

PROJECT REPORT

Of

BIODEGRADABLE PLASTIC BAGS (PLA BASED)

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Biodegradable Plastic Bags (PLA Based).

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and management.

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]



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BIODEGRDABLE PLATSIC BAGS (PLA BASED)

MANUFACTURING

1. INTRODUCTION

The term “Biodegradable” refers to anything or substances that can be degraded by the natural forces and micro-organisms and Bio-degradable plastics refer to those plastics that can be decomposed by the micro-organisms and also natural factors such as rain, sunlight, etc. Hence these bags will not pose to be a threat to the environment. Plastic bags can be made “Oxo-biodegradable” by manufacturing theme from the normal polyethylene or the polypropylene and then incorporating an additive that can cause them to degrade and then biodegradation of the polymer by oxidation.



Fig.: Biodegradable Plastic Bags and PLA pellets

The global production capacity of the biodegradable plastic bags reached around 1.17 million tons in 2019. Polylactic Acid (PLA) based is probably the most well-known biodegradable plastic but besides that there are about 20 groups of biodegradable plastic polymers. Of these 20 known biodegradable plastic groups, only 3 types are produced commercially and those include (i) Starch blends (ii) PLA; and (iii) Polybutylene based polymers which includes Polybutyl Succinate (PBS) and Polybutylene Adipate Terephthalate (PBAT) which are both fossil fuel based.

PLA (Polylactic Acid) is a potential and popular polymer material. It is also called “Polylactide” and can be produced by the fermentation of renewable sources such as Corn, Cassava, Potato, and Sugarcane. Other feedstock that have been researched and explored include Cellulosic Materials, Agricultural Byproducts, and even greenhouse gases such as Carbon dioxide and Methane. But that technology is still under development and agricultural by-products set to remain as the main feedstock for starch blends and PLA in the near future. PLA has excellent properties as compared to aliphatic polyesters such as high mechanical strength, high modulus, biodegradability, biocompatibility, bioabsorbability, transparency, and low toxicity. Because of its excellent properties, PLA has shown potential applications in different sectors such as agricultural films, biomedical devices, packaging, and automotive industries. Although PLA is a bio-degradable polymer, but its complete degradation may take several years. As of 2019, production capacity of PLA was approximately 290 thousand tons.

The initial production of the biodegradable polymers started in the Europe, the US, and Japan but the production was soon shifted to different parts of Asia due to the low cost of the raw materials and the convenience of feedstock acquisition. Many companies have emerged in China, India, and Thailand that are financed by the local investors and also companies from the global north.

2. MARKET POTENTIAL

The global was valued at USD 3.27 billion in 2019 and is expected to reach USD 6.12 billion by 2023 at a CAGR of 15.1 % from 2020 to 2025. The governments across the world are prohibiting the use of single use plastics and this coupled with the rising awareness among the people regarding the harm that the plastics are doing to the Earth are among the key trends that are fuelling this market. Non-compostable plastics are an issue across the globe now and the best way to deal with it is the manufacture and the use of biodegradable plastics.

The market can be segmented on the basis of Material, End-Use, and Regional Outlook.

On the basis of the Material, there can be the following types: Starch-based, PLA-based, Polybutylene Adipate Terephthalate (PBAT), Polybutylene Succinate (PBS), Polyhydroxyalkanoate (PHA), and others. Among these types, the Starch-based bags are set to dominate the market. The segment is poised to expand at a revenue-based CAGR of 10.4%

during the same period in terms of revenue. The PLA-based plastics on the other hand are also another popular category and this is mainly due to the low-cost of the products.

On the basis of End-Use the areas include: Packaging, Industrial sector, Agricultural sector, and others. Among them, the packaging sector dominates the market as Biodegradable plastics are used in both flexible and rigid packaging. Replacement of conventional plastics by these products in food packaging such as boxes, wraps, cups, and plates is gaining momentum, which is supporting the growth of the biodegradable plastic market. In the agricultural sector, the use of Biodegradable Mulch Film ensures conservation of water in the soil, suppresses weed growth, and soil temperature maintenance in order to facilitate faster crop development.

As far the regional outlook is considered, the market can be divided into North-America, Europe, Asia-Pacific region, and the rest of the world. Among the above regions, the highest market share in the biodegradable plastics market is hold by Europe since 2019. In the Asia-Pacific region as well, the market is expected to emerge as the fastest growing market.

3. INDUSTRIAL SCENERIO

The major names in the biodegradable plastics market are: BASF SE, NatureWorks LLC, Mitsubishi Chemical Corporation, Carbion, and Biome Technologies plc. On the global scale, the American company NatureWorks leads the PLA sector, operating a manufacturing facility in Midwestern state of Nebraska with a production capacity of 150,000 tons. They use crops that grow within 50 miles of their US production capacity.

