kolasib.

### Total Capital Requirement:

The total capital requirement, including fixed capital and working capital, is estimated at Rs 18.01 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 11.62 lakhs.

A. Fixed Capital	(Rs lakhs)
Land & Building (3500 sq. ft)	On rent
Plant & Machinery	6.50
Misc. fixed Assets	1.50
Preliminary & Pre-operative expenses	<u>1.00</u>
	9.00

B	Working Capital:		
	Raw materials & Consumables	1 month	2.48
	Finished goods	10 days	1.79
	Working expenses	1 month	0.49
	Receivables	1 month	4.25
		Total (B)	<u>9.01</u>
		Grand Total (A+B)	<u>18.01 lakh</u>

**Note:**

Working capital may be finance as –	
Bank Finance	6.39 lakh
Margin Money	<u>2.62 lakh</u>
	9.01 lakh

**MEANS OF FINANCE:**

Promoter's contribution (35%)	4.07 lakh
Bank Loan(65%)	<u>7.55 lakh</u>
	11.62 lakh

**OPERATING EXPENSES:**

The annual operating expenses are estimated at Rs 47.42 lakhs as given below:

	(Rs. in lakhs)
Raw materials (Refer annexure)	29.75
Consumable (Gas, electrodes etc.)	4.00
Utilities	1.50
Wages & salaries	4.25
Rent	1.35
Other overheads	1.50
Selling expenses @ 5% on sales	2.55
Interest on Term Loan @ 12%	0.91
Interest on Bank Finance for Working Capital @ 15%	0.96
Depreciation @ 10%	0.65
	Rs. 47.42 lakh

**Sales Realization/ Turnover:**

Taking average ex-factory price of Rs 50,000 control panel and Rs 35,000 per tonne of trusses, the annual sales realization works out to Rs 51.00 lakh as under

Item	Quantity	Sales Price	Rs. lakh
Control panel	60 Nos.	Rs 50,000	30.00
Trusses	60 MT	Rs 35,000	21.00
			51.00

**Profitability:**

Based on the sales realization and the operating expenses, the profit (pre-tax) at the targeted annual production would be Rs 3.58 lakhs per year. This works out to a return on investment of 20%. The plant would break-even at about 51% of the annual production envisaged.

**Highlight:**

The major highlights of the project are as follows:

1.	The capital requirement	:	18.01 lakh
2.	Promoter contribution	:	4.07 lakh
3.	Annual Sales	:	51.00 lakh
4.	Annual operating expenses	:	47.42 lakh
5.	Annual Profit (Pre-tax)	:	3.58 lakh
6.	Pre-tax return on sales	:	7%
7.	Break Even Point	:	51%
8.	Number of person employed	:	8 Nos.

**MACHINERY SUPPLIERS:**

1. M/s Ashoka Machine Tools Corporation.  
15 –A, Industrial Area  
Rewari Lines,  
New Delhi – 110 027
2. M/s Davy Ashmore India Ltd.  
6-A, Middleton Street,  
Kolkata – 700 071
3. M/s Indi Hume Pipe Co. Ltd.  
Construction House,  
Ballard Estate,  
Mumbai – 400 038
4. M/s Industrial Gases Ltd.,  
15, Ganesh Chandra Avenue,  
Kolkata – 700 020
5. M/s Industrial Machinery & Tools Corporation,  
P-14, Mission Row Extension,  
Kolkata – 700 001
6. M/s Kanubhai Engineering Pvt. Ltd.,  
3, Mango Lane,  
Kolkata – 700 001

**ANNEXURE-  
ESTIMATE OF RAW MATERIAL COST**

**A. For Panel Boards.**

Sl.No.	Items	Quantity	Amount (Rs Lakh)
<b>A</b>	<b>For Panel Boards</b>		
1	C.R. Short (1.2mm to 3mm)	2.0MT @ Rs 40,000/MT	0.80
2.	Angles, Flats etc. (M.S.) Assorted sizes like 25mm x 5mm x 3mm 35mm x 35mm x 4mm	0.5 MT @ Rs 29,000/MT	0.15
3.	Aluminium/Copper bus bars & fittings	60 sets @ Rs 500 each	0.30
4.	Door hinges, bolts, nuts handles etc.	60 sets @ Rs 800 each	0.48
5.	Electrical fittings - Voltmeter (0.500V) - Ammeters - Rotary switches - Single phase preventor L&T make - Isolator Siemens make - Starter push bottoms - Energy meters - Current transformer & potential transformer - Relays (thermal overload, high Voltage, & high current - MCCB - Indicating lamps, kit kat fuses, wiring & equipment limtriple pole fuse base with fuse etc. - other misc. parts	60 Nos. @ Rs 300 each 60 Nos. @ Rs 300 each 120 Nos. @ Rs 275 each 60 Nos. @ Rs 2000 each 60 Nos. @ Rs 650 each 120 Nos. @ Rs 490 each 300 Nos. @ Rs 500 each 120 Nos. @ Rs 950 each 60 Nos. @ Rs 1050 each 60 Nos. 60 Nos. @ Rs 950 each 60 Nos. @ Rs 700 each	0.18 0.18 0.33 1.20 0.39 0.59 1.50 1.14 0.63 0.65 0.57 0.42
	<b>Total of A</b>		<b>9.51</b>

<b>B</b>	<b>For Roof Trusses</b>		
	Black steel pipe (dia 25mm to 50mm)	30 MT @ Rs 35,000 /MT	10.50
	M.S. Plate, Flats Angles (Assorted sizes) considering 55 wastage	33 MT @ Rs 28,000/MT	9.24
	Misc. Fittings like bolts, nuts, screws etc.	1 MT @ Rs 50,000/MT	0.50
	<b>Total of B</b>		<b>20.24</b>
	<b>GRAND TOTAL</b>		<b>29.75</b>

## ELECTRONIC GOODS (TV) REPAIRING & SERVICING

### Introduction:

With advancement of science various types of electronic goods have flooded the market. As these are electronic items, they are vulnerable and go out of order due to various factors. The repairing and servicing industry plays an important role providing after sales service to these items.

### Market potential:

In to-days modern world every household has electronic gadgets specially TVs, the source of entertainment. Electronic items are mostly unpredictable and are bound to go out of order due to various reasons like power fluctuation, mishandling etc. Though branded companies have their servicing centres yet non-branded low cost TVs have flooded the market. These items are susceptible to malfunctioning and hence servicing and repairing centres have potential market.

### Machinery:

Sl.No.	Description	Nos. reqd.	Price (Rs)	Total Value (Rs)
1.	Digital multi-meter meco 9A	4	3300	13,200
2.	Soldering iron	4	250	1,000
3.	Screw driver small	12	65	780
4.	Screw driver big	8	100	800
5.	Watch makers screw driver	4	150	600
6.	Screw driver folding set with tester	4	150	600
7.	Combination pliers	4	200	800
8.	Nose Pliers	4	150	600
9.	Side cutter pliers	4	150	600
10.	Shear cutting pliers	4	300	1,200
11.	Knife	4	40	160
12.	Tweezers	4	40	160
13.	Scribers	4 sets	60	240
14.	Punch Centre	4 sets	60	240
15.	The solder pump	4	100	400
16.	Hacksaw frame with blade	4	100	400
17.	Hummer (small)	4	125	500
18.	Hand drill machine	4	250	1,000
19.	Flat file zoom	4	125	500
20.	Round files	4	125	500
21.	Misc. tools & equipment	--	--	5,720
	TOTAL			30,000

### Infrastructure:

The major infrastructure requirement are –

Covered Area	:	700 sq.ft.
Power	:	2 KW

### Location:

The suggested locations are –

Assam	:	
Meghalaya	:	District headquarters of all N.E. States.
Nagaland	:	including Sikkim
Tripura	:	
Manipur	:	
Arunachal Pradesh	:	
Sikkim	:	

### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 1,84,750 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 1,42,750 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land building		Rented
Machinery		30,000
Miscellaneous fixed assets		70,000
Preliminary and pre-operative expenses		<u>20,000</u>
	<b>Total (A)</b>	<b>1,20,000</b>
		=====

<b>B. Working Capital:</b>		
Raw materials	1 month	7,500
Finished goods	15 days	15,975
Working expenses	1 month	16,375
Receivables	15 days	<u>24,900</u>
	<b>Total (B)</b>	<b>64,750</b>
		=====

**Total (A)+(B) 1,84,750**

Note: Working capital may be financed as:

Bank Finance	.....	Rs 42,000
Margin Money	.....	<u>Rs 22,750</u>
		<b>Rs 64,750</b>
		=====

**Capital cost of project:**

Fixed Capital	Rs 1,20,000
Margin money for W.C	<u>Rs 22,750</u>
	<b>Rs 1,42,750</b>
	=====

**Means of Finance:**

Promoter's contribution (35%)	Rs 49,963
Term Loan (65%)	<u>Rs 92,787</u>
	<b>Rs 1,42,750</b>
	=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 3,55,718 as given below:

		<b>(Rs in lakhs)</b>
1.	Spare parts	90,000
2.	Utilities	4,500
3.	Wages & Salaries	1,92,000
4.	Rent	30,000
5.	Other overheads	20,000
6.	Interest on term loan @ 12.50%	11,598
8.	Interest on Bank Finance for Working Capital @ 11%	4,620
9.	Depreciation @ 10% on machinery	<u>3,000</u>
		<b>3,55,718</b>
		=====

**Sales Realization:**

Sl.No.	Particulars	Value (Rs)
1.	Income from major repairing & servicing work of TV – 300 Nos. @ Rs 600/-	1,80,000
2.	Income from minor repairing works of TV 600 Nos. @ Rs 350/-	2,10,000
3.	Income from sale of spare parts @ 20% profit on cost price	1,08,000
	<b>TOTAL</b>	<b>4,98,000</b>

**Profitability :**

Based on the sales realization of Rs 4,98,000 and the operating expenses Rs 3,55,718 the profit at rated capacity utilization would be Rs 1,42,282 per year. This works out to a return on investment of 77%. The plant will break even at 39% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 1,84,750
Promoter's contribution	:	Rs 49,963
Annual sales realization (70% cap.)	:	Rs 4,98,000
Annual operating expenses (70% cap.)	:	Rs 3,55,718
Annual profit (pre-tax)	:	Rs 1,42,282
Pre-tax Return on Sales	:	29%
Break Even Point	:	39%
No.of persons employed	:	4

**Suppliers of Machinery**

All tools and equipments are locally available.



## **REPAIRING & SERVICING OF DIESEL GENERATOR, ELECTRIC MOTOR/PUMP**

### **Introduction:**

Diesel generator, Electric motors/pump are the nucleus of modern civilization. The demand for repairing and servicing of these items are steadily growing, there is a bright scope in this field. Diesel generator is first rising with greater industrialization and is widely used in business organizations, institutions, hotel and markets etc. Electric motor/pump also has an extensive use in regular supply of water in almost every household and as well as industrial units, institutions, hotels and markets. Almost 90% of the motors used now a day are induction type.

### **Product Uses:**

Diesel generators are used as the most common in industrial houses, institutions/organizations and households. Continuous power supply in industrial unit as well as institutions/hotels, diesel generator set plays a very important role in production and services in various institutions. The various fields of water pump's applications are multistory buildings, industries, irrigation cooling plants, fountains etc. The water pumps are available in various sizes and types. The Users of these products are well aware of that, after a certain period of time they need services for the economy to be derived.

### **Market Potential:**

With rapid industrialization and modernization, now a day it has become a very urgent for quality servicing unit of such machineries. There is tremendous scope for setting up of typical unit in heart of the urban/semi urban centers. Also with the rapid industrialization, smooth power supply has become an urgent phenomenon. Since more and more development in the coming years, it is expected that demand of such repairing & servicing unit will be necessary in the coming years.

