PROJECT REPORT

OF

BANDAGE MAKING UNIT

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Bandage Making Unit.

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.]

Lucknow Office: Sidhivinayak
Building , 27/1/B, Gokhlley Marg, Lucknow-226001
Delhi Office: Multi-Disciplinary Training
Centre, Gandhi Darshan Rajghat, New Delhi 110002

Email: info@udyami.org.in
Contact: +91 7526000333, 444, 555

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PROJECT AT GLANCE

1	**Name of Proprietor/Director**	XXXXXXXX	
2	**Firm Name**	XXXXXXXX	
3	**Registered Address**	XXXXXXXX	
4	**Nature of Activity**	XXXXXXXX	
5	**Category of Applicant**	XXXXXXXX	
6	**Location of Unit**	XXXXXXXX	
7	**Cost of Project**	22.78	Rs. In Lakhs
8	**Means of Finance**		
i)	**Own Contribution**	2.28	Rs. In Lakhs
ii)	**Term Loan**	13.50	Rs. In Lakhs
iii)	**Working Capital**	7.00	Rs. In Lakhs
9	**Debt Service Coverage Ratio**	3.26	
10	**Break Even Point**	0.37	
11	**Power Requiremnet**	15	KW
12	**Employment**	11	Persons
13	**Major Raw Materials**	Cotton Yarn or Cotton Fabric, Unbleached cotton material	

14 Details of Cost of Project & Means of Finance

Cost of Project

Particulars	Amount in Lacs
Land	Owned/Leased
Building & Civil Work	Owned/Leased
Plant & Machinery	13.50
Furniture & Fixture	0.50
Other Misc Assets	1.00
Working Capital Requirement	7.78
Total	**22.78**

Means of Finance

Particulars	Amount in Lacs
Own Contribution	2.28
Term Loan	13.50
Working capital Loan	7.00
Total	**22.78**

1. INTRODUCTION

There is often a confusion in the use of the terms “Dressings” and “Bandages”. In fact, the term “dressing” refers more correctly to the primary layer of in contact with the wound. A Bandage is a piece of material used to support a medical device such as a Dressing or Splint, or on its own to provide support to or to restrict the movement of a part of the body. When used along with a dressing, the dressing is applied directly on the wound and a bandage is used to hold the dressing in place.

There are two categories of dressings: Adhesive dressing and Gauze dressing. An Adhesive dressing is a piece of medical plaster that is used in case of injuries that do not require a full-fledged dressing. They are meant for small injuries or wounds. The Gauge dressing are thick cotton pads that are used to cover large wounds. They are held in place by wrapping with a gauze strip (bandage) or a tape.

There are three main categories of “Bandages” that are Roller bandage, Tubular bandage, and Triangular bandage. They are all used in different ways for one common intention and that is to either cover wounds or to apply pressure in controlling bleeding and support the strain or the sprain.

Roller bandage are long strips of bandages that can further be subdivided into two types: An Elastic roller bandage that is applied to support a strain or a sprain and is wrapped around the joint or limbs many times. It should be applied firmly. Cotton or Linen roller bandages are used to cover gauze dressings. These bandage can come in any number of widths and lengths and can be used for almost any bandage application, including holding a dressing in place.

Fig.: Cotton and Crepe Roller bandages, respectively

The Tubular bandages are used to dress fingers and toes as these areas are difficult to bandage with the gauze. They can also be used for other parts of the body where there is a lot of movement such as the elbow and knee.

Fig.: Image of a Tubular bandage on the ankle

The Triangular bandages are made of cotton or disposable paper. They have a variety of uses such as:

- When opened up, they make slings to support, elevate, or immobilize upper limbs. This may be necessary for broken bone or sprain or to protect a limb after an operation.
- When folded narrowly, a triangular bandage becomes a cold compress that can help reduce swelling.
- They are used to apply pressure to a wound to control bleeding.

Fig.: A Triangular Bandage

The Cotton Crepe bandage is one of the most common forms of bandages that are used to support a sprain and provide compression to alleviate swelling. They come in two weights of varying requirements of compression. The Medium weight crepe bandage is suitable for use as a dressing retention. Suitable for keeping gauze in place, stemming bleeding, and providing light compression. The Large weight crepe bandage to support strains and sprains in joints and muscles. It also works as a modern compression bandage for knee swelling, ankle swelling, and any other joint injury.

