

1.	Product	:	Wax Candle
2.	BIS Standards	:	IS: 4654- Paraffin Wax IS:1135- WAX candle
3.	NIC Code (2004)	:	36995- Candles, tapers and similar products of wax
4.	Production Capacity	:	Quantity- 15 Metric tone per annum Value Rs. 11,25,000/-
5.	Month & year of Preparation	:	June 2020
6.	Prepared by	:	Leather & Footwear Division
MSME-Development Institute			
Bamunimaidam, Guwahati-21			

Wax Candle

Introduction-

Wax candles are ignitable wicks embedded in paraffin wax to provide light when it is dark. A source of heat, commonly, a naked flame is used to light the wick of the candle. This results in vapourising a small amount of paraffin wax, which then combines with the atmospheric oxygen to ignite and produce a constant flame. The heat, thus generated, melts the top portion of the paraffin wax and the liquefied wax moves upward through the wick by capillary action. This liquefied paraffin wax vapourizes due to the heat to burn within the candle flame.

The use of candles date back to the Romans, who dipped wicks in tallow of killed animals to produce light. But candles lit with tallow used to produce excessive smoke and gave offensive smell, hence, bee wax was used as an alternate source of fuel, But bee wax candles were expensive and very few people could afford it.

In mid 19th century, after distillation of paraffin wax from coal, paraffin wax became the main raw material for production of wax candle.

Before the invention of electric light candles and oil lamps were commonly used for illumination. In areas without electricity or frequent power cuts, candles are still used routinely for illumination. In the developed world today, candles are used mainly for their aesthetic value and scent, particularly to set a soft, warm, or romantic ambiance, Candles are extensively used for religious or ritual purposes.

Plant Capacity (Per Annum)-

- Quantity- 15 Metric tone per annum
- Value Rs. 11,25,000/-

Market & Demand Aspect-

As mentioned earlier, wax candles are an item of daily use. It is used to provide light when it is dark. In areas without electricity or with frequent power cuts, wax candles are still used routinely. Wax candles are used to make decorative candles, which has high demand in the upper echelon of the society for their aesthetic value and scent, particularly to set a soft, warm, or romantic ambiance. Wax candles are also used extensively during religious and social occasions.

- Raw Material-

- **Wax-** The main raw material for wax candle is the wax. Primarily, paraffin wax, a by-product of petroleum refining, is the main source of wax. Microcrystalline wax, beeswax (a by-product of honey collection), gel (a mixture of polymer and mineral oil) or some plant waxes (generally palm, carnauba, bayberry, or soybean wax) are the other sources of wax.
- **Wick-**A candle wick is a piece of string or cord that holds the flame of a candle. Commercial wicks are made from braided cotton. The

wick's capillarity determines the rate at which the melted hydrocarbon is conveyed to the flame. If the capillarity is too great, the molten wax streams down the side of the candle. Wicks are often infused with a variety of chemicals to modify their burning characteristics. For example, it is usually desirable that the wick not glow after the flame is extinguished. Typical agents are ammonium nitrate and ammonium sulphate.

Manufacturing Process & Source of Technology-

- **Wick Preparation-** The cotton or linen wicks are braided and then treated with chemicals or inorganic salt solutions so that they bend at a 90 degree angle when burning. This angle allows the end to remain in the outer mantle of the flame and causes it to be shortened naturally. If the wick is not treated, it will burn too quickly and the flame will be extinguished by the melted wax. However, if the wick burns too slowly, then the amount of exposed wick increases and the candle becomes dangerous
- **Preparing the Wax Base-** First, the wax is heated and melted into a clear, near-liquid state in metal vessels. Wax melted by direct flame can become dark-colored or can contain small pieces of carbon char. Next, the molten wax must be carefully filtered to remove impurities that may interfere with the burning process. Any desired perfumes and dyes are added at this time. Although most wax arriving at the manufacturer conforms to strict purity standards, it is desirable to filter their wax to be sure of a high-quality finished product.
 - **Moulding the Candle-** Prior to the pouring of the wax, the wick is pulled through the tip of the mould. The moulds, which are made of tin or any non-ferrous metal, have polished interior surfaces and are slightly tapered for easier ejection of the finished candle. The wax is cooled to slightly above its melting point and poured into each mould. The moulds are pre-heated so the wax will flow evenly into them. After the wax is poured, moulds are cooled with cold water to speed up the solidification process. Once the wax has solidified, the finished candles are pulled upwards out of the moulds, allowing the wicks to again thread through the moulds in preparation for the next load of candles. The wicks are snipped, and the process begins again. Excess wax is trimmed, collected and re-used

An alternate method uses extrusion, a process in which crushed paraffin wax is forced through a heated steel die under extreme pressure. At the same time, the wax is consolidated around the wick. Unlike moulding machines, extrusion machines produce a continuous length of candle, which is then cut into specific sizes. Next, the tips of the candles are formed by rotation cutters, and the candles are sent to an automated packing machine. Being a costly method of production, manual moulding of candle is preferred.

 - **Packaging-** Candles are packed using paper in individual packs of 10 candles per packet using the brand name. These candle packets are further packed in cartons for bulk transportation.