### **Suggested Capacity (per annum):**

The Repairing & Servicing of Diesel Generator, Electric Motor/Pump per annum will be as follows:

Quantity Repairing & Servicing of:

I.	Diesel Generator (complete)	:	50 nos.
	Value of complete repairing & servicing	:	Rs. 10,000
II.	Diesel Generator (minor works)	:	80 nos.
	Value of minor repairing & servicing	:	Rs. 3,000
A.	Turnover (I + II)	:	Rs. 7.40 Lakhs

Quantity Repairing & Servicing of:

III.	Electric Motor/Pump (complete)	:	250 nos.
	Value for complete repairing & servicing	:	Rs. 1500
IV.	Electric Motor/Pump (complete)	:	400 nos.
	Value for complete repairing & servicing	:	Rs. 800
B.	Turnover (III + IV)	:	<u>Rs. 6.95 lakh</u>

**Total Turnover (A+B)                      Rs. 14.35 lakh**

### **Basis:-**

No. of working days	=	300 days per year
No. of Shifts	=	1 per day.
One shift	=	10 hours

### Infrastructure Requirement:

The main Infrastructure facilities required are:

Required area	600 Sq.ft.
Power requirement	10 kW.
Water (general purpose)	1000 Ltrs.

### Raw Materials and its availability:

The main raw materials required are aluminum castings, stampings, copper wire, bearings, rotor shaft, impeller (brass), Capacitor, pig iron and scrap, brass scrap and ingots, m.s. rods, foundry flux and alloys, miscellaneous hard wares and paints etc. All material & consumable items can be procured from local agencies in the open market.

### Suggested Location:

The Repairing & Servicing of Diesel Generator, Electric Motor/Pump units can be located near big cities, big towns and as well as in large urban areas preferably near marketing centers, of NER including Sikkim.

### Availability of services:

Following are the major service steps:

1. Cast body,
2. Base body,
3. Gum metal valve,
4. Fan,
5. Shaft,
6. Rotor,
7. Starter,
8. Motor,
9. Fuel pump,
10. Painting etc.

### PROJECT ECONOMICS

The total capital requirement estimated as under: -

A.	Fixed Capital		(Rs. in lakhs)
	<b>Land &amp; Building</b>		Own/Lease
	<b>Civil Works</b>		
i.)	Factory Shed 400 sq.ft. @ Rs. 700/sq.ft.		2.80
iii.)	Office cum store 200 sq.ft. @ Rs. 700/sq.ft.		1.40
	<b>Plant &amp; equipments</b>		5.75
	<b>Other misc. Fixed Assets</b>		
	(Water arrangement, Electrical fittings & Other Equipments)		1.50
	<b>Preliminary &amp; Pre-operative Expenses</b>		<u>0.50</u>
	<b>Sub Total (A) Rs.</b>		<b><u>11.95</u></b>
B.	<b>Working Capital</b>	(Norms)	(Rs. in lakhs)
	Raw Materials	1 month	0.35
	Working Expenses	1 month	3.80
	Finished Goods	7 days	0.21
	Receivable	6 days	<u>0.29</u>
	<b>Sub Total (B)</b>		<b><u>4.65</u></b>
	Note: Working Capital to be financed as:-		
	Margin Money:		4.05
	Bank Finance:		<u>0.60</u>
			<b><u>4.65</u></b>

**Means of Finance**

(Rs.Lakhs)

Promoter's Equity(25%)	4.00
Term Loan(75%)	<u>12.00</u>
	<u>16.00</u>

**Production Expenses**

(Rs. in Lakhs)

Raw materials	4.20
Wages & Salaries	3.04
Utilities	0.74
Repair & Maintenance	0.12
Administrative Overhead	0.20
Depreciation	0.89
Selling expenses 5% on sales	0.71
Interest	<u>1.60</u>
	<u>11.50</u>

**Profitability:**

Based on the sales Turnover and the operating expenses, the profit would be Rs. 2.85 lakhs per year. This works out to a return on capital investment of 17%. The unit would break-even at about 67% of the rated capacity.

**Machinery and Equipments:**

1.Cylindrical Grinder 6"-24", 2.Radial Grinder Machine, 3.Shaper, 4. Bench Drill, 5Taping Machine, 6.Bench grinder, 7. Dynamic Balance Machine, 8.Horizontal milling Machine, 9.Slotting Machine, 10. Hydraulic press 20T, 11. Die Casting Unit, 12. Oil Fired Furnace, 13.Varnishing Tank, 14. Baking Oven, 15. Winding Machine, 16. Welding Kit, 17. Painting Kit, 18. Miscellaneous testing Equipments.

**Utilities:****Power Requirement:**

For Plant & Machinery	10 H.P.
For General Lighting	<u>2 H.P.</u>
Total	<u>12 H.P.</u>

**Annual power consumption:**

12 H.P. X 0.746 X 5 hrs.X 300 days. X Rs 5.50

**Annual Electric Bill Rs.= 73,854**  
**Say Rs. 74,000**

**Break Even Analysis**

<b>A. Variable Cost:</b>	(Rs. in Lakhs)
Raw Materials	4.20
Utilities	0.74
Selling Expenses	<u>0.71</u>
	<u>5.65</u>
<b>B. Semi-Variable Cost:</b>	(Rs. in Lakhs)
Wages & Salaries	3.04
Repair & Maintenance	0.12
Administrative Overhead	0.20
Depreciation	0.89
Interest	<u>1.60</u>
	<u>5.85</u>
<b>C. Sales Turnover:</b>	Rs. 14.35 Lakhs
<b>D. Contribution:</b>	Rs. 8.70 Lakhs
<b>E. Break Even Point B/D X 100%</b>	67 %

**Manpower:**

Category	No. of Person	Salary Per Person Per Month(Rs)	Monthly Salary Bill (Rs.)
Service engineers	1	6,000	6,000
Technician (Skilled Worker)	2	5,000	10,000
Supervisor/Marketing Personal	1	7000	7,000
			<b>23,000</b>

Salary Bill Rs 2.76 Lakhs + Benefits @10% annually i.e. Rs 0.28

**Total Annual Salary Bill: Rs. 3.04**

**Highlights:**

The major highlights of the project are as follows:

Total Capital requirement	Rs.	16.60 lakhs
Promoter's contribution	Rs.	4.00 lakhs
Annual Sales realization	Rs.	14.35 lakhs
Annual Operating Expenses	Rs.	11.50 lakhs
Annual Profit	Rs.	2.85 lakhs
Return on sales		20%
Break-even point		67%
No. of person employed		4

**Address of Machinery & Equipment Supplier**

1. M/S Parekh Machine Tools  
5, Khetra das Lane,  
Behind Broadway Hotel,  
Kolkata
2. M/S Economic Machine Tools  
21, Dr.V,B,Gandhi Marg(Forbes Street),Fort  
Mumbai-1
3. M/S Master Engineering Works( Regd.)  
G.T. Road,(Dholewal),  
Opp. Indian oil Petrol Pump,  
Ludhina-3
4. M/S Nyayamurty G.N. Vaidhya Marg  
Bank Street,  
Post Box-2  
Behind SBI, Fort,  
Mumbai-1

## STEEL FABRICATION/STEEL SHUTTER/STEEL GRILL

### INTRODUCTION:

Fabricated steel products cover a host of items such as steel furniture, storage tanks, grill gates, rolling shutter etc. Of these items, steel furniture which are strongly consumer-oriented are a separate class of products. The other items such as gates, grills, tanks and rolling shutter may be categorized together while there are a number of steel furniture units in the north-eastern region. Units manufacturing items like tanks, gates, grills, rolling shutter are few in number and hence there are good prospects in the line for entrepreneurs, especially those who are technically qualified.

### ABOUT THE PRODUCT:

The unit propose to manufacture steel fabricated items like gates, grills, rolling shutters and steel tanks which are required both for domestic and commercial establishments. These steel products are the only replacement of wood in terms of cost and durability. These products will be varied in shapes and sizes as per the demand.

### MARKET POTENTIAL:

It is assumed that the housing shortage is about 7 lakh in urban areas and 70 lakh in rural areas. To mitigate the housing shortage in about five years time about 1.25 lakhs urban dwelling per year and 14 lakhs rural dwellings per year would have to be constructed. It may be conservatively assumed that an average at least about 90,000 urban dwellings and 10 lakh rural dwellings are constructed per year. Assuming that out of the new dwellings to be constructed the requirement of gates, grills, rolling shutters, tanks would be about 5% in case of rural dwelling and 20% in case of urban dwelling the demand for these products estimated as under:

	<u>Rural</u> <u>Nos./year</u>	<u>Urban</u> <u>Nos./year</u>	<u>Total</u> <u>Nos./year</u>
Gates	48750	19500	68250
Grills	195000	156000	351000
Rolling shutters	120	30	150
Tanks	32500	13000	45500

@ 6 grills per rural dwellings and 12 grills per urban dwelling.

Thus, the total demand potential for gates, grills, rolling shutters and tanks for dwellings is estimated at about 464900 lakh Nos./year tonne. Besides the above demand, there is a significant industrial demand where the sizes of these products would be much higher. For instance, factories would require M.S tanks for storing water and these may have capacity of the order of 20 KL against 1 KL for domestic applications. Industrial units would also require large size gates, grills and rolling shutters. Considering that only 5% of the potential demand is tapped by the tiny units, there is scope for 20 – 25 more tiny units with the following product-mix.

	<u>Quantity</u> <u>Nos./year</u>	<u>Unit weight</u> <u>_____ Kg.</u>	<u>Weight</u> <u>Tonne</u>
Gates	75	126	9.45
Grills	375	10	3.7.5
Rolling shutter			
10 ft.x 8.5ft.= 855 qtl.	150	855 qtl.	12750 qtl.
Tanks 1000 ltrs.	225	85	<u>19.13</u>
		Gates, grills, tanks	32.33
		Shutter 5 qtl.	12750

**SUGGESTED CAPACITY:**

The annual production of 32.33 tonne & 12750 sq.ft of rolling shutter is based on the following assumptions.

No.of working days per annum	:	300
No.of shifts per day	:	8
Annual fabricated tonnage gates, grills & tanks	:	32.33
Annual fabricated square feet shutter	:	12750

**INFRASTRUCTURE:**

The main infrastructure facilities required are –

- (a) Covered area – Working Shed - 1000 sq.ft.  
 (b) Utilities – Power - 10 KW.  
 (c) Raw materials and its availability: The major raw materials is mild steel in the form of steels, square bars, angles, locks and flats. Welding electrodes are the major consumables used. The requirement of these materials depending on the product to be manufactured is given hereunder:

i) Gates	Gate Size 3.6 M x 1.20 M (12' x 4')	Raw Material per gate (a) 99 Bars – 12mm = 80 Kg. (b) Angles 40 x 40 x 5mm = 40 Kg. (c) Flats 30 x 5mm = 12 Kg.
ii) Grills	Grill size 1.20m x 1 M	Flats 20 x 5mm = 12 Kg.
iii) Tanks	1000 ltrs.	2mm MS Sheet for all tanks 1 x 1 x 1m 659 m = 95 Kg.
iv) Shutter	10 ft. x 8.5 ft.	Sheets, locks, rolling wheel, spring, shaft 140 kg. per shutter of 10' x 8.5' size.

The annual requirement of major raw materials are given below:

	Kg/year
M.S. Sheets	32250
M.S. Square bars	6000
M.S. Angles	3000
M.S. Flats	6000
Shaft, rolling wheel for shutters, Sheets, locks, spring etc.	<u>21000</u>
	68250 Kg.
Electrodes	24300 Nos.

The various steel raw materials such as angles, bars and flats are not manufactured in the north eastern region. These products are available from Steel Authority of India Ltd. (SAIL) and Tata Iron and Steel Company (TISCO) from their stock yard and also from local dealers. Welding electrodes would be available from stockists for Indian Oxygen, Advani Oerlikon etc.

**SUGGESTED LOCATIONS:**

The suggested locations are –

Assam	:	Guwahati, Sibsagar, Tezpur, Kokrajhar, Silchar.
Arunachal Pradesh	:	Naharlagun, Itanagar
Tripura	:	Dharmanagar
Meghalaya	:	Tura, Shillong
Mizoram	:	Aizawl
Manipur	:	Imphal
Nagaland	:	Dimapur.
Sikkim	:	Gangtok & other Dist. H. Q.

