

# **PSYLLIUM HUSK PROCESSING**

## **1. INTRODUCTION:**

Psyllium is a plant or rather herb as most people know it. It is also known as isabgol, ispaghula or isabgula. The herb is used in production of psyllium husk and psyllium powder. Ispaghula husk seeds are indigestible making them a source of soluble fiber. India dominates the world market in production and export of psyllium husk powder. It provides approximately 80% of psyllium husk powder in the world market. India has the upper hand when it comes to isabgol because of certain factors.

## **2. PRODUCT & ITS APPLICATION:**

Psyllium husks are not digested, allowing them to travel to the digestive tract intact. The water retentive properties of psyllium husk allows for the formation of a soft gel helping to relieve constipation, irritable bowel syndrome, and diarrhoea. They are also used as a regular dietary supplement to improve and maintain regular GI transit. The inert bulk of the husks help to provide a constant volume of solid material irrespective of other aspects of the diet or any disease condition of the gut.

## **3. DESIRED QUALIFICATIONS FOR PROMOTER:**

Successful running this project does not require any specific qualification.

## **4. INDUSTRY LOOKOUT AND TRENDS**

Psyllium husk is obtained from genus *Plantago*. The husk is commercially used for mucilage production used in laxatives and other application of the same. The psyllium plant is native to South East Asia with India dominating the production by volume globally. The psyllium is

high in soluble fiber content with detoxing effect over digestive system makes it a very apt nutraceuticals and OTC pharmaceutical ingredient. Psyllium husk is available in powder and as the whole husk. Psyllium husk dust is produced during the production psyllium husk powder which has application in construction and animal feed industry. Psyllium husk market is expected to be dominated by the North America region owing to its large laxative drug and supplement market. The natural origin of the psyllium husk and offering in organic is anticipated to drive the market over the forecast period.

On the basis of origin, the psyllium husk market can be segmented into conventional and organic. The organic segment to witness high CAGR over the forecast period owing to the global trend of organic and natural based supplements and nutraceuticals. The conventional segment is expected to dominate in terms of volume share owing to cost-effectiveness and low residue presence in the final product.

On the basis of offering, the psyllium husk market can be segmented into whole, powder, and dust. The whole segment is expected to dominate the global psyllium market in terms of volume share. The powder segment is anticipated to see strong CAGR over the forecast period owing to its increased application in supplement and pharmaceutical market.

## **5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:**

India produces 80% of psyllium husk powder in the world market. India's light soils and warm temperate regions highly promote the crops growth. India's large farms of up to 55,000 acres promote large scale farming of isabgula. The country's high population level makes it easy and cheap to obtain labor force required in farming the crop. Because of this, India is way ahead in bargaining cost of raw materials and thus export market becomes promising for this particular product. The end products of isabgula are exported to countries such as United Kingdom, United States of America, Norway, Italy, France, Korea etc.

## **6. RAW MATERIAL REQUIREMENTS:**

The primary raw material is raw psyllium seeds. For sterilization, Ethylene Oxide and Methyl Bromide are required. For packaging, it requires paper bags, PP woven bags and fiber drum as per need of customer.

## **7. MANUFACTURING PROCESS:**

Typical process of manufacturing raisins requires following steps. The raw psyllium seeds need to be cleaned by mechanical process through various steps of processing where no chemicals are used. After cleaning seeds from the cleaning and pre cleaning chambers, de-husking processes begin. The process consists of crushing the seed with emery mills and separation of husk in a closed circuit of an automatic pneumatic aspiration system. The psyllium seed husk is then separated from the remainder of the seed by using slight mechanic pressure. The seeds are crashed between rotating rollers and plates. Psyllium husk is then purified by sieving the mixture to separate the husk from the remainder of the seed part. To obtain high yield of pure quality psyllium seed husk, there is intact milling of psyllium seed in a mill which causes the husk to be fragmented by collision under certain conditions. The husk is fractured separating non-husk portion of the isabgol seed. Psyllium powder is obtained through crashing the pure husk psyllium. The products are then packaged under total hygienic control. Packaging includes uncoated and coated Uv stabilized PP woven fabric without liner, HDPE laminated paper bags with inner poly-liner, laminated PP woven bags with inner poly, fiber paper drum and silver plated ring with inner poly-liner. Finished products can be treated with Ethylene Oxide, Methyl Bromide, and Gamma Rays Irradiation for sterilization as per customer's specified requirements.

## **8. MANPOWER REQUIREMENT:**

The enterprise requires 16employees as detailed below:

Sr. No.	Designation of Employees	Salary Per Person	Monthly Salary ₹	Number of employees required				
				Year-1	Year-2	Year-3	Year-4	Year-5
	<b>Variable Labour: Workers</b>							
1	Operator	₹ 10,000.00	₹ 10,000.00	2	2	2	3	3
2	Un Skilled Workers	₹ 8,000.00	₹ 24,000.00	6	6	6	9	9
	<i>sub-total</i>		₹ 34,000.00	8	8	8	12	12
	<b>Fixed Staff:</b>							
1	Accountant	₹ 12,000.00	₹ 12,000.00	1	1	1	1	1
2	Store Keeper	₹ 8,000.00	₹ 8,000.00	2	2	2	3	3
3	Sales Staff	₹ 12,000.00	₹ 24,000.00	5	5	5	8	8
	<i>sub-total</i>		₹ 44,000.00	8	8	8	12	12
	<b>Total</b>		₹ 78,000.00	16	16	16	24	24