Total Corbion PLA operates the world's second largest PLA plant in Rayong, Thailand. The plant was opened in 2019, with an annual capacity of 75,000 tonnes, using non-Ithe company announced, the company announced its plan for a second PLA plant based in Grandpuits, France, with an annual capacity of 100,000 tonnes. The remaining major PLA producers are mainly from China and most of the companies are small scale companies with a fairly small production capacity of 10, 000 – 50, 000 tons per year. Jiangsu Yunyoucheng operates the largest PLA plant in China, with an annual capacity of 50,000 tonnes.

In India too, there is a high demand for bio-degradable plastics and our country has a huge amount of bio-mass required for their production. Quite a few manufacturing firms like

Envigreen, Ecolife, Plastobags, Earthsoul India and Truegreen have come up with different forms of bioplastics, which are already supplying these environment friendly forms of plastics in regional markets.

Truegreen is a firm based out of Ahmedabad that started the manufacturing plant with a production capacity of 5000 MT per year. Ecolife is a firm based out of Chennai that manufactures Bio-plastics for industrial purposes. Bengaluru based firm Envigreen which is the latest startup to enter the Indian bioplastics market has a production capacity of upto 1000 Tons bioplastics per year.

4. PRODUCT DESCRIPTION

4.1 PRODUCT USES

The uses of the biodegradable plastics can be listed as follows:

1. The manufacturing of the compostable bags is the primary sector of application of the Biodegradable plastics. These bags can be used as grocery carrying, Food Storage, Garbage bags,
2. Packaging is another important sector of application of the biodegradable plastics and accounted for 59 % of the biodegradable plastics made in 2019. Flexible packaging requires almost 500, 000 tons of biodegradable plastics.
3. The second area is the agricultural and the horticultural sector that used 14 % of the biodegradable plastics manufactured in 2019. Agricultural mulching film is used to improve crop yield in many countries.
4. They are also used as consumer goods in different areas.

4.2 RAW MATERIAL REQUIREMENT

The raw materials required for the production of PLA plastics are “Polylactic Acid or Polylactic Acid Blends”. These are available in the form of granules, in various grades, for the use by the plastic convertors.

PLA is a polymer of Lactic Acid, which is a natural acid produced by the fermentation of sugars or starch with the help of micro-organisms. The PLA formed

from the starch or the sugar is incapable of being used as plastics and hence the raw PLA is compounded by mixing it with other substances or by co-polymerization or it is blended with other plastics to enhance its properties.

Besides this, certain additives are also added to the PLA blends that include UV stabilizers, impact resistance modifiers, plasticizers, color pigments.

4.3 MANUFACTURING PROCESS

The production process for PLA Plastic Blends can be written as follows:

1. A “polymer” becomes plastic only when they are correctly adapted to the specific application by compounding. Compounding means preparing for use, and describes the enhancing process that raw plastics go through, being blended with certain additives (e. g. fillers or other additives) to optimize their properties for the planned application. Such aids can be processing aids, UV stabilizers, impact resistance modifiers, plasticizers, color pigments, and many other things.

Compounding can be done in a mixing vessel. Here the components that are added to the PLA blends are mixed together and homogenized.

2. The PLA blends are loaded into the hopper of a Plastic extrusion machine and it conveyed to the rotating screw of the machine.

In the extruder, the PLA blends are heated to a particular temperature and then diversified. When the plastic within container is heated it becomes a melt, it can be extruded and then blown up with the help of circular die to give an inflated plastic sheet.

3. The inflated sheet of plastic is blown up vertically to a high level that further allows the material, a proper distribution and provides the required cooling time before the plastic film is flattened.
4. The ending step in the manufacturing process is to send the inflated sheet through a section of nip rollers to make the film flat and later roll the film into large cores. By altering the speed of the nip rolls, the bubble like formation can change its measurement and thickness of the film.

5. Following the extrusion process, the large coil of plastic films enters the converting department where the film roll is fed into an unwinder, where it's subsequently converted to the plastic bags. The plastic roll is treated with an electrostatic wave of current where it starts to unwind. This is an "Optional" step and is carried out to appropriately prepare the film for the printing process, where the plastic bags are printed with logos and messages.
6. Either after the printing process or after the extrusion process, depending on weather any printing is done, the film is cut into the correct dimensions with hot knives that seal the ends of the bags together at the same time.
7. After the cutting and the sealing process, any material that is "Scrap" is reused again in the manufacturing process in order to minimize any waste material.
8. After this process, the plastic bags are packed in large bundles and then stored for dispatch.