**PRODUCTION PROCESS:**

The main process steps are –

- (A. Cutting or shearing of the materials to size.
- (B. Welding the sized material as per design of product to be made.
- (C. Grinding edges and surfaces to smoothness.
- (D. Providing a coat of red oxide paint to the article produced.

**TOTAL CAPITAL REQUIREMENT:**

The total capital requirement for the project including fixed capital and working capital is estimated at Rs 6.29 lakhs. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 2.62 lakh.

			(Rs in lakh)
<b>(A. Fixed Capital:</b>			
Land and Building			On rent
Plant & Machinery			1.80
Misc. Fixed Assets			0.40
Preliminary & Pre-operative expenses			<u>0.20</u>
		Total (A)	2.40
<b>(A. Working Capital:</b>			
Raw materials	1 month		1.75
Finished goods	10 days		0.58
Working expenses	1 month		0.31
Receivables	10 days		<u>1.25</u>
		Total (B)	3.89
		Grand Total (A+B)	6.29 lakh

**MEANS OF FINANCE:**

Bank Finance	75%	4.72 lakh
Margin Money and NEF	25%	<u>1.57 lakh</u>
		<u>6.29 lakh</u>

**COST OF PRODUCTION:**

The annual operating expenses are estimated at Rs 26.76 lakhs as given below:  
(Rs. in lakhs)

Raw materials	21.00
Utilities	0.72
Wages & salaries	2.40
Rent	0.36
Other overheads	0.24
Selling expenses @ 2.5% of annual sales	1.12
Interest on Term Loan & Working Capital	0.70
Loan @ 15% Depreciation	<u>0.22</u>
	Rs. 26.76 lakh

**TURN OVER:**

Based on a total production of 47 tonnes rolling shutters 150 nos. of finished products comprising of gates, grills, tanks and rolling shutter and selling rate of Rs 47,000 per tonne 12750 sq.ft. rolling shutter, the annual sales realization is estimated at about Rs.45 lakhs per year.

**PLANT & MACHINERY:**

The major equipment required are –

a) Shearing machine	:	1 No.
b) Electric arc welding machine	:	2 sets
c) Electric grinding machine with electrical accessories	:	2 sets
d) Electric and stand drilling machine	:	2 sets
e) Misc. tools	:	3 sets

**RAW MATERIALS:**

Production	Nos.	Cost Rate	Cost
	<u>Weight/Nos.</u>	<u>Kg.</u>	<u>Rs. lakh</u>
A. Gates	68250		
B. Grills	351000		
C. Tanks	45500	68250 Kg.	30
D. Rolling shutter	150		20.47
E. Electrodes	243000	--	0.41
F. Red oxide Paint	--	L.S.	0.12
			<u>21.00</u>

**SALES REALIZATION:**

<u>Item</u>	<u>Kg/sq.ft Rate</u>	<u>Total (Rs lakh)</u>
Gate, grill and tanks	47250 Rs 47/kg.	22.20
Rolling shutter	150 Nos. of Shutter of 10' x 8.5'	Rs 180/sq.ft. <u>22.95</u>
		Total 45.15

Say Rs 45.00 lakh P.A.

**PROFITABILITY:**

Based on the sales realization of Rs 45.00 lakhs and the operating expenses of Rs 26.76 lakhs, the profit at working capital would be Rs 18.24 lakh per year. This works out to a return on investment of 289%. The plant would break even at about 17.68% of the targeted annual production.

Total capital requirement	:	Rs 6.29 lakhs
Equity capital	:	Rs 1.62 lakhs
Annual sales realization	:	Rs 45.00 lakhs
Annual operating expenses	:	Rs 26.76 lakhs
Annual Profit	:	Rs 18.24 lakhs
Return on sales	:	40.53%
Break Even Point	:	17.68%
No. of persons employed	:	10 Nos.

**BREAK-EVEN POINT ANALYSIS:**

(At 100% Capacity Utilization)

A.	<u>Variable Cost:</u>	(Rs.lakh)
	Raw materials	21.00
	Utilities	0.72
	Selling Expenses	<u>1.12</u>
	Total	<u>22.84</u>
B.	<u>Semi-Variable Cost:</u>	
	Wages & Salaries	2.40
	Rent, Insurance etc.	0.36
	Depreciation	0.22
	Administrative overhead	0.24
	Interest	<u>0.70</u>
	Total	<u>3.92</u>
C.	Sales Realization	45.00
D.	Contribution (C – A)	22.16
E.	B.E.P. B/D x % on installed capacity	17.68%

**MACHINERY SUPPLIER:**

- M/s Industrial Engg & Traders,  
Tokobari Road, Athgaon,  
Guwahati



## STONE CHIPS

### INTRODUCTION:

Stone chips, termed as "Metal" in construction parlance, constitute one of the main construction materials along with bricks, sand, cement and steel. In the north-eastern region, where places are widely dispersed and there are communication bottlenecks, availability of construction materials is not adequate at all the places. In many areas, stone chips have to be brought over long distances, resulting in high construction costs. Dispersed stone crushing units are therefore a necessity in all the north-eastern states.

### MARKET POTENTIAL:

At present there are about 15 to 20 stone crushing units in and around Guwahati and a few units around other urban centers such as Tinsukia, Dibrugarh, Shillong, Imphal and Agartala. In a state like Arunachal Pradesh, which is the largest in terms of land area, there are hardly 10 units. Nagaland and Mizoram also have few units. Some units can make stone grit and chips, but currently chips are more in demand. The demand for stone chips is directly linked with the volume of construction activity. Stone chips are used in concreting, along with cement and sand and in road pavement work. It is estimated that for 1000 cu.m of metaling, 750 cu.m of stone chips will be required. Assuming that a tiny unit would cater to local demands within a 25 km radius, it may be expected to serve metal requirements for 100 km of road work per year and 2000 cu.m of concrete per year. On this basis the demand potential for a tiny unit is placed at 31,500 cu.m per year. Assuming that 50% of the demand would be met by the existing units there would be scope for 1 – 2 units in the local area of radius 25 km.

### PLANT CAPACITY:

The capacity of a stone crusher unit depends on the feed size of stone, the desired product size and the size of crusher used. Besides on a 16" x 9" Jaw crusher which is a popular size and 7" feed size of stone, the capacity of a typical unit would be 8,400 tonne per year as follows:

Hourly production capacity	:	3.50 tonne.
Effective working hours	:	8 hours.
No. of shift per day	:	1 shift
No. of work-day per annum	:	300 days.
Annual production capacity	:	8400 tonne
Capacity utilization	:	70%
Annual production	:	5880 tonne

### RAW MATERIALS:

Stone boulders are the only raw material required for the plant. Assuming an average yield of 90% of stone chips, the annual requirement of boulders is estimated at 6540 tonne at 70% capacity utilization.

### PROCESS:

Big stone boulders are first broken to smaller size manually, and then fed to the stone crusher. The crusher can accept stone size of 175mm. Stone crushing is two-stage process. In the first stage 175mm stone is crushed to about 50mm. Thereafter, the crusher is fitted with a conversion kit to enable granulation of 5 to 20mm. The crushed material is screened by rotary screen.

### MACHINERY:

The major equipment required in a stone crushing plant are given below:

- (A. 1 No. Jaw crusher and granulator of size 16" to 10" having 15 HP motor along with rotary screen.
- (B. Conversion kit for converting crushed stone granules (size 16"x6").
- (C. Grizzly for screening of big materials.
- (D. Set of hoppers for manual breaking.
- (E. Rotary screen complete with all fittings.

- (F. 2 Nos. trollies for carrying crushed material.
- (G. 2 Nos. bunkers for storage.
- (H. Other essential accessories – 1 set.
- (I. Air compressor
- (J. Rock drilling machine and jack hammers.
- (K. Drill rods, houses etc.
- (L. Hand tools like shovel, spade, chisels, hammers etc.

Stone crusher are available in two major types namely (a) stationary (b) portable or mobile. Stationary crushers are usually located at quarry heads. Portable crushers are mainly used at construction sites. This profile is based on a stationary crusher.

#### INFRASTRUCTURE:

The main infrastructure requirements are –

Land & building	:	0.5 acre.
Simple shed	:	3 x 2m (wooden/steel poles with GCI Sheet roof)
Power:	:	1.5 KW
Water:	:	2000 ltrs/day.

#### LOCATION:

Stone crushing units should be ideally located near large construction sites. Keeping in view the large projects and industrial areas that are likely to be developed in future, the following locations are suggested.

Assam	:	Bongaigaon, Mangaldoi, Numaligarh, Sibsagar.
Meghalaya	:	Byrnihat, Tura, Jowai.
Arunachal Pradesh	:	Pasighat, Banderdewa, Deomale
Nagaland	:	Medzephara, Phek
Manipur	:	Churachandpur, Ukhrul
Mizoram	:	Kolasib, Vairangte.
Sikkim	:	Gangtok & other Dist. H.Q.

#### TOTAL CAPITAL REQUIREMENT:

The total capital requirement including fixed capital and working capital is estimated at Rs 13.03 lakh as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 10.82 lakh.

			(Rs. lakhs)
A	<u>Fixed Capital:</u>		
	Land (0.5 acre)		On rent
	Plant & Machinery		8.00
	Misc. Fixed Assets		0.80
	Preliminary & Pre-operative expenses		<u>0.60</u>
		Total (A)	9.40
B.	<u>Working Capital:</u>		
	Raw materials	10 days	0.22
	Packing material	½ months	0.69
	Working expenses	1 month	0.69
	Receivables	1 month	<u>2.03</u>
		Total (B)	3.63
	Grant Total (A+B)		13.03 lakh

**Note: Working capital may be financed as –**  
**Bank Finance: R.s. 2.21 lakh**  
**Margin Money: Rs. 1.42 lakh**  
**Total : Rs. 3.63 lakh**

**MEANS OF FINANCE:**

Promoter's contribution (35%)		Rs 3.79 lakh
Term Loan(65%)		<u>Rs 7.03 lakh</u>
	Total	Rs 10.82 lakh

**OPERATING EXPENSES**

The annual operating expenses are estimated at Rs 20.88 lakh as given below:

		(Rs. lakh)
Raw materials and consumables –		
6540 tonne boulder		6.54
@ Rs 100/tonne		
Utilities		1.50
Wages & salaries		6.75
Rent		1.08
Other overheads		0.60
Selling expenses @ 10%		2.44
Interest on term loan @12%		0.84
Interest on bank finance @15%		0.33
for working capital		
Depreciation		<u>0.80</u>
	Total	Rs. 20.88 lakh

**SALES REALIZATION:**

In the output 90% will be chips and balance 10% will be sand. Accordingly, for a throughout of 6540 tonnes of boulders, production of chips will be 5886 tonnes and sand will be 654 tonnes.

The annual sales realization is estimated at Rs 24.39 lakhs as under:

5886 tonnes of stone chips @ Rs 400/tonne	:	Rs 23.54 lakh
654 tonnes of sand @ Rs 130/tonne	:	<u>Rs 0.85 lakh</u>
	Total :	Rs 24.39 lakh

**PROFITABILITY:**

Based on the sales realization and the operating expenses, the profit at 70% capacity would be Rs 3.51 lakh per year. This works out to a return on investment of 27%. The plant would break even at about 52% of the rated capacity.

**HIGHLIGHTS:**

The major highlights of the projects are as follows:

Total Capital requirement	:	Rs 13.03 lakh
Promoter's contribution	:	Rs 3.79 lakh
Annual Sales realization	:	Rs 24.39 lakh
Annual operating expenses	:	Rs 20.88 lakh
Annual Profit (Pre-tax)	:	Rs 3.51 lakh
Pre-tax return on sales	:	14%
Break-Even Point	:	52%
Number of persons employed	:	20 Nos.

