

## **Project Profile**

**1. Product : Soya bean Oil**

**2. Production Capacity : 15000 M.T. PER ANNUM**

**3. Month & Year of Preparation : March, 2011**

**4. Prepared by :**

Chemical Division  
**Government of India**  
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## **1. INTRODUCTION OF THE PRODUCT :**

Soya bean oil is obtained from the seeds either by pressing or solvent extraction method. It is the highest volume vegetable oil produced. The oil content in the seed is about 20 % on dry basis. The crude Soya bean oil of good quality has a light amber color, which upon alkali refining is reduced to the light yellow color of most vegetable seed oils. Soya bean oil produced from green or immature beans may contain sufficient chlorophyll to have a greenish cast but this is not usually very evident until after the yellow – red pigments of the oil have been bleached in hydrogenation. Oil produced from badly damaged beans may have a dark brown color, which will be very difficult to remove by refining.

The crude oil particularly obtained by solvent extraction method contains relatively large amounts (1.5–2.5 %) of non-glyceride materials consisting mainly of phosphatides. The FFA content of good crude Soya bean oil is slightly in excess of 0.5 %.

## **2. PLANT CAPACITY PER ANNUM : 15000 M.T. per Annum.**

## **3. MARKET & DEMAND ASPECTS :**

The solvent extracted Soya bean oil is mainly supplied to Oil refineries, which convert it in to Refined Soya bean Oil. The main use of the oil after refining is for the edible purposes. Particularly Vidarbha region of Maharashtra State is rich in Soya bean. Therefore there are so many refineries, who are buying solvent extracted Soya bean oil to process it further. Looking at the trends of oil used for edible purposes, Soya bean oil is in huge demand. This is also because other edible oils used in this region viz. Ground nut Oil, Sunflower oil, Mustard oil etc. are costly in comparison to Soya bean oil. Refined and partial hydrogenated Soya bean oil is also used in the manufacture of margarines and shortenings. Crude Soya bean oil will be processed further by refineries to convert it in to refined oil, which will be used for edible purposes. So for this area Raw material is available, customers are in plenty mainly because of cost considerations and therefore this project is having very good market potential.

## **4. BASIS AND PRESUMPTIONS :**

- a. The scheme is based on Three shifts of 8 hours per day and 300 working days per annum.
- b. The interest rate on the borrowed capital has been taken as 12 % per annum.

- c. The cost in respect of Raw Materials, Packing Materials, Machinery & Equipments has been taken at the time of preparation of project profile and may vary from place to place and time to time.
- d. The rental Value of production shed is taken as per the prevailing rates and and may vary from place to place.
- e. The plant capacity utilization has been taken as 75 %, since plant used for oil extraction is continuous plant.
- f. Recovery of oil from the seed has been taken as 18.5 % for the calculation purposes.

## 5. IMPLEMENTATION SCHEDULE :

The project implementation will take about nine months. The break-up of activities with relative time for each activity is as follows:

Sr. No.	Activity	Estimated Time Period (Months)
01.	Scheme preparation & approval	0 – 2
02.	Registration under MSME Act 2006 and sanction of loan	2 - 5
03.	Placement of Orders for Machines	4 - 5
04.	PFA License	5 - 7
05.	Power Connection	5 - 7
06.	Installation of Machines	7 - 8
07.	Recruitment of Staff & Trial run	8 – 9
08.	Commercial Production	10 <sup>TH</sup> onwards.

## 6. LEGAL ASPECTS :

The general requirements for obtaining License are as under :

- a. Land and Plant Layout.
- b. Proof of Ownership of Land of Consent letter of owner, if the land is taken on rent .
- c. Copy of Memorandum of articles of association or partnership deed, list of Directors etc. as the case may be.
- d. Photocopy of the packing material specimen.
- e. Clearance from State Pollution Control Board.