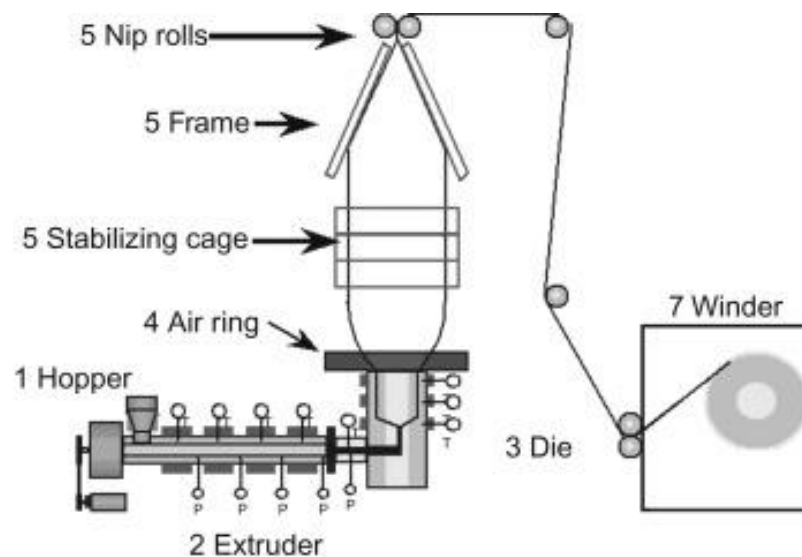


Fig.: Schematic diagram of the extrusion and blow up process.

4.4 YIELD OF PRODUCT/PRODUCTION RATIO

The annual production capacity of this Biodegradable Plastic Plant can be something between 100 MT – 250 MT per year depending upon the capacity of the machines used.

5. INDIAN STANDARDS FOR THE PRODUCT

IS 17088-2008 lays down the Specifications for “Compostable Plastics” specifying the procedures and requirements for the identification and labelling of plastics, and products made from plastics, that are suitable for recovery through aerobic composting.

6. PROJECT COMPONENTS

6.1 Land /Civil Work

An area of almost 2,000 – 3,000 square feet would be required to set up Biodegradable Plastic Bags Manufacturing plant. This space would be required for raw materials storage mainly, production, packaging, storage of finished goods, and administrative work.

We have not considered the cost of Land purchase & Building Civil work in the project. It is assumed that land & building will be on rent & approx. rental of the same will be Rs. 40,000 to 60,000 per month.

6.2 Plant & Machinery

The following machineries would be required for the manufacture of the Biodegradable Plastic Bag manufacturing plant:

1. A vertical mixing equipment for the mixing of the PLA with the other additives. The raw material is loaded through the hopper and thereby it is sucked up into the mixer. The outlet is connected to the extruding machine. This is generally made from mild steel and the power consumption is somewhere between 8 – 14 HP for the mixing 100 – 500 Kg PLA granules.



Fig.: Vertical blending machine

2. Plastic Extruder & Blow Film Machine. The mixed PLA blend is melted and shaped into the plastic bags in the extrusion machine, converting the solid plastic pellets into a uniform polymer melt. The power consumption can be anywhere between 30 - 50 kW depending upon the quantity of the input.



Fig.: Plastic bag extrusion with blown film.

3. After the plastic pellets are converted into the plastic rolls in the extrusion machine, they are printed in the Plastic bag printing machine.



Fig.: Plastic bags printing machine

4. After the bags have been printed, they are cut and their ends are sealed with a Plastic Cutting and Sealing machine. This machine may come along with a conveyor belt as well.



Fig.: Polythene bag cutting and sealing machine

S. No.	Description	Qty.	Rate Per Unit
01.	SDI -BIO DEGRDABLE FLIM BLOWING MACHINE	01	17,00,000.00
02.	CUTTING & SEALING MACHINE	01	13,00,000.00
03.	HYDRAULIC MANUAL PRESS PUNCHING	01	3,00,000.00
04.	4 COLOR FLIM PRINTING MACHINE(OPTIONAL)	01	14,00,000.00
	Sub-Total		47,00,000
	GST @ 18%		8,46,000
	TOTAL		55,46,000

6.3 Misc. Assets

The miscellaneous assets include Spare parts for the extruder, printing machine, cutting and sealing machine, extruder die, water circulation unit for the excess heat buildup, pellet storage tanks, scrap shredder, safety equipment, instrument chart and accessories, cleaning materials of the plants, furniture, and other electrical equipments.

6.4 Power Requirement

The machineries in a Biodegradable Plastic Bag manufacturing plant can work with a 3 phase AC 40-80 KW power supply.

6.5 Manpower Requirement

The total manpower required for the operation of Biodegradable Plastic bag is about 12 -15.