**MACHINERY SUPPLIER:**

1. M/s Hindustan Agrico,  
Pratapnagar, I.T.I., Udaipur – 313 001
2. M/s Thapar Auto Trading Works,  
B- 32, Phase-II,Mayapuri, New Delhi – 110 064

## TWO WHEELER REPAIRING & SERVICING

### Introduction:

Today the best mode of communication is to have a two wheeler. Due to the demand the market have been flooded by variety of two wheelers launched by various companies. A survey has indicated that there is an increase in the number of two wheeler in the road every year.

### Market Potential:

With the increase in the number of two wheelers in the road, the demands for repairing and servicing units have also increased. Though most of the companies have their own workshop, yet clients prefer to repair their vehicles in these unit due to the cost and the time saving factor.

### Plant Capacity:

Working Days/year : 300  
Annual Production : – Major & minor repairing of 3300 Nos. Two wheelers  
– Painting, welding & engine overhauling of 40 Nos. Two wheelers  
– Selling of spare parts & accessories.

### Raw Materials:

The major consumables required:

Carbide  
Gas Rod,  
Brass Rod,  
Painting materials,  
Lubricants,  
Cable – clutch, break, gears,  
Nuts & bolts,  
Meter valves,  
lights – head, back, indicators  
Plain sheet (decorative)  
Accessories fittings.

### Machinery:

Electric Drill machine,  
Electric Bench grinder,  
Gas welding set,  
Spray painting set,  
Digital multi-meter,  
Greasing equipments,  
Battery charger,  
Misc. tools and accessories.

### Infrastructure:

The major infrastructural equipment are –

Covered area : 500 sq.ft.  
Power : 3 KW  
Water : 500 ltr./day.

### Location:

The suggested locations are:

Assam  
Meghalaya  
Nagaland  
Tripura  
Manipur  
Arunachal Pradesh  
Sikkim

All state capitals and district headquarters.

### Total Capital Requirement:

The total capital requirement including fixed capital and working capital is estimated at Rs 1,56,880 as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 35,880.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land & building		Rented
Plant & Machinery		85,000
Miscellaneous fixed assets		30,000
Preliminary and pre-operative expenses		<u>6,000</u>
	<b>Total (A)</b>	<b>1,21,000</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	15 days	9,000
Working expenses	1 month	15,120
Receivables	7 days	<u>11,760</u>
	<b>Total (B)</b>	<b>35,880</b>
		=====
	<b>Total (A)+(B)</b>	<b>1,56,880</b>
		=====
Note: Working capital may be financed as:		
Bank Finance	.....	23,322
Margin Money	.....	<u>12,558</u>
		<b>35,880</b>
		=====
<b>Means of Finance:</b>		
Promoter's contribution (35%)		46,745
Term Loan (65%)		<u>86,813</u>
		<b>1,33,558</b>
		=====

### Operating Expenses:

The annual operating expenses are estimated at Rs 4,22,157 as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials:	1,80,000
2.	Utilities	23,040
3.	Wages & Salaries	1,58,400
4.	Rent, Insurance	24,000
5.	Other overheads	12,000
6.	Interest on term loan	10,418
7.	Interest on Bank Finance for Working Capital	2,799
8.	Depreciation @10% on machinery	<u>11,500</u>
		<b>4,22,157</b>
		=====

### Sales Realization:

- Major repairing	300 Nos. @ Rs 500/-	1,50,000
- Minor repairing	3000 Nos. @ Rs 50/-	15,000
- Welding and painting with engine overhauling	40 Nos. @ Rs 2000/-	80,000
- Spare parts and accessories fittings	L.S.	<u>1,44,000</u>
		<b>5,24,000</b>
		=====

### Profitability :

Based on the sales realization of Rs 5,24,000 and the operating expenses, of Rs 4,22,157 the profit at rated capacity utilization would be Rs .....per year. This works out to a return on investment of 65%. The plant will break even at 68% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs	1,56,880
Promoter's contribution	:	Rs	46,745
Annual sales realization (70% cap.)	:	Rs	5,24,000
Annual operating expenses (70% cap.)	:	Rs	4,22,157
Annual profit (pre-tax)	:	Rs	1,01,848
Pre-tax Return on Sales	:		19.44%
Break Even Point	:		68%
No.of persons employed	:		5

**Suppliers of Machinery:**

1. M/s Jain Engineering Works  
147, Netaji Subhas Road,  
Kolkata – 700 001
2. M/s Oriental Machinery (1919) Pvt. Ltd.  
25, R.N. Mukherjee Road,  
Kolkata – 700 001
3. M/s Archana Machinery Stores,  
M.S. Road, Fancy Bazar,  
Guwahati – 78 1001

## TYRE RETREADING CENTRE

### Introduction:

When the sole portion of a tyre wears out, a new sole can be applied on it or the whole tyre up to tread can be renewed. This retreated tyre can be used again and almost are equivalent to new tyres and work quite satisfactorily for reasonable periods. A retreated tyre is expected to give about 3/4 of mileage or even more as that of a new one.

With the advancement of science & technology and the ever increasing demand for vehicular traffic due to ever increase in trade & commerce, playing of more trucks, busses, cars & Jeeps etc. is a must and consequently these speak for better prospects of tyre retreading services.

Retreading of damaged tyre is done by conventional hot matrix curing in most cases. But recently a new technology has been developed called "Precured Tread Rubber Retreading Process" which is commonly known as "Cold Process Retreading". In this process, the Precured Tread Rubber already has a tread pattern on it eliminating the need for a tread matrix at vulcanizing stage. Tread Rubber is precured along with other raw materials and manufactured in the factory under controlled conditions and given a well researched pattern ensuring that the transporter gets a reliable perfectly finish product. Retreading Tyre by precured method gives 50% more mileage than the tyre retreaded by conventional process.

### Services/Uses

Due to more coverage of miles or kilometers, the tyre are subjected to wear and tear and when a tyre wears out badly, a new sole of rubber is affixed to it so that it could again be used for a years more. Affixing a new rubber layer, to worn out tyre is called tyre resoling. A stage comes when tyre wears out to a considerable extent and it becomes necessary to recondition it, this process is called Retreading.

### Market Potential:

The market demand of tyre retreading by cold process is increasing day by day. There is a good scope for setting up units for tyre retreading by cold process using procured tread rubbers. The unit will make channels through its selling agent or marketing personals and to have collection depots (small or big vulcanizing shops or petrol pump). The desire of the tyre user to salvage their tyres by process of retreading is growing each day.

### Production Capacity (per annum):

The capacity of the proposed unit has been estimated at 6 nos. (truck/bus) tyres and 8 nos (Cars/jeep) tyres etc. In terms of annual capacity it will be as under:

Services	Nos.	Revenue Turnover
Passenger Car Tyre Retreading Size-590x15	2400	14,40,000
Truck/bus Tyre Retreading Size-300x20	1800	36,00,000
Total Turnover 50.40 Lakhs		

<b>Basis:</b>	No. of woking days:	300 days per year
	No. of Shifts:	one per day
	One shift:	8 hours

### Infrastructure Requirement:

The main Infrastructure facilities required are:

Required area:	1000 sq.ft.
Power requierement:	20 KW
Water(required in every working day)	2-3 K.Ltr

**Raw Materials/consumables:**

The raw material required for the typical units are Procured Tread Rubber, Cushion Compound, Vulcanising Solution, envelope etc. that can be acquired from local market.

**Process of Manufacture:**

The tyre coming from the customers is cleaned dully. Dust and mud are removed. The casing is inspected for cuts, ply section, condition of beads etc., and based on the condition of the casing, the tyre is selected or rejected. Under inflated conditions the selected tyre's crown area is buffed to the required texture and contour. This is for better bonding of procured rubber to the casing. The buffed casing is mounted on the tread building machine. Cushion compound is applied on the buffed tread area over which the procured tread rubber is applied and stickled using rollers. The joint portion of the procured tread rubber is stepped to avoid possible opening during curing of the tyre. The build up of the tyre is covered by a rubber envelope and placed in the "bonder" and the bonder steam is passed at specific temperature, which cures the cushion compound to complete the bonding of the tread on the casing.

**Suggested Location:**

Automobile tyre retreading center may be set up in all the state capital cities of North eastern region. Including Sikkim Such unit can also be set in other cities, towns and major urban centers preferable in High wayside.

**PROJECT ECONOMICS**

The total capital requirement estimated is Rs. 28.23 Lakhs as given below:

<b>C. Fixed Capital:</b>		<b><u>Rupees</u></b>
Land 2000 sq.ft.		Own/lease
Building/Civil Works		
a.) Hall cum shed 600 sq.ft. @ Rs. 700/sq.ft.		4,20,000
b.) Office 200 sq. ft. @ Rs 700/ sq.ft.		1,40,000
c.) Store 200 sq. ft. @ Rs. 600/sq.ft.		1,20,000
d.) Water System (including Bore Well + over head tank etc)		1,20,000
Plant and Machinery		10,50,000
Miscellaneous Fixed Assets & Other equipments		2,00,000
Preliminary and pre-operative expenses		<u>1,00,000</u>
		<u>21,50,000</u>
<b>D. Working Capital:</b>		
	<b>(Norms)</b>	<b>(Rupees)</b>
Raw Materials/Consumables	1 month	2,50,000
Working Expenses	1 month	70,000
Finished Goods	15 days	1,85,000
Receivables	10 days	<u>1,68,000</u>
		<u>6,73,000</u>
Note: Working capital to be financed as:-		
	Margin Money:	2,50,000
	Bank Finance:	4,23,000



**Means of Finance:**

	<b>(Rupees)</b>
Promoter's Equity(25%)	6,00,000
Term Loan(75%)	<u>18,00,000</u>
	<b><u>24,00,000</u></b>

**Production Expenses:**

	<b>(Rupees)</b>
Raw Materials/Consumables	22,74,000
Wages & Salaries	7,40,000
Utilities	90,000
Repair & Maintenance	50,000
Administrative Overheads	50,000
Selling Expenses 10% on sales	5,04,000
Depreciation	1,60,000
Interest	<u>2,88,000</u>
	<b><u>41,56,000</u></b>

**Profitability:**

Based on the sales Turn over and the production Expenses. The profit would be Rs. 8.84 Lakhs per year. This works out to a return on capital investment of 30 %. The Unit would break-even at about 59% of the rated capacity.

**Break Even Analysis:**

P. Variable Cost:	<b>(Rupees)</b>
Raw Materials/Consumables	22,74,000
Utilities	90,000
Selling Expenses	<u>5,04,000</u>
	<b><u>28,68,000</u></b>
Q. Semi-Variable Cost:	<b>(Rupees)</b>
Wages & Salaries	7,40,000
Repair & Maintenance	50,000
Administrative Overheads	50,000
Depreciation	1,60,000
Interest	<u>2,88,000</u>
	<b><u>12,88,000</u></b>
R. Sales Turnover:	50,40,000
S. Contribution:	21,72,000
T. Break Even Point:	59%

**Manpower Requirement:**

Personnel	Nos.	Salary per person (Rs.)	Salary Bill (Rs)
Supervisor (Technical)	1	7000	7000
Skilled Workers	2	6000	12000
Semi-skilled Workers	3	5000	15000
Un-skilled worker/ helper	3	3000	9000
Accounts cum Store	1	6000	6000
Salesman	1	7000	7000
		Total Rs.	56,000

Salary Bill Rs. 6.72 Lakhs + Benefits @ 10% annually i.e. Rs. 0.67 lakh

**Total Annual Salary Bill: Rs. 7.40 lakh**

**Raw Materials (Per Month):**

Particulars	Quantity	Price(Rs.)/Unit	Rupees
Precured Tread Rubber	1500 KG	100	1,50,000
Cushion Compound	200 Ltrs.	100	20,000
Vulcanising Solution	150 Ltrs	90	13,500
Envelope	400 nos.	10	4,000
Curing Bag	250 nos.	8	2,000
Total Rs.			1,89,500
<b>Annual Raw Materials/Consumable Cost Rs. 22,74,000</b>			

**Plant & Machinery:**

Particular	Qty. Nos	Price (Rs.)	(Rupees)
Buffing machine with dust collector builder tyre with curing rims and Electric hoist	1	6,00,000	6,00,000
Work bench envelope/ Tyre stand Gantry	1	50,000	50,000
Boiler cap. 200 kg/hrs.	1	3,00,000	3,00,000
100 lbs working pressure Air compressor fitted with 5 H P Motor	1	60,000	60,000
Air Conditioner	1	40,000	40,000
Total Rs.			10,50,000

**Highlights:**

The Major highlights of the project are as follows:

Total Capital Requirement	Rs. 28.23 Lakhs
Promoter's Contribution	Rs. 6.00 Lakhs
Annual Sales Realization	Rs. 50.40 Lakhs
Annual Production Expenses	Rs. 41.56 Lakhs
Annual Profit	Rs. 8.84 Lakhs
Return on Sales	18%
Break-even Point	59%
No. of person employed	11

**Address of Machinery Suppliers:**

1. M/s. Security Equipment Engineers  
48, Chetla, Road,  
Kolkata- 700027
2. M/s. Industrial Rubber Products  
20, Khanpara Road,  
Kolkata - 700065
3. M/s. Nandi and Co.  
125, Belilious Road,  
Howrah - 711101 (WB)
4. M/s. Chand and Co. Engineering Pvt. Ltd.  
3/18, Mahendra Road, Kolkata-700025
5. M/s. Die Hard Polimer Products  
117, Ghorkha Basi Road,  
Kolkata - 700028

## VEHICLE WHEEL CAP

### Introduction:

Vehicle wheel cap is a cap used for covering the ends of the automobile hubs. It is made from M.S. Sheet (22 SWG or similar) and pressed in such a way so as to fit it easily and correctly in the vehicle wheel cap. In some cases extra fixture is used to secure the fixing. It is available in the decorative colours and shades also. Vehicle wheel cap should be free from any spot and should have a lustrous surface all over.