## **7. TECHNICAL ASPECTS :**

- a. PRODUCTION CAPACITY : 15000 MT P.A.**
- b. QUALITY CONTROL & STANDARDS : As per Customer Specs.**

### **C. MANUFACTURING PROCESS :**

The Soya bean oil is extracted from the seed by Solvent Extraction Method. It is a process of diffusion of solvent in to the oil bearing cells of the raw material resulting a solution of the oil in the solvent “Hexane”. The entire process is largely divide in to three main sections as follows:

#### **a. Preparatory Section :**

An efficient extraction would need that every oil bearing cell of the material is in contact with solvent. Smaller the material size, better the penetration of the solvent in to the oil bearing cells, but to fine a size will prevent the solvent from percolating through the mass. Hence an optimum size is absolutely essential for efficient extraction. To achieve this Soya bean seeds are passed through expanders after cracking, cooking and flaking.

#### **b. Main Extraction :**

The prepared material is received in to extraction plant. The extraction chamber consists of a number of solvent sprayers, which sprays the solvent over the entire bed of

raw material. The length & breadth is designed to give sufficient time for intimate contact penetration and percolation of solvent in to raw material. The material coming out of the spraying chamber is deoiled material with solvent which is recovered in the desolventising section, while the mixture of Oil and solvent called Miscella is pumped in to miscella tank, from where it is transferred to desolventiser.

#### **c. Desolventisation:**

The extracted material has a tendency for retaining the solvent with it, and this solvent has to be recovered. The retention varies from 20 % to 35 % weight of the material extracted. The basic principle involved in desolventisation is direct and indirect heating of material with steam to a temperature well above boiling point of solvent and thus entrusting no solvent is left over with material. Vapors of solvent are sent to scrubber, where the solvent to trace vapors is washed. The De oiled and desolventised meal thus obtained is then transported to bagging section with the help of a conveyor. A cooling arrangements is provided to ensure proper cooling of the material for easy bagging and hold moisture 10-12 %.

**d. Distillation:**

Mixture of Oil and solvent obtained in the extractor is known as miscella and it normally contains 12% to 18 % of the oil un the solvent. Distillation is performed in three stages under vacuum to ensure that no oxygen is present when the oil is heated to a high temperature. First evaporation takes place in Economizer and concentrates in the first and second, flasher leaving practically only oil behind. This oil is further treated with open steam to ensure that no solvent finds its way along with the oil.

The solvent vapors thus produced passes through Oil – vapor separator to separate out any oil particles strapped with the solvent vapors and are then passed to condenser for condensation.

**8. FINANCIAL ASPECTS :**

<b>Sr. No.</b>	<b>Description</b>	<b>Quantity</b>	<b>Value (Rs.)</b>
<b>(a)</b>	<b>Land &amp; Building</b> Covered area of 1000 Sq. Mtrs. on rent	L.S.	30,000
<b>(b)</b>	<b>Machinery &amp; Equipments</b>		
01.	<b>Solvent extraction plant 50 TPD comprising -</b> Elevators, Seed Cleaner, Aspiration system, Cracker, Cooker, Flaker, Roll Grinding attachment, Hydraulic system, Conveyors, Rotary Air Lock, Feed Bin, Micro Level Indicators, Extractor, Rising Hoppers, Discharge Bin, Bulk Flow conveyor, Rotary Air Lock, Rotary Air Lock, Toaster, Dust Catcher New Design, Horizontal Tubular Condensor, Sealing Device, Vapour Cooler, Miscella Holding Tank, Water Solvent Separator, Spent Water Desolventiser, Evaporator, Separator, Pre Heater, Condensors, Oil Stripping Column, Heater, Drier, Oil Holding Tank, Vaccum Equipment, Final Vapour Absorber, Heat Exchangers, Final Vertical Stripper, Accessories and Misc. including installation charges.	L.S.	1,38,60,000
02.	Boiler Coal Fired Capacity : 1.5 ton / hour with Chimney, motor & all accessories	1 No.	3,50,000
03.	Preoperative Expenses	L.S.	25,000
		<b>Total</b>	<b>1,42,35,000</b>