The Elastic Adhesive bandage consist of a woven fabric, elastic in the wrap, which has been spread evenly with an adhesive mass containing zinc oxide which does not offset when the bandage in unrolled. This type of bandage can easily accommodate of irregularly contoured areas.

Fig.: Elastic Adhesive Bandage

2. PRODUCT DESCRIPTION

2.1 PRODUCT USES

The uses of the products can be listed as follows:

1. Firstly, a bandage prevents the wounds from getting contaminated by dirt and grime and any kind of microbial infection.
2. Secondly, the bandage supports any part of the body that has been strained or sprained so that the blood flow in that region is control and provides the time required to heal and also acts as a constant cushion.

3. The third use is to provide rest to the injured body part.
4. This helps is restricting the movement of the injured body part so as to heal it quickly.

RAW MATERIAL REQUIREMENT

The key raw material that is required to make the Surgical Bandages is Cotton yarn or Cotton Fabric. Muslin Bandage Rolls are made from unbleached cotton material (mesh size 56 x 60) while the Crepe Bandage is also made from cotton yarn, but the weaving is totally different from the Muslin Bandage Roll.

Triangular Bandages are made by cutting a square shaped bleached muslin cloth corner to corner forming two right angled triangles of equal size and shape.

Orthopedic bandages are made from Plaster of Paris impregnated gauze material that is made from cotton cloth.

There are certain specifications that should be maintained when the cloth for bandage is manufactured or is purchased those are:

1. The width of the cloth must be between 2.5 cm – 15 cm while the length of the cloth must be 3 – 4 m.
2. The bandage cloth needs to be woven in a plain weave with well-formed selvedge and free from weaving defects. The cloth must also be free from any kind of filing, wising, or dressing material.
3. The cloth should be bleached to be free me any microbes.
4. The pH of the cloth must be maintained from 6.5 – 8.5.

Besides the cotton yarn or cloth, the other materials that are required include Bleach, Starch, Washing chemicals, Adhesives, Packing materials, and Gummed labels.

2.2 MANUFACTURING PROCESS

The production process for surgical bandages can be written as follows:

1. The first step of the manufacture requires the procurement of the raw material that is “Cotton yarn” from the cotton spinning mills.

2. The cotton yarn is weaved in the form open yarn fabric of desired warp and weft count with the help of either a powerloom or a handloom. This is called the "Grey fabric" and is Non-absorbent.
3. The next step is the Bleaching of the Grey Fabric which is done in boiling kiers and bleaching tubs wherein it becomes white and absorbent. The bandage cloth is also dissolved in Starch solution.
4. The bleached white fabric is dried then by passing lengthwise through a Stenter machine. This machine holds, straightens, and stretches the fabric taut as it gets dried.
5. The fabric is then rolled in the form of rolls of 18 – 20 m or as per requirement and then transferred to the cutting and folding section.
6. The bandage rolls are then passed through the Calendering machine to give a proper rigid shape to the rolls. The bandage cloth is fed into a winding machine to make rolls from the cloth of the desired length. After a sufficient roll (200 – 300 m) has been wound on an aluminum pole of the machine, this large roll is then cut into smaller 3 – 5 m length rolls or whatever is the desired length while the width is maintained in between 1.5 – 3 cm or as desired.
7. After the cutting process is completed, the rolls are charged in an autoclave for sterilization for about 5 – 10 minutes.
8. Thereafter the rolls are collected and packed in dozens for marketing.

This method is applicable to any type of bandage only the quality of the cloth and the specifications of the bandage change during the cutting process.

3. PROJECT COMPONENTS

3.1 Land /Civil Work

An area of almost 2, 000 – 3,000 square feet would be required to set up Surgical Bandage 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. 40,000-50,000 per month.

3.2 Plant & Machinery

The following machineries would be required for the manufacture of the Surgical Bandage:

1. Warping machine which makes the warp by winding the yarn at tension including a cross at both ends of the frame or the mill, until the number of warp yarns required has been wound.

Fig.: Warping machine

2. Weaving machine or Power loom/ Air jet loom is required to weave the yarn into bandage rolls. Warp and weft are the concept used in weaving to turn a yarn into fabric. The lengthwise or longitudinal warps are held stationary in tension while transverse weft is drawn through or inserted over and under the warp.

