

**PROJECT PROFILE ON
VANILLIN**

PRODUCT : VANILLIN

NIC CODE : 24119

PRODUCT CODE : 32511

PRODUCTION CAPACITY: : 5760 kgs./Annum

MONTH & YEAR OF PREPARATION : MARCH, 2011

PREPARED BY : CHEMICAL DIVISION
MSME - Development Institute
111 & 112, B.T.Road,
Kolkata-700108
E.mail director@sisikolkata.gov.in
Visit us: www.sisikolkata.gov.in
Ph: 2577-0595/97/98/2596

PROJECT PROFILE ON VANILLIN

I. Introduction :

Vanillin, a partially methylated aldehyde of the catechol series, is the fragrant constituent of vanilla bean and occurs also in the sugar beet in balsams and resins. It is an important component of artificial flavour. Vanillin is the main ingredient in artificial vanilla flavours, used most extensively for the flavouring of confectionary, baked goods, candies, chocolates, etc. Vanillin serves widely also in perfumes and cosmetics for imparting sweet and casting notes. It blends well with heliotrope in and coumarone. Used in floral and fancy scents alike.

2. Plant Capacity per annum :

<u>Item</u>	<u>Quantity</u>
Vanillin	5760 kgs.

3. Market & Demand Aspect:

There is no organised unit in West Bengal for production of vanillin. Most of the vanillin available in the market is a blended product of imported vanillin. There is considerable demand of vanillin in the country for the bakers and confectionery industry, perfumery and cosmetic industry. There is ample scope for its production in the Eastern Region.

4. Raw materials:

The raw materials required for manufacturing of Vanillin are Engenol, Caustic Potash, Acetic Anhydride, Glacial Acetic Acid, Potassium Dichromate. All the above raw materials are available locally from manufacturers or traders.

5. Manufacturing Process & Source of Technology:

The synthetic process for manufacture of Vanillin utilises Eugenol Available from some essential oils. Under the influence of alcoholic KCH at 140°C of conC.KCH aqueous at 220°C, Eugenol isomerises to give isoeugenol. This is acetylated to protect the phenolic group and Oxidised under mild conditions with potassium dichromate solutions. Isoeugenol is converted to vanillin. Pure Vanillin is obtained by reaction with sodium bisulphate and then distilled to give pure vanillin.

The important aromatic aldehydic is widely distributed in nature although it occurs in essential oils, gums, and balsams only in small quantities. Most likely plants do not contain vanillin as much but in the form of glycosides which by enzyme action release vanillin.

6. Basis of Project Selection :

There are few number of reagent manufacturer in and around Kolkata. These units are having the expertise to manufacture Vanillin with little bit modification in the existing plant and machinery. The requirement of vanillin is increasing day by day in the State and the adjacent States also.

7. Presumption :

- a) The working hours : 8 hours per day on single shift basis and 25 working days in a month.
- b) The cost of machinery and equipment, raw materials etc. are those generally obtaining at the time of the preparation of the project report.
- c) The rate of interest is considered at 14% per annum on fixed capital and working capital investment both.
- d) The time period for achieving full envisaged capacity utilization is three years.

- e) The project is based on Single shift working per day and 300 working days per annum
- f) The rate of interest on Bank loan has been considered as 14% p.a. which may vary from time to time.

8. Production capacity per annum (at 70% capacity utilization) :

<u>Item</u>	<u>Quantity</u>	<u>Value</u>
Vanillin	69120 kgs.	Rs. 60.48 lakhs

9. Utilities per annum:

- a) Electricity 48,000 KW hr. per annum
- b) Furnace Oil 5,000 ltrs. per annum
- c) Water 2,000 ltrs. per annum

10. FINANCIAL ASPECTS :

A. Fixed Capital :

1. Land & Building :

4000 sft. Covered area &
2000 sft. Uncovered area Rented

Plant & Machinery :

	<u>Required</u>	<u>(Rs.)</u>
1. Glass lined reactor of capacity 250 ltrs. complete with MS Jacket, SS stirring 3HP 440 volts Condenser & reflux arrangement	3	3,75,000.00
2. Centrifuge machine 22" basket size, made from SS sheet of AISI 316 quality 5HP, 440 volts.	1	74,000.00
3. Intermediate storage tank of capacity 2.0KL, made from PVC & inside FRP Coating	2	72,000.00
4. Hot Oil circulation unit of capacity 50,000 Kl/hour and complete with other fittings.	1	1,40,000.00
5. Acetic Acid storage tank of capacity 1.0KL made from SS sheet of AISI 316 quality	1	30,000.00
6. Caustic Potash solution tank of capacity 250 ltrs., PVC moulded cylindrical body with loose tap cover	4	10,000.00
7. Steam Distillation unit of capacity 250 ltrs. made from SS Plate of AISI 316 quality, MS Jacket, 3 HP, 440 volts SS receiver of capacity 80 ltrs.	1	1,90,000.00
8. Non IBR oil fired baby boiler of evaporation capacity 180 ltrs./hr. complete with other fittings	1	<u>1,80,000.00</u>
		Rs. 10,79,000.00
Vat 4%		<u>43,160.00</u>
		Rs. 11,22,160.00