7. LICENSE & APPROVALS

To start the biodegradable plastic bag manufacturing process the different licenses and registrations from the different authorities regarding the area and machineries must be obtained initially. These laws vary from one state to the other. Besides them, the other certificates that must be obtained are:

1. A trade license from the local Municipal Body authority.
2. MSME Udyam Online registration
3. The GST (Goods and Service Tax) certification.
4. A “No-objection Certificate” from the Pollution Control Board.
5. A “No-objection Certificate” from the Fire Board.

8. SWOT ANALYSIS

Strengths: On one hand when plastics take somewhere between 20 to 500 years for their degradation, Biodegradable plastics can be degraded by the natural forces within 5 years which is a major advantage over the normal plastics. The issue of Global Warming and rising levels of pollution are also spreading awareness among the people thus motivating them to use the biodegradable variety.

Another major advantage of the Biodegradable plastic bag manufacturing is the fact that the raw materials are not sourced from petroleum.

Weaknesses: Despite several environmental advantages, the Biodegradable have a range of shortcomings too. Segregation of the plastics and the biodegradable plastics is a major drawback as they look very similar. Moreover, they take a long amount of time to get decomposed and some of them even do not degrade under normal conditions and specified conditions are required for their degradation. Some of the biodegradable plastics release

greenhouse gases during decomposition, which is counterproductive to the environmental cause, thus restraining the market growth.

Opportunities: With the rising awareness among the people regarding the different environmental concerns, the biodegradable plastics are to find a huge market and hence market in the near future.

Threats: The major threat to the market is the fact that the PLA bags take a lot of time to decompose which might lead ways to other faster degrading materials.

9. FINANCIALS

COST OF PROJECT	
(in Lacs)	
PARTICULARS	AMOUNT
Land & Building	Owned/rented
Plant & Machinery	55.46
Miscellaneous Assets	2.00
Furniture	1.00
Working capital	20.00
Total	78.46

MEANS OF FINANCE	
PARTICULARS	AMOUNT
Own Contribution @ 25%	19.62
Term Loan @ 75%	43.85
Working Capital (Bank Finance)	15.00
Total	78.46

PROJECTED BALANCE SHEET						(in Lacs)
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year	
<u>Liabilities</u>						
Capital						
Opening Balance		21.40	26.78	33.97	41.51	
Add:- Own Capital	19.62					
Add:- Retained Profit	7.28	11.38	14.19	18.54	22.27	
Less:- Drawings	5.50	6.00	7.00	11.00	13.50	
Closing Balance	21.40	26.78	33.97	41.51	50.28	
Term Loan	38.97	29.23	19.49	9.74	-	
Working Capital Limit	15.00	15.00	15.00	15.00	15.00	
Sundry Creditors	7.48	9.78	10.98	13.05	14.50	
Provisions & Other Liabilities	0.50	0.75	0.90	1.08	1.30	
TOTAL :	83.35	81.53	80.33	80.39	81.08	
<u>Assets</u>						
Fixed Assets (Gross)	58.46	58.46	58.46	58.46	58.46	
Gross Depreciation	8.72	16.14	22.44	27.81	32.37	
Net Fixed Assets	49.74	42.32	36.02	30.65	26.09	
Current Assets						
Sundry Debtors	11.40	13.55	15.24	17.00	18.88	
Stock in Hand	20.03	23.33	26.22	29.23	32.48	
Cash and Bank	1.18	1.58	1.62	2.00	1.62	
Loans and advances/other current assets	1.00	0.75	1.25	1.50	2.00	
TOTAL :	83.35	81.53	80.33	80.39	81.08	

PROJECTED CASH FLOW STATEMENT					(in Lacs)
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
<u>SOURCES OF FUND</u>					
Own Margin	19.62				
Net Profit	7.54	13.04	17.06	23.27	28.59
Depriciation & Exp. W/off	8.72	7.42	6.31	5.37	4.56
Increase in Cash Credit	15.00	-	-	-	-
Increase In Term Loan	43.85	-	-	-	-
Increase in Creditors	7.48	2.30	1.20	2.07	1.45
Increase in Provisions & Other liabilities	0.50	0.25	0.15	0.18	0.22
TOTAL :	102.69	23.01	24.72	30.89	34.83
<u>APPLICATION OF FUND</u>					
Increase in Fixed Assets	58.46				
Increase in Stock	20.03	3.30	2.89	3.02	3.25
Increase in Debtors	11.40	2.15	1.69	1.76	1.89
Increase in loans and advances	1.00	0.25	0.50	0.25	0.50
Repayment of Term Loan	4.87	9.74	9.74	9.74	9.74
Drawings	5.50	6.00	7.00	11.00	13.50
Taxation	0.26	1.66	2.87	4.73	6.33
TOTAL :	101.51	22.61	24.69	30.50	35.21
Opening Cash & Bank Balance	-	1.18	1.58	1.62	2.00
Add : Surplus	1.18	0.40	0.04	0.39	-0.38
Closing Cash & Bank Balance	1.18	1.58	1.62	2.00	1.62

