

## **92. SANITARY NAPKIN**

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## **I. SUMMARY**

This profile envisages the establishment of a plant for the production of Sanitary Napkin with a capacity of 1 million pieces per annum.

The present demand for the proposed product is estimated at 200 tonnes per annum. The demand is expected to reach at 279 tonnes by the year 2010.

The plant will create employment opportunities for 23 persons.

The total investment requirement is estimated at Birr 2.42 million, out of which Birr 1.8 million is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 37.7 % and a net present value (NPV) of Birr 3.8 million, discounted at 8.5 %.

## **II. PRODUCT DESCRIPTION AND APPLICATION**

Sanitary napkin is a piece of soft paper used for wiping the lips or finger after a meal. As a result, the proposed product has a wide application and use by middle and upper class citizens. Sanitary napkin is also widely used in occasional ceremonies like wedding, birth day party and other farewells. The product has also considerable demand by hotels, restaurants and pastries.

Toilet paper is a product prepared from soft paper usually in roll form of specified dimension. The normal size of the roll toilet paper is width 115 mm + 10 mm, inner diameter of winding 37-39 mm. The substance of the paper is 21-23 gm/cm<sup>2</sup>. The raw material can be either clean soft paper or waste paper. Toilet paper is getting high demand in offices, restaurants, hotels, commercial centers, schools, homes, etc.

Standard size of sanitary napkin is as follows.

Width	70 mm
Length	190 mm
Thickness	8 mm or more
Weight	6 gm

### **III. MARKET STUDY AND PLANT CAPACITY**

#### **A. MARKET STUDY**

##### **1. Past Supply and Present Demand**

Napkins are tissue papers used for sanitary purposes. Other uses of toilet paper overlapping with napkins are nose care, eye glass wiping and make up remover. Standard toilet papers are two ply having 500 sheets of size 4.5" x 4.5 ". However, one ply and smaller size sheets are also available. However, the best toilet paper is the softest, strongest and absorbent one. Recently, pre-moisture napkins and toilet papers are also introduced.

Data on the domestic production of napkins and toilet papers is not available; Yekatit Paper Converting Enterprise, MAMCO and other producers are known to supply these products. Imported napkins and toilet papers are presented in Table 3.1.

The 2000-2004 five year average, import of napkins was 131 tonnes, while in the same period 55 tonnes of toilet paper was imported annually. The total imported napkin & toilet paper was 187 tonnes. According to distributors and retailers of napkins and toilet papers about 75 % of the market is covered by domestic suppliers. Thus, the total supply of napkins and toilet papers is estimated at 249 tonnes. On the other hand, the domestic production of paper products has shown an average 7% growth rate in year 1994-95. To estimate the current demand for napkins and toilet papers, this average growth rate of domestic production is adopted and the current effective demand is estimated at 200 tonnes.

##### **2. Projected Demand**

Demand for napkins and toilet paper is related with urbanization, modernization and changes in life styles. As the population of the country becomes more and more urbanized and living standards improve, there will be a growing demand for napkins and toilet papers. However in this study, the demand is projected on the basis of the domestic paper production growth rate of 7%, which is adopted as an indicator of the demand for napkins and toilet papers. Projected demand is presented in Table 3.2.

**Table 3.2**  
**PROJECTED DEMAND FOR NAPKINS AND TOILET PAPERS IN TONNES**

<b>Year</b>	<b>Napkins</b>	<b>Toilet Paper</b>	<b>Total</b>
2006	150	63	213
2007	160	67	228
2008	172	72	244
2009	184	77	261
2010	197	83	279
2011	210	88	299
2012	225	95	320
2013	241	101	342
2014	258	108	366
2015	276	116	392

### **3. Pricing and Distribution**

The retail price of napkins at Addis Ababa is Birr 3 for table napkin and Birr 0.75 for small all propose napkins. AMCO's toilet paper has a retail price of Birr 3 while that of Yekatit Paper Convery Enterprise brand " Velvet" has Birr 2.75. The recommended price for the new project is, therefore, Birr 2 for table napkins and Birr 0.50 for small napkins. Toilet papers of the new project will have the ex-factory price of Birr 1.75.

The products will be distributed through the existing outlets and direct delivery to major distributors.

## **B. PLANT CAPACITY AND PRODUCTION PROGRAMME**

### **1. Plant Capacity**

Based on demand projection indicated in the market study, the suggested plant capacity is 100 tonnes per annum. The plant is envisaged to operate in double shift of 16 hours a day for 270 days a year. This is excluding 13 holidays and 52 Sundays, and assigning 30 days for executing repair and maintenance programme of the production equipment.

### **2. Production Programme**

The plant is expected to operate 75% and 85% of the installed capacity in the first and second years, respectively. The plant will reach full capacity on the third year. The rationale behind such production build-up is that the production equipment are new, and operators usually take sometime to develop the specific skills and knowhow.