Fig.: Air jet power loom

3. Bobbin winding machine is required to wind the yarn onto a bobbin that will be required later in the weaving machine.

Fig.: Bobbin winding machine

4. Mild Steel Pressure Kier system to boiling off the impurities that are present in the natural fabrics. This process takes place in a large mild steel pressurized vessel which is loaded 1/3rd with the material to be cleaned. Generally a 1 % caustic soda solution is used to clean the material. The temperature of the Kier is gradually raised to 70 °C with steam until the air in the Kier is completely removed. Then the Kier is closed and the temperature raised to 110°C for 1-3 hrs. Then the washing is done with normal water.

Fig.: Pressure Kier System

5. Stenter machine is a specialist oven used in the textile industry for drying and heat treating fabric after wet processing. It consists of heated chambers, adjustable to the width of the fabric being treated. Fabric is fed into the heated chamber supported at either selvedge by a series of stenter pins or clamps which support the fabric as it is moved through the drying chambers.

Fig.: Stenter machine

6. Steam calendering machine to straighten the fabric. The fabric is moistened by steam before the calendering process is performed. A series of heated rolls in the machine are fed with the moistened textile cloth.

Fig.: Steam calendering machine

7. Bandage rolling machine is required to make large rolls for the cloth for cutting them later. This can either be automatic, semi-automatic, or manual in operation. The cloth to be rolled

Fig.: Rolling machine

8. Medical bandage/ Gauze cutting machine. The machine is required to cut the rolled medical bandage into smaller rolls whose size may range from 3 – 5 m depending upon the specification. The machine can be either automatic or semi-automatic.

Fig.: Gauze cutting machine

9. Baby boiler machine to avail steam for the calendaring and the kier boiling process.

Fig.: Baby boiler

10. Automatic Clean-In-Place and Sterilize-In-Place systems for the sterilization of the bandage rolls.

Fig.: Sterilizer

11. Surgical bandage packing machine. The finished products are packed and made ready in this machine. The machine should be able to pack atleast 70 – 100 rolls in a minute.

Fig.: Bandage packing machine

4. LICENSE & APPROVALS

To start the Surgical Bandage 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. MSME Udyam Online registration
2. The GST (Goods and Service Tax) certification.
3. A “No-objection Certificate” from the Pollution Control Board.
4. A “No-objection Certificate” from Fire Board.
5. Trademark (optional)

PROJECTED BALANCE SHEET **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Liabilities					
Capital					
Opening Balance		4.45	7.27	16.28	19.47
Add:- Own Capital	2.28				
Add:- Retained Profit	4.67	6.33	9.00	11.45	13.25
Less:- Drawings	2.50	3.50	5.50	8.25	9.00
			5.50		
Closing Balance	4.45	7.27	16.28	19.47	23.72
Term Loan	12.00	9.00	6.00	3.00	-
Working Capital Limit	7.00	7.00	7.00	7.00	7.00
Sundry Creditors	2.80	3.16	3.57	3.99	4.44
Provisions & Other Liabilities	0.50	0.75	1.00	1.50	1.88
TOTAL :	**26.75**	**27.19**	**33.84**	**34.97**	**37.03**
Assets					
Fixed Assets (Gross)	15.00	15.00	15.00	15.00	15.00
Gross Depriciation	2.23	4.12	5.73	7.10	8.27
Net Fixed Assets	**12.78**	**10.88**	**9.27**	**7.90**	**6.73**
Current Assets					
Sundry Debtors	4.40	5.23	5.88	6.57	7.28
Stock in Hand	7.20	8.40	9.45	10.56	11.71
Cash and Bank	0.87	1.43	1.99	2.30	3.31
Loans and advances	1.50	1.25	1.75	2.15	2.50
TOTAL :	**26.75**	**27.19**	**28.34**	**29.47**	**31.53**