PROJECTED PROFITABILITY STATEMENT					(in Lacs)
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	50%	55%	60%	65%	70%
SALES					
BIODEGRADABLE PLASTIC BAGS	228.00	271.01	304.73	339.94	377.70
Total	228.00	271.01	304.73	339.94	377.70
COST OF SALES					
Raw material cost	172.50	195.53	219.60	244.73	271.95
Electricity Expenses	8.40	9.24	10.16	11.18	12.30
Depreciation	8.72	7.42	6.31	5.37	4.56
Wages & labour	9.36	10.30	11.33	12.46	13.70
Repair & maintenance	1.14	2.71	3.66	3.40	3.78
Consumables	2.85	3.39	3.81	4.25	4.72
Packaging cost	5.70	5.42	5.33	5.95	6.61
Cost of Production	208.67	234.00	260.20	287.33	317.63
Add: Opening Stock	-	11.40	13.55	15.24	17.00
Less: Closing Stock	11.40	13.55	15.24	17.00	18.88
Cost of Sales	197.27	231.84	258.51	285.57	315.74
GROSS PROFIT	30.73	39.17	46.21	54.37	61.96
Salary to Staff	5.76	6.62	7.62	8.76	10.07
Interest on Term Loan	4.31	4.48	2.72	1.65	0.58
Interest on working Capital	1.65	1.65	1.65	1.65	1.65
Rent	6.00	6.60	7.26	7.99	8.78
Selling & Administration Expenses	5.47	6.78	9.90	11.05	12.28
TOTAL	23.19	26.13	29.16	31.10	33.36
NET PROFIT	7.54	13.04	17.06	23.27	28.59
Taxation	0.26	1.66	2.87	4.73	6.33
PROFIT (After Tax)	7.28	11.38	14.19	18.54	22.27

CALCULATION OF D.S.C.R

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	16.00	18.80	20.50	23.91	26.83
Interest on Term Loan	4.31	4.48	2.72	1.65	0.58
Total	20.31	23.27	23.22	25.56	27.41
<u>REPAYMENT</u>					
Instalment of Term Loan	4.87	9.74	9.74	9.74	9.74
Interest on Term Loan	4.31	4.48	2.72	1.65	0.58
Total	9.18	14.22	12.47	11.40	10.32
DEBT SERVICE COVERAGE RATIO	2.21	1.64	1.86	2.24	2.66
AVERAGE D.S.C.R.					2.12

COMPUTATION OF PRODUCTION OF BIODEGRADABLE		
Items to be Produced		
BIODEGRADABLE PLASTIC BAGS		
Machine capacity Per Day	500	KG
Total working Hours	8	hours
Tortal shifts in a Day	1	Shift
Machine capacity per day	500	KG
Working days in a month	25	Days
Working days per annum	300	
Machine capacity per annum	150000	KG

Production of BIODEGRADABLE PLASTIC BAGS		
Production	Capacity	KG
1st year	50%	75,000
2nd year	55%	82,500
3rd year	60%	90,000
4th year	65%	97,500
5th year	70%	1,05,000

Raw material cost			
Year	Capacity	Rate (per KG)	Amount (Rs. in lacs)
1st year	50%	230.00	172.50
2nd year	55%	237.00	195.53
3rd year	60%	244.00	219.60
4th year	65%	251.00	244.73
5th year	70%	259.00	271.95

COMPUTATION OF SALE-BIODEGRADABLE PLASTIC BAGS

Particulars	1st year	2nd year	3rd year	4th year	5th year
Op Stock	-	3,750	4,125	4,500	4,875
Production	75,000	82,500	90,000	97,500	1,05,000
Less : Closing Stock (15 Days)	3,750	4,125	4,500	4,875	5,250
Net Sale	71,250	82,125	89,625	97,125	1,04,625
sale revenue per KG	320.00	330.00	340.00	350.00	361.00
Sales (in Lacs)	228.00	271.01	304.73	339.94	377.70

BREAK UP OF LABOUR CHARGES

Particulars	Wages Rs. per Month	No of Employees	Total Salary
Skilled	14,000	3	42,000
Unskilled	12,000	3	36,000
Total salary per month			78,000
Total annual labour charges	(in lacs)		9.36

BREAK UP OF Staff Salary CHARGES

Particulars	Salary Rs. per Month	No of Employees	Total Salary
Helper	7,000	5	35,000
Administartive staff	13,000	1	13,000
Total salary per month			48,000
Total annual Staff charges	(in lacs)		5.76

Utility Charges (per month)

Particulars	value	Description
Power connection required	50	KWH
consumption per day	400	units
Consumption per month	10000	units
Rate per Unit	7	Rs.
power Bill per month	70000	Rs.