#### IV. MATERIALS AND INPUTS

##### A. RAW AND AUXILIARY MATERIALS

The major raw materials and auxiliaries required for the production of sanitary napkins and toilet papers are shown in Table 4.1 below. All the raw and auxiliary materials are to be imported.

**Table 4.1**

**RAW AND AUXILIARY MATERIALS**  
**REQUIREMENT AND COST**

Sr. No.	Description	Unit Of Measure	Annual Quantity	Unit Price (CIF)	Total Price (CIF)
1	Tissue paper (2 ply)	tonne	100.10	4,000 Br/t	400,400
2	Core paper	kg	1100	3 Br/kg	3300
3	Wrapping paper (45 gm/m <sup>2</sup> )	kg	350	8 Br/kg	2800
4*	Glue	kg	700	80.0 Br/kg	5600
5*	Polyethylene film	As req.	-		5000
					417,100

\* Glue & polyethylene film are auxiliary materials.

##### B. UTILITIES

Electricity and water are utilities required for the plant. Electricity is required as motive power and to supply lighting and sockets. Water is required for human consumption and general purposes. The annual consumption of electricity and water is given in Table 4.2.

**Table 4.2****ANNUAL UTILITIES REQUIREMENT AND COST**

<b>Sr. No.</b>	<b>Description</b>	<b>Qty</b>	<b>Unit cost (Birr)</b>	<b>Total cost (Birr)</b>
1	Electricity (kWh)	10,000	0.474 Birr/kwt	4800
2	Water (m <sup>3</sup> )	800	1.5 Birr/ M <sup>3</sup>	1200
	<b>Grand Total Coast</b>	<b>-</b>	<b>-</b>	<b>6000</b>

**V. TECHNOLOGY AND ENGINEERING****A. TECHNOLOGY****1. Production Process**

The technology of producing sanitary napkin differs depending on the raw materials used, the shape of finished products, the size, etc. Therefore, there is no fixed method of manufacturing and processing. The prime requisite of sanitary napkin as a product is cleanliness having good absorption, strength against leak, fine feeling to the touch, stability and adaptability to bodily movement, and no breaking or getting out of shape.

The production process is a step by step cutting, folding and rolling the various components of the raw and auxiliary materials required for the product. The activities are done sequentially so that the final product will have good absorption and strength against leakage.

After the napkin is covered by laminated paper, adhesive tape is stripped horizontally so as to fix the napkin to the position in order to have stability to bodily movement. Finally, the napkin is packed by polyethylene films.

With regard to production of toilet paper, the roll of raw material is first fed to the machine adjusted to slit the soft paper to the width of the finished product. Paper cones prepared for the purpose are put onto the machine. The soft paper is then wound onto the paper cone until it reaches the required thickness. The machine is then operated to produce market size soft papers. Each piece is then wrapped with polyethylene film.

## 2. Source of Technology

The source of technology are countries like Korea, India and China. Addresses of two manufactures are given below.

- a) China National Machinery  
Import and Export Corporation  
Shandong Branch  
82 Fan / Hsia Road  
Tsinglao  
China.
- b) The National Small Industries Corporation  
Ladha Udying Bhavan  
New Delhi - 100 020  
India.

## B. ENGINEERING

### 1. Machinery and Equipment

Machinery and equipment required for the production of sanitary napkins & toilet papers along with estimated costs are given Table 5.1.

**Table 5.1**

#### **MACHINERY AND EQUIPMENT REQUIREMENT AND COST**

Sr. No.	Description	Qty. (No.)	Cost ('000 Birr)		
			LC	FC	TC
1	Core rewinding and cutting m/c	1	-	200	200
2	Tissue paper rewinding and slitting m/c	1	-	1050	1050
3	Sealing machine	1	-	80	80
4	Fork lift	1	-	300	300
	<b>Total FOB</b>		-	<b>1630</b>	<b>1630</b>
	Bank, Insurance, Freight, etc.		150	-	150
	<b>Total CIF</b>		<b>150</b>	<b>1630</b>	<b>1780</b>

### 2. Land, Building and Civil Works

The required building area for housing of production equipment, storage of raw materials and finished goods, building for management and other utilities is estimated to be 300m<sup>2</sup>. Assuming Birr 1,000 as the unit cost per m<sup>2</sup> of building, the total expenditure on building is estimated at Birr 300,000.



Site area for production hall, administration building, including parking lot and for general purposes, is estimated to be 500 m<sup>2</sup>. The cost for leasing land for 70 years, at the rate of Birr 2.0 per m<sup>2</sup>, will be Birr 70,000.

Thus, the total cost of land, building and civil works, assuming that the total land lease cost will be paid in advance will be Birr 370,000.

### 3. Proposed Location

Proximity to raw materials can not be a factor to determine the location of the envisaged plant since all the raw and auxiliary materials are imported from abroad. However, taking into consideration such factors as proximity to better market, availability of infrastructures and utilities, Assosa is preferred to be an appropriate location to establish the Sanitary napkin and toilet paper plant.