PROJECTED PROFITABILITY STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	**50%**	**55%**	**60%**	**65%**	**70%**
SALES					
BANDAGE	87.99	104.63	117.68	131.31	145.53
Total	**87.99**	**104.63**	**117.68**	**131.31**	**145.53**
COST OF SALES					
Raw material cost	56.06	63.28	71.37	79.85	88.73
Electricity Expenses	1.26	1.66	1.81	1.97	2.12
Depreciation	2.23	1.89	1.61	1.37	1.17
Wages & labour	9.36	9.83	10.32	10.84	11.38
Repair & maintenance	0.88	1.05	1.18	1.31	1.46
Consumables	4.40	5.23	5.88	6.57	7.28
Packaging cost	1.76	2.09	2.35	1.31	1.46
Cost of Production	75.95	85.03	94.53	103.22	113.57
Add: Opening Stock	-	4.40	5.23	5.88	6.57
Less: Closing Stock	4.40	5.23	5.88	6.57	7.28
Cost of Sales	71.55	84.20	93.88	102.54	112.86
GROSS PROFIT	**16.45**	**20.43**	**23.80**	**28.78**	**32.67**
GROSS PROFIT RATIO	**18.69%**	**19.52%**	**20.22%**	**21.91%**	**22.45%**
Salary to Staff	3.12	3.28	3.44	3.61	3.79
Interest on Term Loan	1.33	2.07	0.84	0.51	0.18
Interest on working Capital	0.77	0.77	0.77	0.77	0.77
Rent	4.80	5.28	5.81	6.39	7.03
Selling & Administration Expenses	1.76	2.35	2.94	3.94	4.73
TOTAL	**11.78**	**13.75**	**13.80**	**15.22**	**16.50**
NET PROFIT	4.67	6.68	10.00	13.56	16.17
Taxation	-	0.35	1.00	2.11	2.93
PROFIT (After Tax)	4.67	6.33	9.00	11.45	13.25
NET PROFIT RATIO	**5.31%**	**6.05%**	**7.65%**	**8.72%**	**9.10%**

PROJECTED CASH FLOW STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
SOURCES OF FUND					
Own Margin	2.28				
Net Profit	4.67	6.68	10.00	13.56	16.17
Depriciation & Exp. W/off	2.23	1.89	1.61	1.37	1.17
Increase in Cash Credit	7.00	-	-	-	-
Increase In Term Loan	13.50	-	-	-	-
Increase in Creditors	2.80	0.36	0.40	0.42	0.44
Increase in Provisions & Other liabilities	0.50	0.25	0.25	0.50	0.38
TOTAL :	**32.98**	**9.18**	**12.27**	**15.85**	**18.16**
APPLICATION OF FUND					
Increase in Fixed Assets	15.00				
Increase in Stock	7.20	1.19	1.06	1.11	1.15
Increase in Debtors	4.40	0.83	0.65	0.68	0.71
Increase in loans and advances	1.50	- 0.25	0.50	0.40	0.35
Repayment of Term Loan	1.50	3.00	3.00	3.00	3.00
Drawings	2.50	3.50	5.50	8.25	9.00
Taxation	-	0.35	1.00	2.11	2.93
TOTAL :	**32.10**	**8.62**	**11.71**	**15.55**	**17.14**
Opening Cash & Bank Balance	-	0.87	1.43	1.99	2.30
Add : Surplus	0.87	0.56	0.56	0.31	1.02
Closing Cash & Bank Balance	**0.87**	**1.43**	**1.99**	**2.30**	**3.31**

CALCULATION OF D.S.C.R

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	6.89	8.22	10.61	12.82	14.41
Interest on Term Loan	1.33	2.07	0.84	0.51	0.18
Total	8.22	10.29	11.45	13.33	14.59
REPAYMENT					
Instalment of Term Loan	1.50	3.00	3.00	3.00	3.00
Interest on Term Loan	1.33	2.07	0.84	0.51	0.18
Total	2.83	5.07	3.84	3.51	3.18
DEBT SERVICE COVERAGE RATIO	**2.91**	**2.03**	**2.98**	**3.80**	**4.59**
AVERAGE D.S.C.R.					**3.26**