### Market Potential:

The population of vehicles in Assam alone is over 10 lakhs. Assuming the population of vehicles in other parts of the region as 40% of that of Assam, the total vehicle population in the north-eastern region would be around 14,00,000. It is understood that due to gradually improve standard of living of the people of the region and easy availability of car loans the number of vehicles in the region is increasing by 10% to 15% per year according to a recent study conducted by the Central Road Research Institute. This itself will throw open opportunities for additional demand for vehicle wheel cap in the region providing opportunities for a few units to come up in the region.

### Plant Capacity:

The production basis for a typical tiny unit would be as under:

Working hours/day	: 8 (1 shift)
Working days in a year	: 300
Annual Production capacity	: 10,000 Nos.of vehicle wheel cap

The unit has been assumed to operate at 70%, 80% and 90% of its installed capacity in the first, second and third year and onwards of its operation.

### Raw Material:

The main raw material required for manufacturing vehicle wheel cap M.S. Sheet 22 SWG or similar for (18 MT) for 4,000 vehicle wheel cap.

### Process:

In the manufacturing process of vehicle wheel caps indigenously available M.S. sheet 22 SWG or similar are cut to the required circle, the desired shape and form is obtained by pressing operation and finally the edges are folded in the beading machine. The caps thus made are sent for the electroplating from outside unit. Electroplating is a specialized job and it will not be economical for such a small scale unit to do the same by himself at the beginning.

### Machinery:

The major equipment required by the unit for producing vehicle wheel caps are as follows:

Sl.No.	Particulars
1.	Circle cutting machine power operated pedestal mounted upto 3'x16' SWG with $\frac{3}{4}$ H.P. motor, starter and other fittings – 1 No.
2.	Double action power press suitable for 16" circle 4" deep with 10 HP motor starter and other fittings – 1 NO.
3.	Hand operated beading machine with rollers – 1 No.
4.	Die, punch & other Misc. hand-tools and measuring tools – L.S.

### Location:

The suitable locations for the project may be –

- Kokrajhar, Nagaon, Tinsukia, Silchar in Assam.
- Dimapur in Nagaland.
- Imphal in Manipur

- Itanagar in Arunachal Pradesh
- Byrnihat in Meghalaya
- Dharmannagar in Tripura

**Infrastructure:**

The basic infrastructure required are :

Land	:	3,000 sq.ft.
Building	:	1,000 sq.ft.
Power	:	10 KW
Water	:	1,000 Ltr. Per day.
Manpower	:	8 Nos. (Administrative (3), Factory Staff (5))

**Total Capital Requirement:**

The total capital requirement including fixed capital and working capital is estimated at Rs 9.20 lakhs as follows. Of this, the project cost comprising fixed capital and margin money on working capital is Rs 8.20 lakhs.

<b>A. Fixed Capital:</b>		<b>(Rs in lakh)</b>
Land		Rented
Building		Rented
Machinery		3.50
Miscellaneous fixed assets		2.50
Preliminary and pre-operative expenses		<u>1.50</u>
	<b>Total (A)</b>	<b>7.50</b>
		=====
<b>B. Working Capital:</b>		
Raw materials & Packing material	1 month	0.60
Finished goods	2 weeks	0.35
Working expenses	1 month	0.30
Receivables	2 weeks	<u>0.45</u>
	<b>Total (B)</b>	<b>1.70</b>
		=====
	<b>Total (A)+(B)</b>	<b>9.20</b>

Note: Working capital may be financed as:

Bank Finance	.....	Rs 1.00 lakhs
Margin Money	.....	<u>Rs 0.70 lakhs</u>
		<b>Rs 1.70 lakhs</b>
		=====

**Means of Finance:**

The project cost of Rs 8.20 lakhs including margin money for working capital may be financed as under:

Promoter's contribution (35%)	....	Rs 2.90 lakhs
Term Loan (65%)	....	<u>Rs 5.30 lakhs</u>
		<b>Rs 8.20 lakhs</b>
		=====

**Operating Expenses:**

The annual operating expenses are estimated at Rs 6.20 lakhs (70% capacity utilization) as given below:

		<b>(Rs in lakhs)</b>
1.	Raw materials	1.30
2.	Utilities	0.50
3.	Wages & Salaries	2.50
4.	Overheads	0.40
5.	Selling expenses @ 3% on annual sales	0.25
6.	Interest on term loan (13.50%)	0.70
7.	Interest on Bank Finance for Working Capital (12.%)	0.15
8.	Depreciation @10%	<u>0.40</u>
		<b>6.20</b>
		=====

**Sales Realization:**

The basis on which average ex-factory sales realization from the sale of vehicle wheel caps at 100% capacity utilization is as follows:

Items	Nos.	Unit Sales Price (Rs)	Annual Sales Price (Rs)
Vehicle wheel caps	10,000	110/-	11,00,000

Based on this the annual sales realization is estimated to be Rs 11.00 lakhs and at 70% capacity utilization the same is Rs 7.70 lakhs.

**Profitability :**

Based on the sales realization and the operating expenses, the profit would be Rs 1.50 lakhs per year (70% capacity utilization). This works out to a return on investment of 18%. The plant will break even at 51% of the rated capacity.

**Highlight:**

The major highlights of the project are as follows:

Total capital requirement	:	Rs 9.20 lakhs
Promoter's contribution	:	Rs 2.90 lakhs
Annual sales realization (70% cap.)	:	Rs 7.70 lakhs
Annual operating expenses (70% cap.)	:	Rs 6.20 lakhs
Annual profit (pre-tax)	:	Rs 1.50 lakhs
Pre-tax Return on Sales	:	20%
Break Even Point	:	51%
No. of persons employed	:	8

**List of Machinery Suppliers:****List of Raw Materials Suppliers:**

1.	M/s Atlas Works (P) Ltd. 119, Ripon St., Kolkata – 700 016	Raw materials will be available from the authorized local dealers of Capital cities and major towns of the region.
2.	M/s Manaklal & Sons, 115/116 Narayan Dhuru St., Mumbai – 400 003	
3.	M/s Batliboi & Co. Pvt. Ltd. Jeewa Vihar, Parliament St. New Delhi – 110 001	

## ORNAMENTAL FISH

### Introduction:

Ornamental fishes usually mean attractive colourful fishes of various characteristics, which are kept as pets in confined space of an aquarium or a garden pool for fun and fancy. Ornamental fishes are usually kept in glass aquarium and hence popularly known as "Aquarium Fishes". These living jewels need not always have bright colours; as sometimes their peculiar characteristics such as body colour, morphology, mode of taking food etc. may also add to their attractiveness.

The northeast region of India is blessed with rich biodiversity and fisheries resources. With more than 90% of population being fish eaters, there is heavy demand for fish but a wide gap exists between supply and demand. The region produces over 0.214 million tons of fish annually, with almost 50% coming from aquaculture. Aquaculture development in the region is taking place at a rapid rate. However, efforts are necessary to increase the present level of production through both horizontal and vertical expansion. The region has rivers, coldwater streams, floodplain wet lands, reservoirs, lakes, ponds, paddy fields, and mini-barrages to support large-scale aquaculture activities, which can not only produce fish to meet regional requirements, but also export the surplus.

### Commercially Important species:

Ornamental fish keeping and its propagation has been an important activity for many which provide not only aesthetic pleasure but also financial openings. About 600 ornamental fish species have been reported world wide from various aquatic environments. Already 217 fish species belonging to 136 genera has been identified in north Eastern Region, of which about 150 species have been reported to be of ornamental value and in case of more than 50 species, overseas demand has been established. Some of the commercially important species are-

*Chitala*, *Notopterus*, *Gonialosa manmina*, *Gudusia chapra*, *chela cachius*, *C. laubuca*, *Salmostoma bacaila*, *Brachydanio rerio*, *Danio aequipinnatus*, *D. devario*, *D. dangila*, *D. regina*, *Esomus danricus*, *Aspidoparia morar*, *Amblypharyngodon mola*, *Puntius chola*, *P. conchoniis*, *P. gelius*, *P. phutunio*, *P. sophore*, *P. terio*, *P. ticto*, *Osteobrama cotio*, *Rasbora*, *Barilius barila*, *B. bendelisis*, *Acanthocobitis botia*, *Botia histrionica*, *B. berdmorei*, *B. derio*, *Lepidocephalus guntea*, *Mystus vittatus*, *Mystus cavasius*, *Rita rita*, *Gagata cenia*, *Hara*, *Ailia coila*, *A. punatata*, *Pseudotropius atherinoides*, *Clarias batrachus*, *Heteropneustes fossilis*, *Chaca*, *Xenontodon cancila*, *Aplocheilus panchax*, *Monopterus cuchia*, *Chanda nama*, *Pseudambassis ranga*, *P. lalia*, *P. baculis*, *Badis badis*, *Nandus*, *Glossogobius giuris*, *Anabas testudineus*, *Colisa fasciatus*, *C. lalia*, *C. sota*, *Ctenops nobilis*, *C. stewarti*, *Channa orientalis*, *C. punctatus*, *C. barca*, *Macrogathus aral*, *M. pancalus*, *Mastacembelus armatus*, *Tetraodon cutcutia* etc.

### Marketing Potential:

Keeping of aquarium has emerged as the second most popular hobby in recent years, next to photography. The ever-increasing demand for aquarium fishes gradually paved the avenue towards global trade of ornamental fishes. India's overall trade presently is over Rs. 150 million. About 80% of ornamental fishes from India to International market are exported via Kolkata Airport, of which the lion's share is contributed from North Eastern Region.

North Eastern Region is blessed by the presence of mild climate and abundance of ornamental fishes in nature and contributes the lion's share of total ichthyo species in North Eastern region of India. Presence of diverse natural water bodies is also an added advantage. However, there is vast unexplored potential for indigenous ornamental fishes in this region. Scientific and systematic exploration of this potential will definitely ensure a significant place for our Region in this sphere, besides employment generation and earning of foreign exchange.

**Production Capacity (per annum):**

The capacity of the proposed unit has been estimated as under:

- 13 exotic varieties of fish and 150 fresh water ornamental fish species have been found to be viable for export from the region have been considered in the proposed project.
- The capacity has been planned for production of 25,000 units of exotic varieties fishes under 13 species and 80,000 units of wild caught ornamental fish under 150 species, with flexibility for changes in the amount of production.