Basis of Project Selection & Presumptions-

This project profile is prepared based on the following presumptions:

1. The unit will run on single shift basis of eight hours duration with 300 working days in a year.
2. The unit will use 70% of its installed capacity in the first year of commencement of commercial production and will attain its maximum capacity of 85% by the end of second year of commercial production.
3. The prices of raw materials as shown in this project profile are as per the prevailing market rate and may vary time to time.
4. The prices of machinery & equipment as shown in this project profile are as per the prevailing market rate and may vary time to time.
5. The salary & wages shown in this project profile is as per the prevailing rate and conforms to the minimum wages act enacted by the state government.
6. Promoter's contribution for the project is taken @ 5% of the total cost of the project and will be financed under PMEGP.
7. The rate of interest for the loan is taken @ 12% per annum.
8. The pay back period of the loan is assumed to 7 years after the moratorium period.
9. The cost of land and building as shown in the project profile is approximate one and the same may vary from place to place
10. The project will be implemented in three months from the date of conception of the project idea.

Financial Aspects-

- **Fixed Capital:**

A. **Land & Building:** Rented Premises of 1500 sqft area, @ Rs. 3,000/- per month.

B. **Machinery & Equipment**

Sl. No.	Description	Rate (Rs)	Quantity	Value (Rs)
1.	Moulds of various sizes	5000/-	5	25,000.00
2.	Wax Melting Vessels	1000/-	2	2,000.00
3.	Gas Burner	5000/-	1	5,000.00
4.	Electric Weighing Machine	1,500/-	1	1,500.00
5.	Misc Fixed Assets	3,500/-	LS	3,500.00
			Total	Rs. 37,000.00

- **Working Capital-**

A. **Salary & Wages (Per Month)**

Sl. No.	Designation	Salary (Rs)	No	Amount (Rs.)
1.	Supervisor	5,000/-	1	5,000.00
2	Semi-Skilled Worker	3,000/-	1	3,000.00
			Total	Rs. 8,000.00

B. Raw Material Estimation (Per Month)

Sl. No	Item	Rate (Rs)	Quantity	Total (Rs)
1	Paraffin Wax	63/-	1250 kg	78,750.00
2,	Wicks	30/-	50 bundles	1,500.00
3.	Kerosene Oil	-	LS	500.00
4.	Packing Materials	-	LS	1,750.00
			Rs.	82,500.00

C. Miscellaneous Expenditure (Per Month)

1.	Rent	3,000.00
2.	Transportation Charge	1,500.00
3.	Communication, Postage & Stationary	500.00
4.	Insurance	500.00
5.	Advertising & publicity	1,000.00
6.	Sales Expenditure	1,500.00
7.	Other Misc Expenditure (including electricity)	2,000.00
Total		10,000.00

D. Total Working Capital (Per Month)

Sl No.	Component	Amount (Rs)
1	Salary & Wages	8,000.00
2	Raw Material	82,500.00
3	Miscellaneous Expenditure	10,000.00
Total		Rs. 1,00,500.00

• Total Capital Investment

Sl. No.	Type of Capital	Amount (Rs.)
1.	Fixed Capital	37,000.00
2.	Working Capital for 3 Months	3,01,500.00
Total		Rs. 3,38,500.00

• Means of Financing

Sl. No.	Means of Finance	Amount (Rs.)
1.	Promoter's Contribution (5%)	16,925.00
2.	Bank loan under PMEG	3,21,575.00

Total	Rs. 3,38,500.00
--------------	------------------------

• **Financial Analysis-**

A. Cost of Production (Per Annum)

Sl. No.	Items of Cost	Amount (Rs.)
1.	Total Recurring Cost	12,06,000.00
2.	Depreciation on fixed assets @ 20%	7,400.00
3.	Interest on Bank loan	38,589.00
	Total	12,51,989.00

B. Turnover (Per Annum)

Item	Rate	Qty	Amount
Wax Candle	95.00	15,000 kg	14,25,000.00

C. Gross Profit (Per Annum)

$$\begin{aligned} \text{Gross Profit} &= \text{Sales Turnover} - \text{Cost of Production} \\ \text{Gross Profit} &= \text{Rs. 14,25,000} - \text{Rs. 12,51,989.00} \\ &= \text{Rs. 1,73,011.00} \end{aligned}$$

D. Profit Rate on Sales

$$\begin{aligned} \text{Profit Rate on Sales} &= \frac{\text{Gross Profit} \times 100}{\text{Turnover}} \\ &= \frac{1,73,011 \times 100}{14,25,000} \\ &= 12.14\% \end{aligned}$$

E. Rate of Return on Investment

$$\begin{aligned} \text{Rate of Return on Investment} &= \frac{\text{Gross Profit} \times 100}{\text{Total Capital investment}} \\ &= \frac{1,73,011 \times 100}{3,38,500} \\ &= 45.11\% \end{aligned}$$

F. Break Even Analysis

$$\text{Break Even Point} = \frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Profit}}$$

Fixed Cost (Per Annum)

Sl. No.	Items	Amount (Rs.)
1.	Depreciation	7,400.00
2.	Interest on Bank Loan	38,589.00
3.	40% Salary & Wages	28,400.00
4.	40% of Misc Expenses	48,000.00
	<u>Total</u>	<u>83,400.00</u>

$$\begin{aligned} \text{Break Even Point} &= \frac{83,400 \times 100}{83,400 + 1,73,011} \\ &= 32.53\% \end{aligned}$$

Address of Supplier of Tools & Equipment

Modern Metal Moulders,
Industrial Estate, Bamunimaidam, Guwahati-21.

Addresses of Wax Suppliers

Numaligarh Refinery Limited
122A, G.S. Road
Christianbasti, Guwahati-781005