**(c) Raw & Packing Materials per Month:**

Sr. No.	Description	Quantity	Value (Rs.)
01.	Soya bean Seed @ Rs.22000 per MT	937.5 MT	2,06,25,000
02.	Hexane @ 55 per Ltr.	425 Ltrs	23,375
03.	Other Misc. Chemicals	L.S.	20,000
04.	Packing Materials viz. HDPE Bags and other Misc. packing material.	L.S.	1,00,000
		<b>Total</b>	<b>2,07,68,375</b>

**(d) Salary & Wages per Month :**

Sr. No.	Description	Nos.	Value (Rs.)
01.	Manager	01	12,000
02.	Supervisor / Chemist	03	18,000
03.	Skilled labour	06	24,000
03.	Semi – skilled labour	12	36,000
04.	Unskilled labour	12	30,000
		<b>Total</b>	<b>1,20,000</b>

**(e) Utilities per Month :**

Sr. No.	Description	Quantity	Value (Rs.)
01.	Power @ Rs.5.5/ KWH	42000 KWH	2,31,000
02.	Water	L.S.	20,000
03.	White Coal @ Rs.3000 per MT	150 MT	4,50,000
		<b>Total</b>	<b>7,01,000</b>

**(f) Other Expenses per Month :**

Sr. No.	Description	Quantity	Value (Rs.)
01.	Rent	L.S.	30,000
02.	Postage & Stationery	L.S.	2,000
03.	Telephone	L.S.	5,000
04.	Repair & Maintenance @ Rs.300 per MT	L.S.	2,81,250
05.	Insurance @ 2% of Machinery & Equipment Cost		23,725
06.	Marketing & Travelling Expenses	L.S.	20,000
		<b>Total</b>	<b>3,61,975</b>

<b>(g) Working Capital for One Month (c+d+e+f)</b>	<b>:</b>	<b>2,19,51,350</b>
<b>(h) Working Capital for three Months</b>	<b>:</b>	<b>6,58,54,050</b>
	<b>Or say</b>	<b>6,58,54,000</b>
<b>(i) Total Capital Investment (b+h)</b>	<b>:</b>	<b>8,00,89,000</b>

## 9. FINANCIAL ANALYSIS :

### (a) Cost of production per Annum :

Sr. No.	Description	Value (Rs.)
01.	Raw & Packing Materials	24,92,20,500
02.	Salary & Wages	14,40,000
03.	Utilities	84,12,000
04.	Other Expenses	43,43,700
05.	Depreciation on Machinery & Equipments @ 10% p.a.	14,21,000
06.	Interest on borrowed capital @ 12 % p.a.	96,10,680
	<b>Total</b>	<b>27,44,47,880</b>
	<b>Or say</b>	<b>27,44,48,000</b>

### (b) Turnover per Annum :

Sr. No.	Description	Value (Rs.)
01.	2081 MT Crude Soya bean Oil @ Rs.57000 per MT	<b>11,86,17,000</b>
02.	9000 MT DOC @ Rs.20,000 per MT	<b>18,00,00,000</b>
	<b>Total</b>	<b>29,86,17,000</b>

### (c) Net Profit per Year :

$$\begin{aligned}
 \text{Net Profit} &= \text{Total turnover} - \text{Total cost of production} \\
 &= 29,86,17,000 - 27,44,48,000 \\
 &= \mathbf{2,41,69,000}
 \end{aligned}$$

### (d) Profit Ration on Sales :

$$\begin{aligned}
 \text{Profit Ratio on Sales} &= \frac{\text{Net Profit}}{\text{Total turnover}} \times 100 \\
 &= \frac{2,41,69,000}{29,86,17,000} \times 100 \\
 &= \mathbf{8.09 \%}
 \end{aligned}$$