The proposed project is envisaged to produce 1.05 lakhs nos of ornamental fish as well as exotic fish.

**Infrastructure Requirement:**

The main Infrastructure facilities required are:

1. Required land area:	1 bigha.
2. Open shed area	1000 sq.ft.
3. Office, showroom, laboratory. Store & packing Room, etc.	500 sq. ft.
4. Power requirement:	5 KW
5. Water Supply requirement:	5,000 Ltrs Per/day

**Raw Materials/Consumable/Packaging :**

The brood-stock to be selected for breeding should be superior so that they produce quality fish for sale.

The basic raw material for breeding & rearing is constant availability of agro-based by products like oil cake, rice polish and wheat bran, and animal based prtin such as fish meal and prawn-head meal will facilitate preparation of pelleted diet for the fish.

Ornamental aquarium fish are packed in a polythene bag (thickness not less than 0.1 mm) filled to 1/3 of its volume. The plastic bag should be filled with three parts to one part water and rest oxygen.

**Technology:**

Three type of technology required for exotic/ornamental fish, they are: -

1. Natural.
2. Hypophysation.
3. Stripping method of breeding.

In natural technique, two males and one female brooder, which form a set, are selected and released in the breeding tank, preferably cement with required environment. The brooders must be completely ripe and ready to breed. These brooders are released in the evening, when they usually breed at night. After they breed, the brooders are removed and the eggs are allowed to hatch in the same tank.

In hypophysation, it is difficult to breed ornamental fish seed are tried with this technique. While the composition and cement tank environment brooder set is same as in natural technique, the female brooders are injected with fish pituitary hormone, prepared after standard method @2-3 mg./kg body weight of the brooder. After 6 hours the female is again injected with fish pituitary hormone, as second dose,@ 5-6 mg./kg body weight, of the male brooder. After hormone administration, both male and female brooders are released in the cement-breeding tank, where the fish breed usually within 3-6 hours.

In Stripping technique, the female brooder is held over a plastic or glass bowl. Then its abdomen is slowly and gently pressed towards the genital opening. The eggs will ooze out and fall on the bowl. After the eggs are completely collected, two males, one after another ate stripped to collect their milt over eggs. When the eggs will be fertilized, the fertilized eggs are processed in the hatchery in normal way for hatching.

### Suggested Location:

Breeding and rearing unit should be made near a constant supply of water and electricity. If the unit is located near the streams, it will be excellent where the unit can receive portable water and the rearing unit can be made flow-through.

Breeding and rearing unit must be established nearer to airport/railway station, so that live fish could be easily transported to market as also for export.

### PROJECT ECONOMICS

The total capital requirement estimated is Rs. Lakhs as given below:

<b>E. Fixed Capital:</b>		<u>Rupees in Lakhs</u>
1.	Land 2000 sq.ft.	Own/lease
	i) Site development cost	1.00
	ii) Boundary walls with get	1.50
	iii) Development of Tanks and a small ponds	4.50
2.	Building/Civil Works	
	i) Construction of open shed	2.50
	ii) Office, showroom, laboratory. Store & packing Room, etc.	4.00
	iii) Water supply/boring water/pump set/ Overhead tank/water pipe lining/ Toilet & Septic tank etc.	3.00
3.	Plant and Equipments.	3.60
	i) hose pipe, ii) feeding bags, iii) sprinkler, iv) generator, v) microscope, vi) air pump, vii) power filter, viii) air stone, ix) external power filters, x) High blow air pumps, xi) air regulators, xii) flexible pipes for aeration, xiii) glass equipments, xiv) hand nets short & long, xv) plastic cage, xvi) feeders, xvii) oxygen cylinders with accessories xviii) happa & other misc. tools	
4.	Miscellaneous Fixed Assets like office furniture/ equipments, Electrical connection & installation etc.	1.50
5.	Preliminary and pre-operative expenses	1.00
		<u>22.60</u>
<b>F. Working Capital:</b>		<b>(Norms) (Rs.in Lakh)</b>
	Raw Materials/Consumables/ packaging items	1 month 0.42
	Working Expenses	1 month 0.48
	Finished Goods	7days 0.25
	Receivables	10 days <u>0.75</u>
		<u>1.90</u>

Note: Working capital to be financed as:-

Margin Money	:	90,000
Bank Finance	:	1,00,000



<b>Means of Finance:</b>	<b>(Rupees)</b>
Promoter's Equity(25%)	5,90,000
Term Loan(75%)	<u>17,60,000</u>
	<b><u>23,50,000</u></b>

<b>Production Expenses:</b>	<b>(Rupees)</b>
Raw Materials/Consumables	5,00,000
Wages & Salaries	5,54,000
Utilities	24,000
Repair & Maintenance	12,000
Administrative Overheads	30,000
Selling Expenses 10% on sales	2,46,000
Depreciation	1,25,000
Interest	<u>2,35,000</u>
	<b><u>17,26,000</u></b>

**Profitability:**

Based on the sales Turn over and the production Expenses. The profit would be Rs. 9.20 Lakhs per year. This works out to a return on capital investment of 38%. The Unit would break-even at about 48% of the rated capacity.

**Break Even Analysis:**

U. Variable Cost:	(Rupees)
Raw Materials/Consumables	5,00,000
Utilities	24,000
Selling Expenses	<u>2,46,000</u>
	<b><u>7,70,000</u></b>
V. Semi-Variable Cost:	(Rupees)
Wages & Salaries	5,54,000
Repair & Maintenance	12,000
Administrative Overheads	30,000
Depreciation	1,25,000
Interest	<u>2,35,000</u>
	<b><u>9,56,000</u></b>
W. Sales Turnover:	26.46 lakhs
X. Contribution:	18.76lakhs
Y. Break Even Point:	51%

**Manpower Requirement:**

Personnel	Nos.	Salary per person (Rs.)	Salary Bill (Rs)
Supervisor (Technical)	1	7000	7000
Skilled Workers	3	6000	18000
Maintenance personnel	1	6000	6000
Sales personnel	1	6000	6000
Accounts cum store	1	5000	5000
Total Rs.			42000

Salary Bill Rs. 5.04 Lakhs + Benefits @ 10% annually i.e. Rs. 0.50 lakh  
**Total Annual Salary Bill: Rs. 5.54 lakh**

**Cost of Raw-Materials/consumables/Packing Materials:-**

1.	Cost of Brooders	Rs. 30,000
2.	Purchase price of wild caught	Rs. 1,70,000
3.	Consumables and stores	<u>Rs. 3,00,000</u>
		<u>Rs. 5,00,000</u>

**Sales Realisation:**

By sale of 84,000 exotic/ornamental fish (taking 20% mortality) at Rs. 30.00 (avg.), the total sales realization would be Rs. 26.46 Lakhs.

**Highlights:**

The Major highlights of the project are as follows:

Total Capital Requirement	Rs. 23.50 Lakhs
Promoter's Contribution	Rs. 5.90 Lakhs
Annual Sales Realization	Rs. 26.46 Lakhs
Annual Production Expenses	Rs. 17.26 Lakhs
Annual Profit	Rs. 9.20 Lakhs
Return on Sales	35%
Break-even Point	51%
No. of person employed	7

## POULTRY HATCHERY UNIT

### Introduction :

Poultry meat is the fastest growing component of global meat production. Poultry production in the country has shown a steady increase in the last decade. As a result, there has been a sharp rise in the availability of eggs and broilers. The country produced 800 million broilers in 2002 as compared to 350 million in 1995. The production of poultry meat in 2002 was 975 thousand tons as compared to 576 thousand tons in 1995. The value of India's poultry exports between 2005-06 stood at Rs 167.58 crore.

India, the world's second largest developing economy, now has a large and rapidly expanding poultry sector. The Indian Poultry industry has transformed from meager backyard farming to a well-organized scientific techno commercial industry. Majority of Poultry industry is in organized sector contributing nearly 70% of the total output while rest 30% is coming from unorganized sector. The Status of poultry sector during 10<sup>th</sup> Plan was significant by contributing about 11,000 crores to national GDP, ranking 4<sup>th</sup> in egg production and 19<sup>th</sup> in broiler production in the world. The production was 45.2 billion eggs and about 2.0 million tons of chicken meat.

The sector provides a great employment opportunity. It is estimated that more than 2 million people are employed directly or indirectly in this sector. It is further estimated that an increase of one egg and 50 gms of meat per capita consumption would create an employment opportunity for about 25,000 and 20,000 persons, respectively.

### Product uses:

Poultry meat is the fastest growing animal protein, the uses of eggs and broiler meat are on the increase with growing population. Chicken is most popular causing among the non-vegetarian delicious dishes on Indian dining table is one or other type of the chicken based items.

### Market Potential:

Despite the fact that the country's poultry industry is the fastest growing in the world, its potential to attract big-time foreign investment is negligible and will necessitate a host of changes—greater integration, better cost-efficiencies and improvement in distribution.

Poultry industry's potential for growth also stems from the fact that 80 per cent of India is non-vegetarian. Besides, poultry has no religious sentiment. India is likely to be among the fastest growing poultry consumption nations, due to rising affordability, population growth and conversion from vegetarianism. This is one reason that international market may look at the Indian poultry industry.

In the Northeastern states there is a substantial shortage of chicken meats and eggs against the market demand. The poultry industry is well dominated in the Southern states of the country with nearly 60-70% of the total output coming from these States. However, marketing of the final product is still under the control of traders.

### Production Capacity (per annum):

The capacity of the proposed unit has been estimated as under:

Production per batch in 27 days	1000 chicks	27,000 nos.
Annual Production in 350 days	13 batches	3,51,000 nos.

### Basis:

No. of working days: 350 days per year

### Infrastructure Requirement:

The main Infrastructure facilities required are:

Required shed:	800 sq.ft.
Office cum Store	200 sq.ft.
Power requirement:	5 KW
Water (required in every working day)	5,000 Ltrs

### Raw Materials/Consumables:

The basic raw material for hatchery is foundation egg. The foundation egg will be required to procure from outside the region. The other materials are medicines, glucose and poultry feed which are locally available.

A. Foundation Eggs for broiler/layer	Rs. 6.00 each,
Annual Cost of Raw Materials 3.51 nos.X	Rs. 6.00 each
	Rs. 21.06 Lakhs,
B. Medicine/Vaccination etc.	Rs. 2.00 each, Total Rs.7.02

**Total Cost of Raw Materials/consumables Rs 28.08 Lakhs**

### Process of Manufacture:

The major process steps are: -

- (A) Collection of eggs,
- (B) Testing of eggs using testing machine,
- (C) Laying the selected eggs inside the incubator carefully for setting,
- (D) After 18 days transfer the eggs to planting chamber,
- (E) The hatchery operation is 3 days duration. After 3 days baby chicks come out from egg shell,
- (F) Removing baby chicks from the incubator,
- (G) The second batch of eggs should be placed in incubator after 3 days gap from the first batch operation.
- (H) Placing the baby chicks in separate chamber,
- (I) Medicines to be placed in incubator to avoid diseases.

### Suggested Location:

Hatchery unit can be set up in the state capitals of Northeastern region and all district headquarters of Sikkim. Such unit can also be set in other cities, towns and major urban centers keeping in mind the available transport network within the states/regions preferably Air Linkage.