REPAYMENT SCHEDULE OF TERM LOAN							
						Interest	11.00%
Year	Particulars	Amount	Addition	Total	Interest	Repayment	Closing Balance
ist	Opening Balance	-					
	1st month		13.50	13.50	-	-	13.50
	2nd month	13.50	-	13.50	0.12	-	13.50
	3rd month	13.50	-	13.50	0.12	-	13.50
	4th month	13.50	-	13.50	0.12	-	13.50
	5th month	13.50	-	13.50	0.12	-	13.50
	6th month	13.50	-	13.50	0.12	-	13.50
	7th month	13.50	-	13.50	0.12	0.25	13.25
	8th month	13.25	-	13.25	0.12	0.25	13.00
	9th month	13.00	-	13.00	0.12	0.25	12.75
	10th month	12.75	-	12.75	0.12	0.25	12.50
	11th month	12.50	-	12.50	0.11	0.25	12.25
	12th month	12.25	-	12.25	0.11	0.25	12.00
					1.33	**1.50**	
2nd	Opening Balance						
	1st month	12.00	-	12.00	0.11	0.25	11.75
	2nd month	11.75	-	11.75	0.11	0.25	11.50
	3rd month	11.50	-	11.50	0.11	0.25	11.25
	4th month	11.25	-	11.25	0.10	0.25	11.00
	5th month	11.00	-	11.00	0.10	0.25	10.75
	6th month	10.75	-	10.75	1.00	0.25	10.50
	7th month	10.50	-	10.50	0.10	0.25	10.25
	8th month	10.25	-	10.25	0.09	0.25	10.00
	9th month	10.00	-	10.00	0.09	0.25	9.75
	10th month	9.75	-	9.75	0.09	0.25	9.50
	11th month	9.50	-	9.50	0.09	0.25	9.25
	12th month	9.25	-	9.25	0.08	0.25	9.00
					2.07	**3.00**	
3rd	Opening Balance						
	1st month	9.00	-	9.00	0.08	0.25	8.75
	2nd month	8.75	-	8.75	0.08	0.25	8.50
	3rd month	8.50	-	8.50	0.08	0.25	8.25
	4th month	8.25	-	8.25	0.08	0.25	8.00
	5th month	8.00	-	8.00	0.07	0.25	7.75
	6th month	7.75	-	7.75	0.07	0.25	7.50
	7th month	7.50	-	7.50	0.07	0.25	7.25
	8th month	7.25	-	7.25	0.07	0.25	7.00
	9th month	7.00	-	7.00	0.06	0.25	6.75
	10th month	6.75	-	6.75	0.06	0.25	6.50
	11th month	6.50	-	6.50	0.06	0.25	6.25
	12th month	6.25	-	6.25	0.06	0.25	6.00
					0.84	**3.00**	

4th	Opening Balance						
	1st month	6.00	-	6.00	0.06	0.25	5.75
	2nd month	5.75	-	5.75	0.05	0.25	5.50
	3rd month	5.50	-	5.50	0.05	0.25	5.25
	4th month	5.25	-	5.25	0.05	0.25	5.00
	5th month	5.00	-	5.00	0.05	0.25	4.75
	6th month	4.75	-	4.75	0.04	0.25	4.50
	7th month	4.50	-	4.50	0.04	0.25	4.25
	8th month	4.25	-	4.25	0.04	0.25	4.00
	9th month	4.00	-	4.00	0.04	0.25	3.75
	10th month	3.75	-	3.75	0.03	0.25	3.50
	11th month	3.50	-	3.50	0.03	0.25	3.25
	12th month	3.25	-	3.25	0.03	0.25	3.00
					0.51	**3.00**	
5th	Opening Balance						
	1st month	3.00	-	3.00	0.03	0.25	2.75
	2nd month	2.75	-	2.75	0.03	0.25	2.50
	3rd month	2.50	-	2.50	0.02	0.25	2.25
	4th month	2.25	-	2.25	0.02	0.25	2.00
	5th month	2.00	-	2.00	0.02	0.25	1.75
	6th month	1.75	-	1.75	0.02	0.25	1.50
	7th month	1.50	-	1.50	0.01	0.25	1.25
	8th month	1.25	-	1.25	0.01	0.25	1.00
	9th month	1.00	-	1.00	0.01	0.25	0.75
	10th month	0.75	-	0.75	0.01	0.25	0.50
	11th month	0.50	-	0.50	0.00	0.25	0.25
	12th month	0.25	-	0.25	0.00	0.25	-
					0.18	**3.00**	

DOOR TO DOOR	60	MONTHS
MORATORIUM PERIOD	6	MONTHS
REPAYMENT PERIOD	54	MONTHS

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