BF Rs. 11,22,000.00

9.	Electrification & installation of Plant & Machinery and other electrical arrangement	Rs. 1,00,000.00
10.	Transportation charges	25,000.00
11.	Diesel Generator set – 20 HP	2,00,000.00
12.	Preliminary & Preoperative expenses	50,000.00
13.	Office furniture	50,000.00
14.	Contingencies	<u>35,000.00</u>
		Rs. 16,32,000.00

B. Working Capital per month :**I. Salary & Wages :**

	<u>Qty.</u>	<u>Rate(Rs.)</u>	<u>Value (Rs.)</u>
1.	1	8,000.00	8,000.00
2.	1	5,000.00	5,000.00
3.	2	4,000.00	8,000.00
4.	2	3,500.00	7,000.00
5.	1	6,000.00	6,000.00
6.	1	3,000.00	3,000.00
7.	<u>2</u>	3,000.00	<u>6,000.00</u>
	10	Rs.	43,000.00
		Perquisites 15%	<u>6,450.00</u>
			Rs. 49,450.00

II. Raw materials estimation per month:

	<u>Particular</u>	<u>Qty.</u>	<u>Rate(Rs.)</u>	<u>Value (Rs.)</u>
1.	Engenol	576 kgs.	264/Kg.	1,52,064.00
2.	Caustic Potash	144 kgs.	35/kg.	5,040.00
3.	Acetic Anhydride	144 kgs.	58/kg.	8,357.00
4.	Glacial Acetic Acid	192 kgs.	38/kg.	7,296.00
5.	Potassium Dichromate	120 kgs.	113/kg.	<u>13,560.00</u>
				Rs. 1,86,312.00

III. Utilities per month :

1.	Electricity	Rs.	22,000.00
2.	Furnace Oil		11,000.00
3.	Water		<u>1,000.00</u>
		Rs.	34,000.00

IV. Other Miscellaneous Recurring Expenses per month:

1.	Rent	Rs.	10,000.00
2.	Traveling & conveyance charges		10,000.00
3.	Packing & transportation		15,000.00
4.	Repair & Maintenance		5,000.00
5.	Postage, telegraph and telephone		4,500.00
6.	Consumable stores		3,500.00
7.	Insurance		2,000.00
8.	Miscellaneous expenses		<u>3,000.00</u>
		Rs.	53,000.00

C. Total Working Capital per month

1.	Salary & wages	Rs.	49,450.00
2.	Raw materials		1,86,312.00
3.	Utilities		34,000.00
4.	Other Miscellaneous Recurring Expenses		<u>53,000.00</u>
		Rs.	<u>3,22,762.00</u>

D. Total Working Capital for 3 months:

1.	Salary & wages	Rs. 1,48,350.00
2.	Raw materials	5,58,936.00
3.	Utilities	1,02,000.00
4.	Other Miscellaneous Recurring Expenses	<u>1,59,000.00</u>
		Rs. 9,68,286.00

E. Total Capital Investment :

1.	Fixed Capital	Rs. 16,32,000.00
2.	Working Capital for 3 months	<u>9,68,286.00</u>
		Rs. 26,00,286.00

11. Financial analysis :**i) Cost of Production per year :**

1.	Working Capital	Rs. 38,73,144.00
2.	Depreciation on Plant & Machinery @ 20% per annum	2,24,400.00
3.	Depreciation on furniture/fixture/ Generator set, etc. @ 15% per annum	60,000.00
4.	Interest on total capital investment @ 14% per annum	<u>3,64,040.00</u>
		Rs. 45,21,584.00

ii) Turn over per year :

By sale of 69,120kgs. of Vanillin @ Rs. 87.5 per kg.= Rs. 60,48,000.00

iii) Net Profit per year :

$$\begin{aligned} & \text{Turn over per year} - \text{Cost of Production per year} \\ = & \text{Rs. } 60,48,000.00 - \text{Rs. } 45,21,584.00 = \text{Rs. } 15,26,416.00 \end{aligned}$$

iv) **Profit Ratio on Sale** = $\frac{\text{Rs. } 15,26,416.00 \times 100}{60,48,000.00} = 25.23\%$

v) **Rate of return** = $\frac{\text{Rs. } 15,26,416.00}{38,73,144} = 39.41\%$

vi) **BEP Analysis :**

Fixed Cost :	
1. Depreciation on Plant & Machinery	Rs. 2,24,400.00
2. Depreciation on Furniture/fixtute	60,000.00
3. Interest on total capital Investment	3,64,040.00
4. Rent	1,20,000.00
5. Insurance	24,000.00
6. 40% of salary & wages	2,37,300.00
7. 40% of other expenditure excluding Rent & Insurance	<u>3,60,000.00</u>
	Rs. 13,89,800.00

$$\text{BEP} = \frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Profit}}$$

$$= \frac{13,89,800 \times 100}{13,89,800 + 15,26,416} = 47.65\%$$

12. List of supplier addresses :

a. Machinery Suppliers :

1. M/s. Sonali Fab,
71, Biren Roy Rd., Kolkata-61
2. M/s. Ganson Ltd.,
59B, Chowringhee Rd., Kolkata-20
3. M/s. Pelican Engineers,
4, Hanger Ford Lane, Kolkata-16

b. Raw materials :

1. M/s. Gorachand & Co.,
31/1, Bonfields Lane,
Kolkata-700001
2. M/s. Allied Chemicals,
45, 31/1, Bonfields Lane,
Kolkata-700001

13. Resource Centre of Technology : Not available

14. List of units set up by using this Project Profile: Not available