### PROJECT ECONOMICS

The total capital requirement estimated is Rs. 18.52 Lakhs as given below:

<b>Fixed Capital:</b>	<b><u>Rupees</u></b>
Land 2000 sq.ft.	Own/lease
Building/Civil Works	
a.) Hall cum shed 800 sq.ft. @ Rs. 700/sq.ft.	5,60,000
b.) Office/store 200 sq. ft. @ Rs 600/ sq.ft.	1,20,000
c.) Water System (including Bore Well + over head tank etc)	1,20,000

Plant and Machinery	3,52,000
Miscellaneous Fixed Assets, Electrical works & Other equipments	1,00,000
Preliminary and pre-operative expenses	<u>50,000</u>
	<u>13,02,000</u>

**Working Capital:**

	<b>(Norms)</b>	<b>(Rupees)</b>
Raw Materials/Consumables	1 month	2,34,000
Working Expenses	1 month	41,000
Finished Goods	15 days	1,40,000
Receivables	10 days	<u>1,35,000</u>
		<u>5,50,000</u>

Note: Working capital to be financed as:-

Margin Money:	1,94,000
Bank Finance:	3,56,000

**Means of Finance:**

Promoter's Equity	<b>(Rupees)</b>
Term Loan	3,76,000
	<u>11,20,000</u>
	<b><u>24,00,000</u></b>

**Production Expenses:**

	<b>(Rupees)</b>
Raw Materials/Consumables	28,08,000
Wages & Salaries	3,83,000
Utilities	1,06,000
Repair & Maintenance	25,000
Administrative Overheads	40,000
Selling Expenses 10% on sales	4,91,000
Depreciation	85,000
Interest	<u>1,93,000</u>
	<u>41,31,000</u>

**Profitability:**

Based on the sales Turn over and the production Expenses. The profit would be Rs. 7.83 Lakhs per year. This works out to a return on capital investment of 42 %. The Unit would break-even at about 48% of the rated capacity.

**Break Even Analysis:**

A. Variable Cost:	<b>(Rupees)</b>
Raw Materials/Consumables	28,08,000
Utilities	1,06,000
Selling Expenses	<u>4,91,000</u>
	<u>34,05,000</u>

B. Semi-Variable Cost:

(Rupees)

Wages & Salaries	3,83,000
Repair & Maintenance	25,000
Administrative Overheads	40,000
Depreciation	85,000
Interest	<u>1,93,000</u>
	<u>7,26,000</u>

C. Sales Turnover:	49.14 lakhs
D. Contribution:	15.09 lakhs
E. Break Even Point:	48%

**Manpower Requirement:**

Personnel	Nos.	Salary per person (Rs.)	Salary Bill (Rs)
Supervisor (Technical)	1	7000	7000
Skilled Workers	1	6000	6000
Semi-skilled Workers	2	5000	10000
Salesman	1	6000	6000
Total Rs.			29,000

Salary Bill Rs. 3.48 Lakhs + Benefits @ 10% annually i.e. Rs. 0.35

**Total Annual Salary Bill: Rs. 3.83**

**Sales Realisation:**

By sale of day old broiler and layer chicks at Rs. 14.00(avg.) at ex-factory rate the total sales realization would be Rs. 49.14 Lakhs

**Plant & Machinery:**

Particular	Qty. Nos	Price (Rs.)	(Rupees)
Poultry egg setter 30,000 eggs capacity chickman series, pressed laminated panel without bottom.	1	1,70,000	1,70,000
Poultry Egg hatcher 10,000 Eggs capacity chickmam series, fiber body, without bottom	1	98,000	98,000
<b>Total Rs.</b>			<b>2,68,000</b>
Essential spares/ Accessories Like:			25,000
Setting Trolley	2		
Electric motor ¾ H.P.	1		
Electric motor 1/2 H.P.	1		
Electric motor 1/3 H.P. GE	1		
Transfer table	1		
Jumbo Thermometer	1		
Relay Box	1		
Turning Timer	1		
Dry wet Thermometer	4		
Heater U type	2		
Solenoid valve complete set	1		
Solenoid Coil	2		
			2,93,000
Add. 20% on the cost of P/M as C.S.T. packaging, forwarding, loading/unloading etc.			59,000
<b>Total Rs.</b>			<b>3,52,000</b>

**Highlights:**

The Major highlights of the project are as follows:

Total Capital Requirement	Rs. 18.52 Lakhs
Promoter's Contribution	Rs. 3.76 Lakhs
Annual Sales Realization	Rs. 49.14 Lakhs
Annual Production Expenses	Rs. 41.31 Lakhs
Annual Profit	Rs. 7.83 Lakhs
Return on Sales	16%
Break-even Point	48%
No. of person employed	5

**Address of Machinery Suppliers:**

M/S Karamsar Poultry Appliances(Regd.)  
C-120,Hari Nagar Clock Tower,  
New Delhi-110 64

M/S Metro Poultry Products (I) ltd.  
Paltanbazar ,Guwahati-3

### **Additional information for the benefit of entrepreneurs**

1. Under the scheme operated by CGTMSE, credit guarantee cover is available for all collateral and third party guarantee free loans up to Rs.50 lakh. The eligible activities include all manufacturing and service sector enterprises. The guarantee cover is provided by CGTMSE for a nominal guarantee / annual service fee. Details may be obtained from the Local Lending Institutions, [www.cgtmse.org.in](http://www.cgtmse.org.in) , office of the Lead Bank in the district or Local office of SIDBI.
2. The entrepreneur may also obtain approvals related to specific industries as per the local laws in place. Details may be obtained from the District Industries Centre / local offices of the Lending Institutions.
3. The Government offers certain incentives to units set up in North Eastern Region. The details may be obtained from the District Industries Centre / concerned State Government Department / NEDFi / [www.nedfi.com](http://www.nedfi.com)
4. The debt-equity ratio, margin money requirements, etc., given in the project profiles are indicative. These norms / financing patterns would depend on norms / parameters of respective lending institutions / banks.
5. The Bank does not guarantee accuracy of the data as they have been prepared by North-Eastern Industrial & Technical Consultancy Organisation Limited (NEITCO) from multiple sources, both primary and secondary. The entrepreneurs are advised to cross-check the prices of raw materials, finished products as also prices and suppliers of plant and machinery before taking a decision. It also does not accept any responsibility whatsoever for any consequence arising from the use of the information contained in the document.



**File No.10 (3)/2007-DBA-II/NER**  
**Government of India**  
**Ministry of Commerce and Industry**  
**Department of Industrial Policy and Promotion**  
\*\*\*\*\*

**New Delhi dated the 1st April, 2007.**

**OFFICE MEMORANDUM**

**Subject: North East Industrial and Investment Promotion Policy (NEIIPP), 2007**

The Government has approved a package of fiscal incentives and other concessions for the North East Region namely the '**North East Industrial and Investment Promotion Policy (NEIIPP), 2007**', effective from 1.4.2007, which, inter-alia, envisages the following:

**(i) Coverage:**

The North East Industrial Policy (NEIP), 1997 announced on 24.12.1997 covered the States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. Under NEIIPP, 2007, Sikkim will also be included. Consequently, the 'New Industrial Policy and other concessions for the State of Sikkim' announced vide O.M. No.14(2)/2002-SPS dated 23.12.2002 and the Schemes thereunder i.e. Central Capital Investment Subsidy Scheme, 2002, Central Interest Subsidy Scheme, 2002 and Central Comprehensive Insurance Scheme, 2002, notified vide Notifications No. F.No.14(2)/2002-SPS dated the 24.12.2002 will be discontinued from 1.4.2007.

**(ii) Duration :**

All new units as well as existing units which go in for substantial expansion, unless otherwise specified and which commence commercial production within the 10 year period from the date of notification of NEIIPP, 2007 will be eligible for incentives for a period of ten years from the date of commencement of commercial production.

**(iii) Neutrality of location:**

Incentives will be available to all industrial units, new as well as existing units on their substantial expansion, located anywhere in the North Eastern Region. Consequently, the distinction between 'thrust' and 'non-thrust' industries made in NEIP, 1997 will be discontinued from 1.4.2007.

**(iv) Substantial Expansion:**

Incentives on substantial expansion will be given to units effecting 'an increase by not less than 25% in the value of fixed capital investment in plant and machinery for the purpose of expansion of capacity/modernization and diversification', as against an increase by 33½ % which was prescribed in NEIP, 1997.

**(v) Excise Duty Exemption:**

100% Excise Duty exemption will be continued, on finished products made in the North Eastern Region, as was available under NEIP, 1997. However, in cases, where the CENVAT paid on the raw materials and intermediate products going into the production of finished products (other than the products which are otherwise exempt or subject to nil rate of duty) is higher than the excise duties payable on the finished products, ways and means to refund such overflow of CENVAT credit will be separately notified by the Ministry of Finance.

**(vi) Income Tax Exemption:**

100% Income Tax exemption will continue under NEIIPP, 2007 as was available under NEIP, 1997.

**(vii) Capital Investment Subsidy:**

Capital Investment Subsidy will be enhanced from 15% of the investment in plant and machinery to 30% and the limit for automatic approval of subsidy at this rate will be Rs.1.5 crores per unit, as against Rs.30 lakhs as was available under NEIP, 1997. Such subsidy will be applicable to units in the private sector, joint sector, cooperative sector as well as the units set up by the State Governments of the North Eastern Region. For grant of Capital Investment Subsidy higher than Rs.1.5 crore but upto a maximum of Rs.30 crores, there will be an Empowered Committee Chaired by Secretary, Department of Industrial Policy & Promotion with Secretaries of Department of Development of North Eastern Region (DONER), Expenditure, Representative of Planning Commission and Secretary of the concerned Ministries of the Government of India dealing with the subject matter of that industry as its members as also the concerned Chief Secretary/Secretary (Industry) of the North Eastern State where the claiming unit is to be located.

Proposals which are eligible for a subsidy higher than Rs.30 crores, will be placed by Department of Industrial Policy and Promotion before the Union Cabinet for its consideration and approval.

**(viii) Interest Subsidy:**

Interest Subsidy will be made available @ 3% on working capital loan under NEIIPP, 2007 as was available under NEIP, 1997.

**(ix) Comprehensive Insurance:**

New industrial units as well as the existing units on their substantial expansion will be eligible for reimbursement of 100% insurance premium.

**(x) Negative List:**

The following industries will not be eligible for benefits under NEIIPP, 2007:-

- (i) All goods falling under Chapter 24 of the First Schedule to the Central Excise Tariff Act, 1985 (5 of 1986) which pertains to tobacco and manufactured tobacco substitutes.
- (ii) Pan Masala as covered under Chapter 21 of the First Schedule to the Central Excise Tariff Act, 1985 (5 of 1986).
- (iii) Plastic carry bags of less than 20 microns as specified by Ministry of Environment and Forests Notification No.S.O. 705(E) dated 02.09.1999 and S.O.698 (E) dated 17.6.2003.
- (iv) Goods falling under Chapter 27 of the First Schedule to the Central Excise tariff Act, 1985 (5 of 1986) produced by petroleum oil or gas refineries.

**(xi) Incentives for Service/other Sector Industries**

Incentives under NEIIPP, 2007 will be applicable to the following service sector activities/industries:-

**I. Service Sector :**

- (i) Hotels (not below Two Star category), adventure and leisure sports including ropeways ;

- (ii) Medical and health services in the nature of nursing homes with a minimum capacity of 25 beds and old-age homes;
- (iii) Vocational training institutes such as institutes for hotel management, catering and food crafts, entrepreneurship development, nursing and para-medical, civil aviation related training, fashion, design and industrial training.

A number of tax concessions under the existing provisions of Section 10A and 10AA of the Income Tax Act are already available to the IT sector. However, one of the important impediments to the development of Software Technology Parks or IT related SEZs in the North Eastern Region is the non-availability of trained human resources in the North Eastern Region. Accordingly, tax benefits as is availed under Section 80 IC of the Income Tax Act would be extended to IT related training centers and IT hardware units.

## **II. Incentives for Bio-technology industry:**

The biotechnology industry will be eligible for benefits under NEIIPP, 2007 as applicable to other industries.

## **III. Incentives for Power Generating Industries:**

Power Generating plants will continue to get incentives as governed by the provisions of Section 81A of the Income tax Act. In addition, power generating plants upto 10 MW based on both conventional and non-conventional sources will also be eligible for capital investment subsidy, interest subsidy and comprehensive insurance as applicable under NEIIPP, 2007.

### **(xii) Establishment of a monitoring mechanism for implementation of the NEIIPP, 2007:**

In order to establish a monitoring mechanism for implementation of NEIIPP, 2007, a 'High Level Committee' / an 'Advisory Committee' under the Chairmanship of Secretary, Department of Industrial Policy and Promotion and comprising Secretaries of the Ministries/Departments of Revenue, Department of Development of North Eastern Region (DONER), Banking and Insurance, Representative of Planning Commission, CMD, NEDFi as well as major stakeholders including the industry associations of the North Eastern region would be constituted. In addition, an 'Oversight Committee' will be constituted under the Chairmanship of the Union Commerce and Industry Minister with Industry Ministers of NE States as its members.