## VI. MANPOWER AND TRAINING REQUIREMENT

### A. MANPOWER REQUIREMENT

The plant requires 23 work force. The total estimated annual expenditure on manpower including employees' benefits is Birr 96,000 (see Table 6.1).

**Table 6.1**  
**MANPOWER REQUIREMENT AND ANNUAL LABOUR COST**

<b>Sr. No.</b>	<b>Description</b>	<b>Req. No.</b>	<b>Monthly Salary (Birr)</b>	<b>Annual Expenditure (Birr)</b>
1	General manager	1	1800	21,600
2	Production supervisor	1	800	9,600
3	Cashier	1	400	4,800
4	Store keeper	1	400	4,800
5	General service	3	200	7,200
6	Skilled workers (operators)	8	400	38,400
7	Unskilled workers (labourers)	8	200	19,200
	<b>Total number of workers</b>	<b>23</b>	<b>-</b>	<b>100,800</b>
	Workers' benefits (25% BS)	-	-	25,200
	<b>Total Salary</b>	<b>-</b>	<b>-</b>	<b>126,000</b>

### B. TRAINING REQUIREMENT

The general manager and skilled workers require few weeks training on machine operation and production technology. Training is assumed to be free of charge, but only a local currency of about Birr 10,000 is sufficient to cover expenses associated with the training programme.

## VII. FINANCIAL ANALYSIS

The financial analysis of the Sanitary Napkin and Toilet Papers project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	1 years
Source of finance	30 % equity 70 % loan
Tax holidays	3 years
Bank interest	7.5 %
Discounted cashflow	8.5 %
Repair and maintenance	3 % of the total plant and machinery
Accounts receivable	30 days
Raw material, local	30 days
Raw materials, import	90 days
Work in progress	5 days
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days

### A. TOTAL INITIAL INVESTMENT COST

The total initial investment cost of the project including working capital is estimated at 2.42 million, of which 67.3 per cent will be required in foreign currency.

The major breakdown of the total initial investment cost is shown in Table 7.1

**Table 7.1**  
**INITIAL INVESTMENT COST**

<b>Sr. No.</b>	<b>Cost Items</b>	<b>Total ('000 BIRR)</b>
1	Land lease value	70
2.	Building and Civil Work	300
3.	Plant Machinery and Equipment	1,780
4.	Office Furniture and Equipment	75
5.	Vehicle	-
6.	Pre-production Expenditure*	143.5
7	Working Capital	54.6
	<b>Total Investment cost</b>	<b>2,423.1</b>
	<b>Foreign share</b>	<b>67.3%</b>

\* N.B Pre-production expenditure includes interest during construction (Birr128 thousand), training (Birr10 thousand), and ( Birr5 thousand) costs of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.

## B. PRODUCTION COST

The annual production cost at full operation capacity of the plant is estimated at Birr 0.93 million (see Table 7.2). The material and utility cost accounts for 45.7 percent, while repair and maintenance take 5.4 per cent of the production cost.

**Table 7.2**  
**ANNUAL PRODUCTION COST AT FULL CAPACITY ('000 BIRR)**

Item	Cost	%
Raw Material and Inputs	417.1	45.1
Utilities	6	0.6
Maintenance and repair	50	5.4
Labour direct	67.2	7.3
Factory overheads *	5.0	0.5
Administration Cost **	60.6	6.5
<b>Total Operating Costs</b>	<b>605.9</b>	<b>65.5</b>
Depreciation	207.0	22.4
Cost of Finance	112.8	12.2
<b>Total Production Cost</b>	<b>925.7</b>	<b>100.0</b>

## C. FINANCIAL EVALUATION

### 1. Profitability

According to the projected income statement, the project will start generating profit in the first year of operation. Important ratios such as profit to total sales, net profit to equity (Return on equity) and net profit plus interest on total investment (return on total investment) show an increasing trend during the lifetime of the project.

The income statement and the other indicators of profitability show that the project is viable.

*\*Factory overhead cost includes salaries and wages of supervisors, insurance of factory workers, social costs on salaries of direct labour, etc.*

*\*\* Administrative cost includes salaries and wages, insurance, social costs, materials and services used by administrative staff etc.*

## 2. Break-even Analysis

The break-even point of the project including cost of finance when it starts to operate at full capacity ( year 3 ) is estimated by using income statement projection.

$$BE = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable cost}} = 33 \%$$

## 3. Pay-Back Period

The investment cost and income statement projection are used to project the pay-back period. The project's initial investment cost will be fully recovered within 3 years.

## 4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 37.7 % and the net present value at 8.5% discount rate is Birr 3.8 million.

## D. ECONOMIC BENEFITS

The project can create employment for 23 persons. In addition to supply of the domestic needs, the project will generate Birr 0.6 million per annum in terms of tax revenue when it starts to operate at full capacity. Moreover, the Regional Government can collect employment, income tax and sales tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports.