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 filed 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 Mizoram1

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	2.20
	Total (A)	**37.00**
		=====

B. Working Capital:

Raw materials	2 months	5.00
Finished goods	3 weeks	3.00
Working expenses	1 month	0.50
Receivables	2 weeks	2.00
	Total (B)	**10.50**
		====
	Total (A)+(B)	**47.50**

Note: Working capital may be financed as:

Bank Finance	…..	Rs 6.30 lakhs
Margin Money	…..	Rs 4.20 lakhs
		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%)	….	Rs 26.80 lakhs
		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%	2.00
		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 Kwality 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,
   3rd floor,
   Kolkata – 700 071

4. M/s Swastic Plastics,
   24/25, Roopchand Roy Street,
   Kolkata – 700 001