### (e) Rate of Return (ROR) on Total Capital Investment:

$$\begin{aligned}
 \text{ROR} &= \frac{\text{Net Profit per annum}}{\text{Total Capital Investment}} \times 100 \\
 &= \frac{2,41,69,000}{8,00,89,000} \times 100 \\
 &= \mathbf{30.18 \%}
 \end{aligned}$$

**(f) Break Even Analysis :**

**(i) Fixed Cost :**

<b>Sr. No.</b>	<b>Description</b>	<b>Amount (Rs.)</b>
01.	Depreciation on Machinery & Equipments @ 10% p.a.	14,21,000
02.	Interest on Total Capital Investment @ 12 % p.a.	96,10,680
03.	40 % of Salary & Wages	5,76,000
04.	40 % of Other Expenses	17,37,480
	<b>Total</b>	<b>1,33,45,160</b>
	<b>Or say</b>	<b>1,33,45,000</b>

**(ii) Break Even Point (B.E.P.) :**

$$\begin{aligned}\text{B.E.P.} &= \frac{\text{Fixed Cost}}{\frac{\text{Fixed Cost} + \text{Profit}}{1,33,45,000}} \times 100 \\ &= \frac{\text{Fixed Cost}}{1,33,45,000 + 2,41,69,000} \times 100 \\ &= \mathbf{35.57 \%}\end{aligned}$$

**Name and Addresses of Plant and Machinery Suppliers:**

1. M/s. M. M. Tekno Engineers, A – 65, MIDC, Taloja – 410208 (Navi Mumbai)  
Tel. No.91-22-27402073, 27402074, 27402075, Fax No. 91-22-27402078.  
Contact Person: Shri Pradeep M. Bhandari, Mb: 09769315463.  
E-mail: [mmtekno@vsnl.net](mailto:mmtekno@vsnl.net)
2. M/s. Muez Hest India Pvt. Ltd., 231, Blue Rose Industrial Estate, Near Cable Corporation Western Express Highway, Borivali (E), Mumbai – 400 066.  
Tel. No.91 – 2228701752, 28541758, Fax No. 91-2228701752.  
Mb: 09324610477, E-mail: [muezhest@vsnl.com](mailto:muezhest@vsnl.com) , [info@muezhest.com](mailto:info@muezhest.com)

**Boilers:**

1. M/s. Ross Boilers, 33, Burhani Industrial Estate, Kondhwa Bhudruk,  
Pune – 411 037. Tel. No. 020 - 24269393, 24272293, Fax No.020 – 24269562  
Mb. No. 09822012844, 09922433674, Web site : [www.rossindia.com](http://www.rossindia.com)



2. M/s. Micro Dynamics Pvt. Ltd., T – 181 – 1/A, MIDC Bhosari, Pune – 411 026.  
Tel. No.020-27120839 / 30685454, Fax No. 020 – 30685466, Mb:09371313151.  
Web site : [www.indiamart.com](http://www.indiamart.com)

**White Coal :**

1. M/s. Hadoti Biotech Pvt. Ltd., Spl. 3(1) Chambal Industrial Area, Opp. Multimetals, Kota. (Rajasthan) – 324 004, Contact Person: Mr. Shankar Lal Mittal, Phone No. 0744-2209807, Fax No. 0744-2481990, Mob. No. 09414189139 /09413351815, Web : [www.hadotiboitech.com](http://www.hadotiboitech.com)  
E-mail ID: [hadotibiotech@rediffmail.com](mailto:hadotibiotech@rediffmail.com)
2. M/s. Havisha Biotech, 301 Oasis Complex, Opp Ankur High School, Ahmedabad(Gujarat) – 380 007, Telephone – 079-65220205, Fax: 079-30009780  
Contact person: Ms. Dhruti S., Mob. No. 9898003339,  
Web: [www.havishachemcom](http://www.havishachemcom)
3. M/s. Bhakti Bio Coal Engery, A-56, MIDC Katol, Dist. Nagpur (Maharashtra).  
Contact Person : Shri Ramarao Kadu Mb: 09423677519.

**Name and Addresses of Raw Material Suppliers:**

Locally available.