

MEDICATED / PERFUMERY OIL (CASTOR OIL DERIVATIVE)

1. INTRODUCTION

2-Octanol is an eight carbon containing secondary Octyl alcohol, (also known as Capryl alcohol), or 2-Octyl alcohol, which is mainly obtained as a byproduct of alkali fusion reaction of Castor oil in Sebacic acid manufacturing. It is an oily, refractive, transparent, colorless liquid with an aromatic and somewhat unpleasant odor. The typical physical and chemical properties and specifications of refined 2-Octanol available commercially is summarized in Table below:

Table: Octanol Product Specifications and Properties

Sr. No.	Property/Specification Details	Value
1.	Appearance	Clear Liquid, without any particles
2.	Color, Hazen units, max	50
3.	Specific gravity at 20 ⁰ C	0.8193
4.	Acid Value max	0.5
5.	Hydroxyl value	6
6.	Saponification value, min	260
7.	Boiling point ⁰ C	178.5
8.	Refractive index at 20 ⁰ C	1.42025
	Source: Chemical Weekly	

2. PRODUCTS AND ITS APPLICATION



2-Octanol is synonyms as to Capryl alcohol; methylhexyl carbinol; 1-methyl-1-heptanol, 2-octyl alcohol.

2-Octanol is an important castor oil derivative and is finding numerous applications as mentioned here below:

- 2-Octanol is used for the manufacture of different plasticizers like its sebacates, adipate and phthalates-esters of different types with respective organic acids.
- It is used as an antifoaming agent for urea formaldehyde and poly-vinyl resins.
- 2-Octanol is finding application as an organic solvent. Its main use is as solvent in rubber processing industry.
- In coal industry it is used as floating agent. In farming chemical industry also it is used as floating agent and as for producing emulsifier.
- It is finding application in chemical fiber industry as fiber oil.
- It is also used in the manufacture of range of perfumery compounds by forming its esters-butyrate and acetates. It can also be used in the manufacture of methyl-hexyl ketone by oxidation.

Thus, 2-Octanol has many uses and applications.

3. DESIRED QUALIFICATION FOR PROMOTER

The promoter should ideally be having formal qualifications in the field of food processing. Short term training in relevant field would also do.

4. INDUSTRY OUTLOOK/TREND

Perfumery products are the modern trend in the field of beauty and fashion. These agents are gaining popularity as nowadays most women prefer natural products over chemicals for their personal care to enhance their beauty as these products supply the body with nutrients and enhance health and provide satisfaction as these are free from synthetic chemicals and have relatively less side-effects compared to the synthetic cosmetics.

Market is affected by the market demand of these consuming industries and many of these end use products are also dependent on their demand on industrial and consumer products in domestic and export markets.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

India is having fast growing plastic industry, resins and rubber processing industries and hence this product has potential for manufacturing range of plasticizers and also to use it solvent. 2-Octanol has excellent potential as raw material for the manufacture of range of esters which are used as perfumery chemicals. The estimated global demand of 2-Octanol is approx. 45000 MTPA, and out of this almost 85% is being catered by Sebacic acid manufacturers from China. This global demand is growing at the rate of 3 to 5% per annum and Indian market is growing at 6 to 7% p.a. At present India is not producing sufficient quantity of 2-Octanol required by its consuming industries and hence it is being imported from China by major consuming industries like plasticizers and perfumery chemical manufacturers and also by rubber processors.

- **Market Sensitivity and Sensitization**

2-Octanol is mainly used in the manufacture of plasticizers, in perfumery chemicals and as solvent. 2-Octanol market is affected by the market demand of these consuming industries and many of these end use products are also dependent on their demand on industrial and consumer products in domestic and export markets. Thus, 2-Octanol prices will not fluctuate frequently in normal condition. Since, Castor oil is used as main raw material to manufacture 2-Octanol its price fluctuations and the price fluctuations in the main produce Sebacic acid in domestic and international markets will also affect the price of 2-Octanol.

- **Present Industry Status**

In India, at present there is very small capacity of Sebacic Acid manufacture and hence 2-Octanol manufacturing capacity is also in proportion to that. A small quantity of 2-OCTanol is being manufactured using alternate process, but its more economical and viable to recover this product as a by-product of Sebacic Acid manufacture. At present there are only two units of Sebacic acid, which are producing 2-Octanol as by product. The total installed capacity of 2-octanol in India is estimated to be 6500 MTPA considering the present installed capacity of Sebacic Acid in India. However, it is important to note here that about out of this about 1025 MT capacity is currently not operational.

2-Octanol is mainly produced as by-product of Sebacic acid, and at present for large size commercial projects, this technology is brought from China. IICT-Hyderabad is also offering technology for Sebacic Acid and 2-Octanol, but project size offered is commercially not viable. It is suggested to go for proven technology from India or from overseas for this project. Technology for standalone project to manufacture 2-Octanol will be simple and it is considered here to work our project cost for this profile.

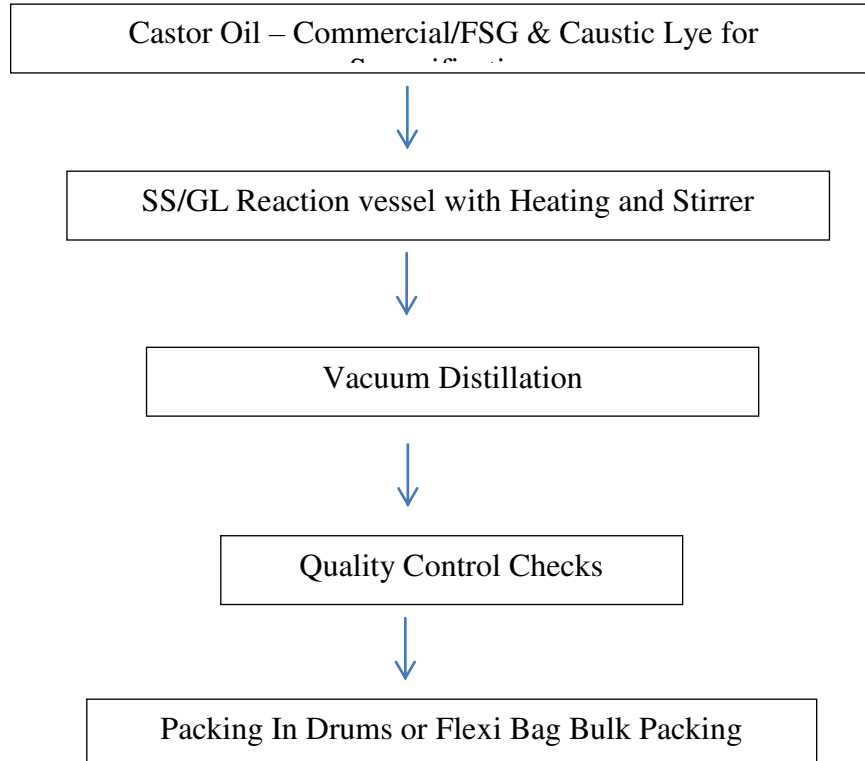
6. RAW MATERIAL REQUIREMENTS

As indicated previously the proposed project will have two main raw materials, castor oil and caustic lye for Saponification. In the proposed project, it will have requirement of approx. 3050 MT of castor oil of commercial/FSG quality.

7. MANUFACTURING PROCESS

2-Octanol is mainly produced as a by-product of Sebacic Acid manufacturing process. However, it can also be manufactured by heating Castor oil soap with 30% sodium carbonate. This process besides giving higher yield also gives purer end product eliminating the need of refining it, as required in other process. A typical material flow and manufacturing process are schematically summarized in following figure:

Figure: Material Flow and Manufacturing Process Diagram for 2-Octanol



8. MANPOWER REQUIREMENTS

The manpower requirement is estimated as below

Sr. No.	Designation	Number	Approx. Total Annual Salary (Rs)
1	Manufacturing chemist	3	45000
2	Production supervisor	1	20000
4	Office staff & marketing executive	7	70000
5	Skilled workers	10	50000
6	Unskilled workers	7	35000

9. IMPLEMENTATION SCHEDULE

It may take about six months from the date of sanction of loans

Sr. No	Activity	Time
1	Preparation of Project profile	One Month
2	E M Registration & approval from Director of Ayurveda	One month
3	Financial/Loan from Banker or Financial Institutions	Two months
4	Power connection/Building construction Six months	One month
5	Machinery procurement & Trial run.	Two months
6	Recruitment of Staff & Labour	One month
7	Actual commercial production	One month

10. COST OF PROJECT AND

There will be need to invest in terms of land, land development, building and civil works, plant and machineries, miscellaneous fixed assets etc; in this project. Over and above fixed asset investment, there will be provision of contingencies and preliminary and pre-operative expenses for the proposed project. A fixed project cost of Rs.76.50 lacs has been estimated for the proposed 2-Octanol projects with

suggested capacity of 1125 MTPA. This estimate is indicative and may differ with the selection of technology as well as proposed size of the project. Detailed estimate are given in below table:

Table: Estimated Project Cost & Means of Finance

Sr. No.	Cost of Project	Rs. In lacs
1.	Land and Land development 1000 Sq. MT	2.50
2.	Main Buildings 250 Sq. mt.	10.00
3.	Plant & Machinery (4.5 TPD) output	35.00
4.	Miscellaneous Fixed Assets	15.00
5.	Preliminary & Pre-operative	8.00
6.	Provision for Contingencies	4.50
7.	Total Fixed Assets	76.50
8.	Margin Money for working capital	23.50
	Total	175.00

11. MEANS OF FINANCE

Sr. No.	Particulars	Rs. In lakhs
1	Promoters contribution @ 25 %	44.00
2	Term Loan Borrowing	131.00
	Total	175.00

The block capital cost of this project including working capital margin is Rs. 100 lacs. The working capital margin is Rs. 23.50 lacs. The proposed project will be using Castor oil as input material and if it is put as an integrated unit it can have status of agro-processing industry. As per present funding norms of financial institutions and banks promoters' margin has been considered at 25% of project cost.

12. WORKING CAPITAL CALCULATION

The proposed project will have working capital requirement of Rs.94 lacs and based on current funding norms of schedule banks considering 25% margin of the promoters, the proposed project will have working capital margin of Rs.23.50 lacs and borrowing of Rs. 70.50 lacs. This requirement is indicative and may change as per funding norms of funding banks/agencies.

13. LIST OF MACHINERY REQUIRED & SOURCES

Plant and Machineries

The main plant and machineries required for the proposed project, their estimated cost and sources are summarized in below table:

Sr. No.	Plant & Machinery Particulars	Estimated Cost in Rs. Lacs	Source of Machinery
1.	Castor oil storage tanks MS	3.0	Local Fabrication
2.	Caustic Lye storage tank MS	1.0	Local Fabrication
3.	SS?GL 10MT reaction vessel for Saponification with heating & stirring arrangement.	12.0	Glass coat Equipment Ltd, Vithal Udyognagar, Anand, Gujarat
4.	SS Distillation colum with vaccum system – Final product	12.0	R. Squar & Company, Ambarnath MIDC, Maharashtra
5.	Thermic Fluid heating system	2.0	Aero-Therm/ Thermax Ltd, Pune
6.	Piping, values, Insulation, etc;	2.5	Local Fabrication
7.	Working Platform and electrical system with controls	2.5	Local Fabrication and Electrical Supplier Co.
	Total	35.0	

Indicative Sources:

- Royal pack industries,
Goregaon,
Mumbai
Maharashtra
- Ridhdi Pharma machineries,
Andheri (East),
Mumbai
Maharashtra
- Ambica Machineries,
Vatva, Ahmedabad
Gujarat
- ARV Engineering,
Thane
Maharashtra

Requirement of Utilities

The proposed project will have thermic fluid heating for castor oil; hence there will be any requirement of heating fuel/gas. Another main utility required for the proposed project will be electric power and as per machinery proposed this unit will have connected power load of approx. 70 HP and utilized peak load will be approx. 50 HP.

14. PROFITABILITY CALCULATIONS

As a standalone project to manufacture 2-Octanol from Castor oil, a unit with 3000 MTPA input capacity is suggested, which will have approx. 1110 MTPA crude 2-Octanol

and on refining it will give approx. 1100 MT pure product. The estimated sales turnover from the proposed project will be approx. Rs. 900 lacs per annum at 100% capacity.

Profitability projections (Rs. Lacs)

Sr. No	Particulars	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
1	Capacity utilisation (%)	60	70	80	80	60
2	Sales	540.00	630.00	720.00	720.00	720.00
3	Expenses	432.00	504.00	576.00	576.00	576.00
4	Gross profit	108.00	126.00	144.00	144.00	144.00
5	Profit to Sales (%)	20.00	20.00	21.00	21.00	21.00

Note: The profitability basis and projections are indicative and on approximate basis only.

As observed from above the proposed unit will start making profit from the first year itself, and it will increase with the capacity utilization in subsequent years.

15. BREAK EVEN ANALYSIS

Financial Ratios:

Based on the annual profitability estimates, key financial indicators, Break-even point, DSCR, average DSCR and ROI for the proposed project, for 3 years period have been worked out in table.

Table: Key Financial Indicators for Medicated Oil Project

Sr. No.	Financial Indicators	1st	2nd	3rd
A	Break-even point (%)	37.02	35.47	33.95
B	Debt-service coverage ratio	1.69	2.52	3.53
C	Average DSCR (%)	2.58		
D	Return on Investment (ROI) (%)	21.62	31.97	42.35

Looking to the estimated financial indicators proposed project for the 2-Octanol will be self-sufficient to generate profits to make it economically viable proposition.

16. STATUTORY/ GOVERNMENT APPROVALS

Generally quality of perfumery products is fully dependent on the quality of raw materials and process of manufacture. The quality control process of Herbal / Natural formulations can be contained from 'Pharmacopica Laboratory of India Medicine, near ALTC, Ghaziabad (U.P)'. The products are to be manufactured as per Indian system of medicines of Ministry of Health. Provisions of Drugs & Cosmetics Act apply. MSME & GST registration, IEC Code for Export of end products and local authority clearance may be required for Shops and Establishment, for Fire and Safety requirement and registration for ESI, PF and Labour laws may be required if applicable. And also take Approval from Pollution Control Board.

17. BACKWARD AND FORWARD INTEGRATION

As forward integration, Entrepreneur may think of going for the production of newer dosage forms like spray.

18. TRAINING CENTERS/COURSES

For Herbal & allied industry training and short term courses may be availed from the Institutions of Ayurvedic Research & Education in respective states. Also EDP centers. Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and

contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.