

**PROJECT PROFILE
ON EUCALYPTUS
OIL EXTRACTING
UNIT**

Table of Contents

INTRODUCTION	3
PRODUCTS AND ITS APPLICATION	3
DESIRED QUALIFICATION FOR PROMOTER	3
INDUSTRY OUTLOOK/TREND	3
MARKET POTENTIAL AND MARKETING ISSUES, IF ANY	4
RAW MATERIAL REQUIREMENTS	4
MANUFACTURING PROCESS	4
MANPOWER REQUIREMENT (PER MONTH)	5
LAND	6
MACHINERY SPECIFICATIONS	6
Utilities	6
Other Contingent Expenses	6
Working Capital (per month)	7
TOTAL CAPITAL INVESTMENT	7
IMPLEMENTATION SCHEDULE	7
INSTALLED CAPACITY & CAPACITY UTILIZATION	7
FINANCIAL ANALYSIS	8
SALES CALCULATION	8
PROFITABILITY CALCULATION (per annum)	8
Rate of Return	8
Net Profit Ratio	8
Break-even Point	9
References	9
MANUFACTURES/ SUPPLIERS OF MACHINERY	9
STATUTORY/ GOVERNMENT APPROVALS	10
DISCLAIMER:	10
DISCLAIMER:	10

INTRODUCTION

Eucalyptus comes from the *Myrtaceae* family, widely grown in the world and commonly used for medicinal plants. There are many species in the world, one of them is *Eucalyptus globulus*. The essential oil can be found in *Eucalyptus globulus*, especially in the leaves.

Eucalypts have been planted on a large scale in India- mainly for fuelwood, pulp, pole and afforestation purposes- but the dominant species is *E. tereticornis* ('Mysore hybrid'), which is not suitable for oil production. Both *E.globulus* (mainly in southern India) and *E.citriodora*, however, have also been planted, and these two species form the basis for Indian eucalyptus oil production.

PRODUCTS AND ITS APPLICATION

- The essential oil is used in many sectors, such as health, flavoring, perfume, cosmetics, and pharmaceuticals.
- The bioactive content in essential oil can be used for antioxidant, anti-bacterial, and anti-inflammatory.
- It is an essential ingredient of medicines that are used to provide relief from influenza and colds. In addition to this, it is also used in the preparation of medicines that are used for cough sweets, lozenges, ointments, and inhalants.
- This oil is used for into toothpaste flavors and soap fragrances. It is also used by mosquito repellent companies
- Eucalyptus oil is used as a co-solvent component of petrol-ethanol fuel blends.

DESIRED QUALIFICATION FOR PROMOTER

For eucalyptus oil extraction need proper skills and technology know-how.

INDUSTRY OUTLOOK/TREND

Eucalyptus oils are exported in many parts of the world from India. The export volume grows at 8% rate. In November 2020, India majorly exported Eucalyptus oils to USA, Brazil, Kenya, Iran, Singapore.

HS Code: 3004

Year	Exports Value in Rs. Lakhs
2021-22 (April-June)	4,192,394.78
2020-21	12,919,598.82

2019-20	10,358,245.49
2018-19	9,293,683.95

Source: Ministry of Commerce & Industries, Govt. of India

MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

Eucalyptus oil making unit has a great potential in India because of its diverse use in the pharmaceutical, chemical, cosmetic and petroleum industries.

RAW MATERIAL REQUIREMENTS

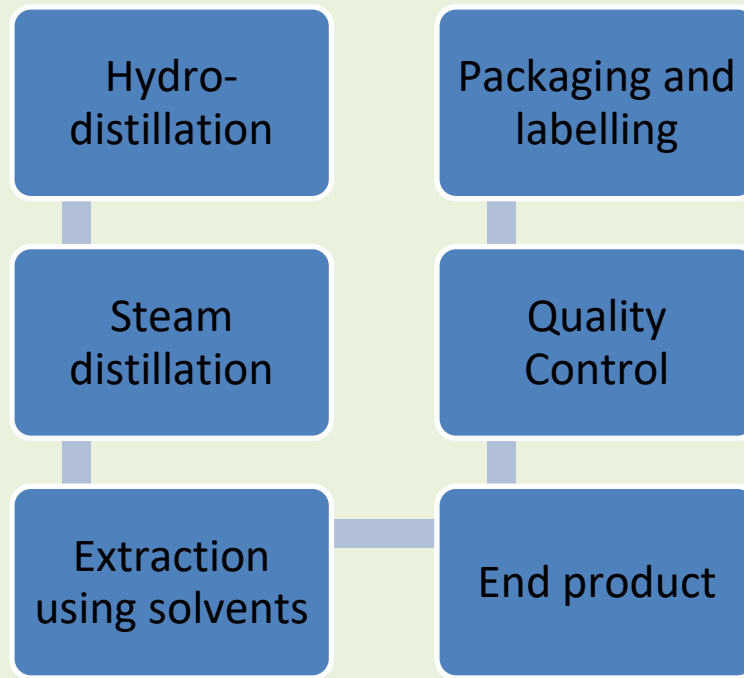
The oil is extracted from fresh and dried leaves, in addition to branch tips. Other component is water and packing containers.

MANUFACTURING PROCESS

The extraction method can affect the yield and chemical content of the essential oil. The selection of effective extraction methods can produce high quality, maximum yield, and maintain the chemical content. Generally, the extraction methods used are maceration, Ultrasound-Assisted Extraction (UAE), Microwave Assisted Extraction (MAE), distillation with water or steam, and others. The effective extraction method can extract essential oil with the best quality and not damage the existence of bioactive compounds.

The extraction method of essential oil can be divided into two categories, conventional and modern methods. The conventional method includes hydro-distillation, steam distillation, and extraction using solvents. The modern method includes supercritical fluid extraction, microwave-assisted hydro-distillation, and ultrasound-assisted extraction.

Process flow chart of preparation of eucalyptus oil:



MANPOWER REQUIREMENT (PER MONTH)

Type	Number	Cost (Rs.)
Manager	1	35,000
Analytical chemist	1	25,000
Quality in-charge	1	25,000
Plant Engineer	1	25,000
Clerk	2	30,000
Storekeeper	1	12,000
Labour (skilled)	8	1,00,000
Labour (semi-skilled)	4	40,000
Accountant	1	18,000
Helper cum peon	1	10,000
Sales person	2	50,000
Driver	3	30,000
Total per month		4,00,000
Total per annum		48,00,000

LAND

Particulars	Units	Value (in Rs. Lakh)
Land	1000 Sq. Ft.	40.00
Covered area, building	600 Sq. Ft.	60.00
Total		100.00

MACHINERY SPECIFICATIONS

Sl. No.	Description	Rate (Rs.)	Qty. (Nos.)	Price (Rs. lakh)
	Distillation section			
1.	Concrete slabs and brickwork	Included in building		
2	Boiler		1	12.00
3	Electrical installation		-	1.00
4	Steel structure		1	15.00
5	Cooling tower		1	1.00
6	Office/laboratory fitments		suitable	1.00
	Distillery equipment			
8	Stills (3 x 2-t, insulated), including chain baskets			6.50
9	Condensers (2; one common to two stills)+ cooling water pump			4.00
10	Electric hoist			1.50
11	Laboratory equipment, including gas chromatograph			3.00
	Total			45.00
12	Furniture & Fixtures			8.00
13	Tractor 2			15.00
14	Gen set			5.00
15	Car			5.00

* No objection certificate may be obtained from the concerned State Pollution Control Board

Utilities

Item	Total Amount (Rs.)
Power	50,000
Fuel	35,000
Water	15,000
Total	1,00,000

Other Contingent Expenses

Particulars	Total Amount (Rs.)
Postage/Stationery	5,000
Travelling expenses and transport charges	50,000

Repair/Maintenance.	25,000
Sales Expenses	25,000
Advertisement/Publicity	25,000
Insurance	20,000
Consumable Stores	25,000
Total	1,75,000

Working Capital (per month)

Particulars	Total Amount (Rs.)
Staff and labour	4,00,000
Raw material	1,50,000
Utilities	1,00,000
Other contingent expenses	1,75,000
Total	8,25,000
Working Capital (for 3 Months)	24,75,000

TOTAL CAPITAL INVESTMENT

Fixed capital (machinery + Building + Furniture +Tractor + Car)	Rs. 1,78,00,000
Working capital (for 3 months)	Rs. 24,75,000
Total	Rs. 2,02,75,000

IMPLEMENTATION SCHEDULE

Project Stages	Months.....						
	1	2	3	4	5	6	7
Acquisition of Land	Yellow	Yellow					
Ordering of Machinery	Light Green	Light Green					
Delivery of Machinery			Light Red	Light Red	Light Red		
Term/Wkg Loan Sanction	White	Blue	Blue				
Installation of Machinery				Brown	Brown		
Commissioning of Plant						Red	
RM/Inputs Procurement						Purple	
Manpower Appointments				White	Dark Purple		
Commercial Production							Orange

INSTALLED CAPACITY & CAPACITY UTILIZATION

The installed capacity of the plant is 100 kg per day. There are 300 working days in a year and one

shift of 8-10 hrs in a day. The capacity utilization of 40%, 80% and 90% has been considered during first, second and third year onwards respectively.

FINANCIAL ANALYSIS

Cost of Production (per annum)	(Rs. Lakh)
Total recurring expenditure	99.00
Depreciation on machinery and equipment @ 10%	4.20
Depreciation on furniture office 20%	1.60
Depreciation on tractor, car and gen set @10%	1.50
Depreciation on building @ 10%	10.00
Interest on total investment @ 12%	23.97
Total	140.27

SALES CALCULATION

Assuming Rs. 750 per kg of eucalyptus oil. Total production 30000 kg per year.

Total Sale (per annum)	Sales (Rs Lakh)
Total	225.00

PROFITABILITY CALCULATION (per annum)

(Rs. In Lakh) $225.00 - 140.27 = \text{Rs. } 84.73 \text{ Lakh}$

Rate of Return

Net profit per year	
-----	$\times 100$
Total investment	
= Rs. 84,73,000	
-----	$\times 100$
2,02,75,000	
42%	

Net Profit Ratio

Profit per year	
-----	$\times 100$
Turn over per year	
= Rs. 84,73,000	
-----	$\times 100$
2,25,00,000	
38.0%	

Break-even Point

Fixed Cost	(Rs Lakh)
Depreciation on machinery and equipment @ 10%	4.20
Depreciation on furniture office 20%	1.60
Depreciation on tractor, car and gen set @10%	1.50
Depreciation on building @ 10%	10.00
Interest 12% p.a.	23.97
Staff and labour @ 40%	19.20
Miscellaneous @ 40%	8.40
Total	68.87

B.E.P	$\frac{\text{Fixed cost} \times 100}{\text{Fixed cost} + \text{profit}}$
	$= \frac{\text{Rs. } 68.87 \text{ lakh} \times 100}{\text{Rs. } 68.87 + 84.73 \text{ lakh}}$
	$\frac{\text{Rs. } 68.87 \text{ lakh}}{\text{Rs. } 153.60 \text{ lakh}}$
	44.83%

References

- Eucalyptus globulus essential oil extraction method N Z Immaroh1, D E Kulihsari1 and S D Nugraheni, Published under license by IOP Publishing Ltd, 2021 IOP Conference Series: Earth and Environmental Science
- Coppen, J.J.W. and Hone, G.A. (1992) Eucalyptus oils: a review of production and markets (NRI Bulletin 56). [Working Paper]
- Video link- https://youtu.be/pGp30_lpHzs

MANUFACTURES/ SUPPLIERS OF MACHINERY

- Dhopeswar Engineering Private Limited, Plot A 16, Co - Operative Industrial Estate, Balanagar, Lane adj to IOC petrol pump, Hyderabad-500037, Telangana, India
- Arkchem Systems Private Limited, Office No. 308, Garden Plaza, Aundh-Ra BRT Road, Wakad, Pune - 411057, Maharashtra, India
- Ylem Energy, 29/21, Gali no -6, Anand Parbat Industrial Area, New Delhi - 110005, Delhi, India

STATUTORY/ GOVERNMENT APPROVALS

There is statutory requirement of FSSAI license for setting up of food processing industry. Moreover, 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. Entrepreneur may contact State Pollution Control Board wherever it is applicable.

DISCLAIMER:

This is an indicative illustration of project profile; the above calculation can vary with the locations. 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.

DISCLAIMER:

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