COMPUTATION OF CLOSING STOCK & WORKING CAPITAL					(in Lacs)
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Finished Goods					
(15 Days)	11.40	13.55	15.24	17.00	18.88
Raw Material					
(15 Days)	8.63	9.78	10.98	12.24	13.60
Closing Stock	20.03	23.33	26.22	29.23	32.48

COMPUTATION OF WORKING CAPITAL REQUIREMENT					
TRADITIONAL METHOD					(in Lacs)
Particulars	Amount	Own Margin		Bank Finance	
Finished Goods & Raw Material	20.03				
Less : Creditors	7.48				
Paid stock	12.55	25%	3.14	75%	9.41
Sundry Debtors	11.40	25%	2.85	75%	8.55
	23.95		5.99		17.96
MPBF					17.96
WORKING CAPITAL LIMIT DEMAND (from Bank)					15.00

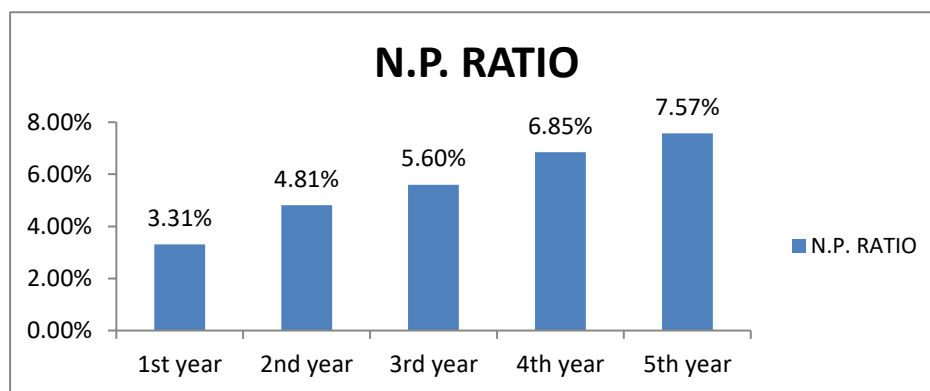
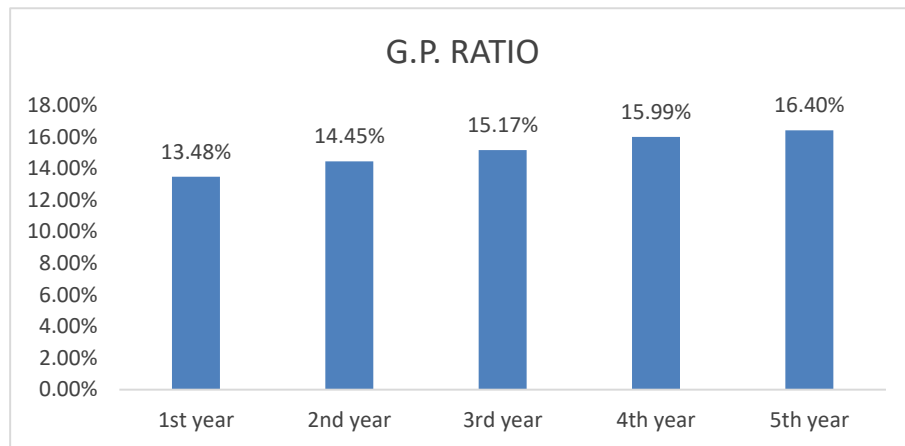
COMPUTATION OF DEPRECIATION				(in Lacs)
Description	Plant & Machinery	Miss. Assets	Furniture	TOTAL
Rate of Depreciation	15.00%	15.00%	10.00%	
Opening Balance	-	-		-
Addition	55.46	2.00	1.00	58.46
Total	55.46	2.00	1.00	58.46
Less : Depreciation	8.32	0.30	0.10	8.72
WDV at end of Year	47.14	1.70	0.90	49.74
Additions During The Year	-	-	-	-
Total	47.14	1.70	0.90	49.74
Less : Depreciation	7.07	0.26	0.09	7.42
WDV at end of Year	40.07	1.45	0.81	42.32
Additions During The Year	-	-	-	-
Total	40.07	1.45	0.81	42.32
Less : Depreciation	6.01	0.22	0.08	6.31
WDV at end of Year	34.06	1.23	0.73	36.02
Additions During The Year	-	-	-	-
Total	34.06	1.23	0.73	36.02
Less : Depreciation	5.11	0.18	0.07	5.37
WDV at end of Year	28.95	1.04	0.66	30.65
Additions During The Year	-	-	-	-
Total	28.95	1.04	0.66	30.65
Less : Depreciation	4.34	0.16	0.07	4.56
WDV at end of Year	24.61	0.89	0.59	26.09