### **(xiii) Value Addition**

In order to ensure genuine industrial activities in the North Eastern Region, benefits under NEIIPP, 2007 will not be admissible to goods in respect of which only peripheral activities like preservation during storage, cleaning operations, packing, re-packing, labelling or re-labelling, sorting, alteration of retail sale price etc. take place.

### **(xiv) Transport Subsidy Scheme**

The Transport Subsidy Scheme would continue beyond 31.3.2007, on the same terms and conditions. However, an early evaluation of the scheme will be carried out with a view to introducing necessary safeguards to prevent possible leakages and misuse.

### **(xv) Nodal agency**

The North East Industrial Development Finance Corporation (NEDFi) will continue to act as the nodal agency for disbursement of subsidies under NEIIPP, 2007.

2. The 'New Industrial Policy and other concession in the North Eastern Region' announced vide O.M. No.EA/1/2/96-IPD, dated 24.12.1997 (NEIP, 1997) will cease to operate with effect from 1.4.2007. Industrial Units which have commenced commercial production on or before 31.3.2007 will continue to get benefits/incentives under NEIP, 1997.

3. Government reserves the right to modify any part of the Policy in public interest.

4. All concerned Ministries/Departments of the Government of India are requested to amend their respective Acts/rules/notifications etc. and issue necessary instructions for giving effect to these decisions.

**(N.N. Prasad)**

Joint Secretary to the Government of India

## **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)**

### **Credit Guarantee Scheme**

#### **Introduction**

Micro and Small Enterprises (MSE) sector acts as a pump-primer for economic development in majority of the developed and developing nations. The sustained growth of MSE sector in India in the post independence period has been possible due to the special attention bestowed by the policy makers, which has helped in balanced regional development, and raising standards of living of the rural population.

While SIDBI has attempted to address many of the problems of MSEs through its specialized windows / schemes, the problem relating to collateral security / third party guarantee is being mitigated through the Credit Guarantee Scheme, administered by Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE).

The Credit Guarantee Scheme (CGS) for Micro and Small Enterprises has been launched by the Government of India to make available collateral and third party guarantee free credit to the industrial units in MSE sector, including those in the Information Technology and Software sector, and Small Scale Service Business (Industry related) Enterprises. Both the existing and the new industrial units are eligible to be covered under the scheme. The scheme has been launched by the Government in response to the general complaint by the society at large that owing to their inability to arrange collateral security and third party guarantee, the first generation entrepreneurs in the MSE sector find it extremely difficult to access credit from the organized banking sector. The banks on their part are extremely concerned about the growing rate of defaults in small loans and hence try to collateralize their exposure to the small borrowers. Keeping this in mind it was thought fit to create the instrument of Credit Guarantee to enhance the comfort level of the banks for financing loans, as well as a new gateway for MSE entrepreneurs to get funding without collateral security and / or third party guarantee.

The Ministry of Micro, Small and Medium Enterprises (MSME), GoI and Small Industries Development Bank of India (SIDBI), established a Trust named **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)** to implement the Credit Guarantee Scheme for Micro and Small Enterprises. The scheme was formally launched, on August 30, 2000. The corpus of CGTMSE is being contributed by the Settlers i.e. GoI and SIDBI in the proportion of 4:1, respectively. The Settlers have contributed Rs.1584.05 crore to the corpus of the Trust (as on August 31, 2008) against the target corpus of Rs.2500 crore.

#### **Eligible Lending Institutions**

The institutions, which are eligible under the scheme, are scheduled commercial banks, including Public Sector Banks, Private Sector Banks, Foreign Banks and select Regional Rural Banks (which have been classified under 'Sustainable Viable' category by NABARD). National Small Industries Corporation Ltd. (NSIC), North Eastern Development Finance Corporation Ltd. (NEDFi), and Small Industries Development Bank of India, have also been made eligible institutions. As on August 31, 2008, there were 64 Member Lending Institutions (MLIs) of the Trust, comprising 27 Public Sector Banks, 14 Private Sector Banks, 20 Regional Rural Banks and 3 other Institutions viz. NSIC, NEDFi and SIDBI. List of MLIs is enclosed at **Annexure-I**.

#### **Eligible Credit Facility**

The credit facilities which are eligible to be covered under the scheme are both term loans and working capital facility up to Rs.50 lakh per borrowing unit, extended without any collateral security or third party guarantee, to a new or existing unit in the Micro and Small Enterprises Sector.

### **Guarantee Cover**

The guarantee cover available under the scheme is to the extent of 75 per cent of the sanctioned amount of the credit facility subject to maximum of Rs.37.50 lakh per borrowing unit. The coverage is 80% in respect of units promoted by women entrepreneurs, units located in North Eastern Region and for micro enterprises upto Rs.5 lakh subject to a maximum of Rs.40 lakh per borrower.

In case of MSEs in NER, guarantee cover is extended in respect of the credit facility co-financed by the MLIs with SIDBI out of the MSE Fund for NER created by SIDBI.

### **Tenure of Guarantee**

The Guarantee cover under the scheme runs through the agreed tenure of the term loan / composite credit. The tenure is 5 years or block of 5 years, in case of working capital is covered under Credit Guarantee Scheme.

### **Fee for Guarantee**

The fee payable to the Trust under the scheme is given below:

Credit Facility	Upfront Guarantee Fee		Annual Service Fee
	North East Region (incl. Sikkim)	Others	
Upto Rs.5 lakh	0.75%	1.00%	0.50%
Above Rs.5 lakh to Rs.50 lakh	0.75%	1.50%	0.75%

### **Website**

The operations of CGTMSE are conducted on B2B portal through internet. The website of CGTMSE has been hosted at [www.cgtmse.in](http://www.cgtmse.in).

**ANNEXURE – I**  
**Member Lending Institutions of CGTMSE**

**SCHEDULED COMMERCIAL BANKS**

➤ **PUBLIC SECTOR BANKS**

- Allahabad Bank
- Andhra Bank
- Bank of Baroda
- Bank of India
- Bank of Maharashtra
- Canara Bank
- Central Bank of India
- Corporation Bank
- Dena Bank
- IDBI Limited
- Indian Bank
- Indian Overseas Bank
- Oriental Bank of Commerce
- Punjab & Sind Bank
- Punjab National Bank
- Syndicate Bank
- UCO Bank
- Union Bank of India
- United Bank of India
- Vijaya Bank

➤ **SBI AND ITS ASSOCIATE BANKS**

- State Bank of India
- State Bank of Bikaner & Jaipur
- State Bank of Hyderabad
- State Bank of Indore
- State Bank of Mysore
- State Bank of Paitala
- State Bank of Travancore

➤ **PRIVATE SECTOR BANKS**

- HDFC Bank Ltd.
- ICICI Bank Ltd
- ING Vysya Bank Ltd.
- IndusInd Bank Ltd.
- The Jammu & Kashmir Bank Ltd.
- The Nainital Bank Ltd.
- The South Indian Bank Ltd.
- The Federal Bank Ltd.
- The Bank of Rajasthan Ltd.
- AXIS Bank Ltd.
- Kotak Mahindra Bank Ltd.
- Tamilnad Mercantile Bank Ltd.
- Karnataka Bank Ltd.
- Yes Bank Ltd.

➤ **REGIONAL RURAL BANKS**

- Select RRBs (20 Nos.)

➤ **OTHER LENDING INSTITUTIONS**

- National Small Industries Corporation Ltd.
- North Eastern Development Finance Corporation Ltd.
- Small Industries Development Bank of India







## SME RATING AGENCY OF INDIA LTD (SMERA)

SME Rating Agency of India Ltd (SMERA) is the country's first & only dedicated rating agency for the MSMEs in India. SMERA was set up in 2005 as a joint initiative of SIDBI, Dun & Bradstreet and several leading public, private sector & foreign banks in the country, with an objective of facilitating flow of credit to MSMEs in the country. 24 banks have entered into MOUs with SMERA, out of which 11 banks have agreed to extend favourable credit terms, including reduction in interest rates to units rated by SMERA. SMERA has completed more than 2000 MSME ratings and many of the better rated SMERA units have started receiving benefits from the banking sector.

### **Ratings from SMERA could also help you to –**

1. Market your enterprise to banks/overseas/domestic corporate for better terms and more business
2. Get Third party and professional insight in your business.
3. Enable comparison of your enterprise information with your industry to improve performance.
4. Build on your strengths and improve your weaknesses.
5. Get shortlisted for Government procurement tenders.

SMERA has offices in all the major metros and its associates also operate from SIDBI offices across the country. For the benefit of the MSME units in the North Eastern States, SMERA is shortly planning to locate its representatives in SIDBI office at Guwahati.

SMERA evaluates MSME units on the basis of its 3 years' financial as well as non-financial information. The rating process is completed within 15 days from the date of receipt of all information. Post rating, SMERA Rating certificate is shared with the rated unit, which can be presented to the banks and other institutions for availing of benefits.

If the benefit of SMERA ratings do interest you, then please fill up the attached fax response form and fax it to us on 00-91-22-67141142 , alternatively send us a mail at **[www.smera.in](http://www.smera.in)**. On receipt of your fax or mail, our customer service executive will contact you for an appointment.



### Fax Response Form

Please tick the boxes below:

- Yes, I want to meet SMERA's Rating Consultant to explain how SMERA ratings will help my company.
- Yes, I am interested in knowing how SMERA ratings will help my company but later, after \_\_\_\_\_ days.
- No, I am not interested in SMERA ratings

My contact details are as follows:

<b>Name &amp; Designation:</b> _____
<b>Company Name:</b> _____
<b>Address:</b> _____
<b>City</b> _____ <b>Pincode</b> _____
<b>Contact details: Phone:</b> _____ <b>Fax</b> _____
<b>Mobile:</b> _____ <b>E-mail</b> _____
<b>Line of Business:</b> _____

## **SIDBI's Branch Network in North Eastern Region**

### **Guwahati Regional & Branch Office**

Small Industries Development Bank of India  
GRO, IDBI Building, Opposite Sentinel Press,  
G.S. Road, Guwahati – 781005  
Phone : 0361 – 2429159, Fax : 2529545

### **Agartala**

Small Industries Development Bank of India, Bijoy Kumar Chowmuhani  
Krishna Nagar, Harish Thakur Road, Agartala – 799001  
Phone : 0381-2323320, Fax : 2323320

### **Aizawl**

Small Industries Development Bank of India  
Mardin Tuikhuahtlang, Aizawl – 796001  
Phone : 0389-2323424, Fax : 2323424

### **Dimapur**

Small Industries Development Bank of India  
IDC House, Kohima Road, Dimapur – 797112  
Phone : 03862-225641, Fax : 225641

### **Gangtok**

Small Industries Development Bank of India  
Ragasha Building, Nam-Nam Road, Gangtok – 737101  
Phone : 03592-203028, Fax : 223028

### **Imphal**

Small Industries Development Bank of India  
Imphal Urban Co-operative Bank Ltd. Building,  
M.G. Avenue, Imphal – 795001  
Phone : 0385-2451878, Fax : 2451878

### **Itanagar**

Small Industries Development Bank of India  
12, Tadar Tang Marg,  
VIP Road, Bank Tinali, Itanagar – 791111  
Phone : 0360-2211822, Fax : 2211822

### **Shillong**

Small Industries Development Bank of India  
Morello Building,  
M.G. Road, Shillong – 793001  
Phone : 0364-2222639, Fax : 2222639

### **Address of North Eastern Industrials & Technical Consultancy Organisation Ltd**

NEITCO Ltd. G.S. Road, Bhangagarh, Guwahati-5.  
Phone : 0361-2529470, 2529158, Fax : 0361-2529592

**SIDBI WEBSITE: <http://www.sidbi.in>  
Toll Free No. 1800 22 6753**