REPAYMENT SCHEDULE OF TERM LOAN								
							Interest	11.00%
Year	Particulars	Amount	Addition	Total	Interest	Repayment	Closing Balance	
1st	Opening Balance	-						
	1st month		43.85	43.85	-	-	43.85	
	2nd month	43.85	-	43.85	0.40	-	43.85	
	3rd month	43.85	-	43.85	0.40	-	43.85	
	4th month	43.85	-	43.85	0.40	-	43.85	
	5th month	43.85	-	43.85	0.40	-	43.85	
	6th month	43.85	-	43.85	0.40	-	43.85	
	7th month	43.85	-	43.85	0.40	0.81	43.03	
	8th month	43.03	-	43.03	0.39	0.81	42.22	
	9th month	42.22	-	42.22	0.39	0.81	41.41	
	10th month	41.41	-	41.41	0.38	0.81	40.60	
	11th month	40.60	-	40.60	0.37	0.81	39.79	
	12th month	39.79	-	39.79	0.36	0.81	38.97	
					4.31	4.87		
2nd	Opening Balance							
	1st month	38.97	-	38.97	0.36	0.81	38.16	
	2nd month	38.16	-	38.16	0.35	0.81	37.35	
	3rd month	37.35	-	37.35	0.34	0.81	36.54	
	4th month	36.54	-	36.54	0.33	0.81	35.73	
	5th month	35.73	-	35.73	0.33	0.81	34.91	
	6th month	34.91	-	34.91	1.00	0.81	34.10	
	7th month	34.10	-	34.10	0.31	0.81	33.29	
	8th month	33.29	-	33.29	0.31	0.81	32.48	
	9th month	32.48	-	32.48	0.30	0.81	31.67	
	10th month	31.67	-	31.67	0.29	0.81	30.85	
	11th month	30.85	-	30.85	0.28	0.81	30.04	
	12th month	30.04	-	30.04	0.28	0.81	29.23	
					4.48	9.74		
3rd	Opening Balance							
	1st month	29.23	-	29.23	0.27	0.81	28.42	
	2nd month	28.42	-	28.42	0.26	0.81	27.61	
	3rd month	27.61	-	27.61	0.25	0.81	26.79	
	4th month	26.79	-	26.79	0.25	0.81	25.98	
	5th month	25.98	-	25.98	0.24	0.81	25.17	
	6th month	25.17	-	25.17	0.23	0.81	24.36	
	7th month	24.36	-	24.36	0.22	0.81	23.55	
	8th month	23.55	-	23.55	0.22	0.81	22.73	
	9th month	22.73	-	22.73	0.21	0.81	21.92	
	10th month	21.92	-	21.92	0.20	0.81	21.11	
	11th month	21.11	-	21.11	0.19	0.81	20.30	

12th month	20.30	-	20.30	0.19	0.81	19.49
				2.72	9.74	
4th Opening Balance						
1st month	19.49	-	19.49	0.18	0.81	18.67
2nd month	18.67	-	18.67	0.17	0.81	17.86
3rd month	17.86	-	17.86	0.16	0.81	17.05
4th month	17.05	-	17.05	0.16	0.81	16.24
5th month	16.24	-	16.24	0.15	0.81	15.43
6th month	15.43	-	15.43	0.14	0.81	14.62
7th month	14.62	-	14.62	0.13	0.81	13.80
8th month	13.80	-	13.80	0.13	0.81	12.99
9th month	12.99	-	12.99	0.12	0.81	12.18
10th month	12.18	-	12.18	0.11	0.81	11.37
11th month	11.37	-	11.37	0.10	0.81	10.56
12th month	10.56	-	10.56	0.10	0.81	9.74
				1.65	9.74	
5th Opening Balance						
1st month	9.74	-	9.74	0.09	0.81	8.93
2nd month	8.93	-	8.93	0.08	0.81	8.12
3rd month	8.12	-	8.12	0.07	0.81	7.31
4th month	7.31	-	7.31	0.07	0.81	6.50
5th month	6.50	-	6.50	0.06	0.81	5.68
6th month	5.68	-	5.68	0.05	0.81	4.87
7th month	4.87	-	4.87	0.04	0.81	4.06
8th month	4.06	-	4.06	0.04	0.81	3.25
9th month	3.25	-	3.25	0.03	0.81	2.44
10th month	2.44	-	2.44	0.02	0.81	1.62
11th month	1.62	-	1.62	0.01	0.81	0.81
12th month	0.81	-	0.81	0.01	0.81	-
				0.58	9.74	
DOOR TO DOOR	60	MONTHS				
MORATORIUM PERIOD	6	MONTHS				
REPAYMENT PERIOD	54	MONTHS				

BREAK EVEN POINT ANALYSIS					
Year	I	II	III	IV	V
Net Sales & Other Income	228.00	271.01	304.73	339.94	377.70
Less : Op. WIP Goods	-	11.40	13.55	15.24	17.00
Add : Cl. WIP Goods	11.40	13.55	15.24	17.00	18.88
Total Sales	239.40	273.16	306.41	341.70	379.58
Variable & Semi Variable Exp.					
Raw material cost	172.50	195.53	219.60	244.73	271.95
Electricity Exp/Coal Consumption at 85%	7.14	7.85	8.64	9.50	10.45
Wages & Salary at 60%	9.07	10.15	11.37	12.73	14.27
Selling & administrative Expenses 80%	4.38	5.42	7.92	8.84	9.82
Interest on working Capital	1.65	1.65	1.65	1.65	1.65
Repair & maintenance	1.14	2.71	3.66	3.40	3.78
consumables	2.85	3.39	3.81	4.25	4.72
Packaging	5.70	5.42	5.33	5.95	6.61
Total Variable & Semi Variable Exp	204.43	232.12	261.98	291.05	323.25
Contribution	34.97	41.04	44.43	50.65	56.34
Fixed & Semi Fixed Expenses					
Electricity Exp/Coal Consumption at 15%	1.26	1.39	1.52	1.68	1.84
Wages & Salary at 40%	6.05	6.77	7.58	8.49	9.51
Interest on Term Loan	4.31	4.48	2.72	1.65	0.58
Depreciation	8.72	7.42	6.31	5.37	4.56
Selling & administrative Expenses 20%	1.09	1.36	1.98	2.21	2.46
Rent	6.00	6.60	7.26	7.99	8.78
Total Fixed Expenses	27.43	28.00	27.37	27.38	27.74
Capacity Utilization	50%	55%	60%	65%	70%
OPERATING PROFIT	7.54	13.04	17.06	23.27	28.59
BREAK EVEN POINT	39%	38%	37%	35%	34%
BREAK EVEN SALES	187.79	186.36	188.77	184.69	186.92

FINANCIAL INDICATORS					
PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
TURNOVER	228.00	271.01	304.73	339.94	377.70
GROSS PROFIT	30.73	39.17	46.21	54.37	61.96
G.P. RATIO	13.48%	14.45%	15.17%	15.99%	16.40%
NET PROFIT	7.54	13.04	17.06	23.27	28.59
N.P. RATIO	3.31%	4.81%	5.60%	6.85%	7.57%
CURRENT ASSETS	33.60	39.21	44.32	49.73	54.99
CURRENT LIABILITIES	22.98	25.53	26.88	29.13	30.80
CURRENT RATIO	1.46	1.54	1.65	1.71	1.79



10. IMPLEMENTATION SCHEDULE

Implementation Schedule

S.N.	Activity	Time Required (in Months)
1	Acquisition Of premises	1
2	Procurement & installation of Plant & Machinery	1-2
3	Arrangement of Finance	2-3
4	Requirement of required Manpower	1-2
	Total time Required (some activities shall run concurrently)	4-5 Months

11. ASSUMPTIONS

- Production Capacity of Biodegradable Plastic Bags is 500 KG Per Day. First year, Capacity has been taken @ 50%.
- Working shift of 8 hours per day has been considered.
- Raw Material stock is for 15 days and finished goods Closing Stock has been taken for 15 days.
- Credit period to Sundry Debtors has been given for 15 days.
- Credit period by the Sundry Creditors has been provided for 13-16 days.
- Depreciation and Income tax rates has been taken as per the Income tax Act, 1961.
- Interest on working Capital Loan and Term loan has been taken at 11%.
- Arrangement for labour wages has been made as per the prevailing market rates, which may vary from place to place and the minimum wages fixed by the concerned authorized from time to time.

- Selling Prices & Raw material costing has been increased by 3% & 3% respectively in the subsequent years.
- The rental value of the workshop shed and other built up/covered areas has been taken as per the prevailing market rates, which may vary from place to place and time to time.
- The rates quoted in respect of machines, equipment and raw materials are those prevailing at the time of preparation of this project profile, and are likely to vary from supplier to supplier and place to place.
- This project profile is prepared for guidance; hence, entrepreneurs are advised to check all the parameters while intending to put up such unit.

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