## 9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 7 – 9months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	2.00
2	Construction (if applicable)	2.50
3	Procurement & installation of Plant & Machinery	2.50
4	Arrangement of Finance	1.00
5	Recruitment of required manpower	1.00
	Total time required <i>(some activities shall run concurrently)</i>	7.00 - 9.00

## 10. COST OF PROJECT:

The project shall cost ₹ 108.33lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	12.00
2	Building	16.00
3	Plant & Machinery	32.00
4	Furniture, other Misc. Equipments	0.50
5	Other Assets including Preliminary / Pre-operative expenses	3.20
6	Margin for Working Capital	44.63
	<b>Total</b>	<b>108.33</b>

### 11. MEANS OF FINANCE:

Bank term loans are assumed @ 60% of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	27.08
2	Bank Finance	81.24
	<b>Total</b>	<b>108.33</b>

### 12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 44.63lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	22.31	0.25	5.58	16.73
2	Receivables	11.16	0.25	2.79	8.37
3	Overheads	11.16	100%	11.16	0.00
4	Creditors	-		0.00	0.00
	<b>Total</b>	44.63		19.52	25.10

### 13. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below:

Sr. No.	Particulars	UOM	Qty	Rate (₹ in Lacs)	Value (₹ in Lacs)
	<b>Plant &amp; Machinery / equipments</b>				
<b>a)</b>	<b>Main Machinery</b>				
1	Psyllium Dehusking Plant - Cleaning, Rubber Polisher, Aspirator, Siever, Grader, Milling, Dehusking Machine, Husk Separator, Husk Grader	Nos	1	₹ 12.50	₹ 12.50
2	Psyllium Powder Plant - Hammer Mill, Ultrafine Grinder, Roller Mill, Siever, Central Fugal	Nos	1	₹ 10.80	₹ 10.80
3	Common Machineries - Pin Mill, Fan, Cyclone, Dust Collector, Pneumatic Conveyor, Cone Mixer, Bagging	Nos	2	₹ 4.35	₹ 8.70
	<i>sub-total Plant &amp; Machinery</i>				<b>₹ 32.00</b>
	<b>Furniture / Electrical installations</b>				
1	Office furniture and Electrification	LS	1	₹ 0.50	₹ 0.50
	<i>sub total</i>				<b>₹ 0.50</b>
	<b>Other Assets</b>				
1	preliminary and preoperative	LS		3.20	₹ 3.20
	<i>sub-total Other Assets</i>				<b>₹ 3.20</b>
	<b>Total</b>				<b>₹ 35.70</b>

All the machines and equipments are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

1. Fry-Tech Food Equipments Private Limited  
S. No. 4, Raviraj Industrial Estate,  
Bhikhubhai Mukhi Ka Kuwa Bharwadvash,  
Ramol, Ahmedabad - 380024,  
Gujarat, India

2. Hindustan Vibrotech Pvt. Ltd.

Office No. 2, Ground Floor,  
Vrindavan Building, Vile Parle East,  
Mumbai – 400057,  
Maharashtra, India

3. Electronics cooling systems Pvt. Ltd.

S-27, SIDCO Industrial Estate  
Kakkalur Industrial Estate  
Tiruvallur – 602003,  
Tamil Nadu, India

4. Springboard Enterprises India Ltd.

1st, 2nd & 3rd Floor,  
Plot No. 7, 8 & 9,  
Garg Shopping Mall,  
Service Centre, Rohini Sector 2  
New Delhi – 110085,  
Delhi, India

5. Flour Tech Engineers Private Limited

Plot No. 182, Sector 24,  
Faridabad - 121005,  
Haryana, India

6. P Square Technologies

3, Swami Mahal,  
Gurunanak Nagar,  
Off. Shankarsheth Road Bhavani Peth,  
Pune - 411002,  
Maharashtra, India

7. Ricon Engineers

10 To 13, Bhagwati Estate,  
Near Amraiwadi Torrent Power,  
Behind Uttam Dairy,  
Rakhial, Ahmedabad - 380023,  
Gujarat, India

8. Kamdhenu Agro Machinery

Plot No. 6, Near Power House,  
Wathoda Road Wathoda,  
Nagpur - 440035,  
Maharashtra, India

#### 14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	184.28	214.99	245.70	276.41	307.13
3	Raw Materials & Other direct inputs	₹. In Lacs	115.21	134.41	153.61	172.81	192.01
4	Gross Margin	₹. In Lacs	69.07	80.58	92.09	103.60	115.12
5	Overheads except interest	₹. In Lacs	20.46	21.73	24.29	25.06	25.57
6	Interest @ 10 %	₹. In Lacs	8.12	8.12	5.42	4.06	3.25
7	Depreciation @ 30 %	₹. In Lacs	22.40	16.00	11.20	8.00	7.20
8	<b>Net Profit before tax</b>	₹. In Lacs	<b>18.09</b>	<b>34.72</b>	<b>51.18</b>	<b>66.48</b>	<b>79.10</b>

The basis of profitability calculation:

This unit will have 90-100 MT/Annum capacity. The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study, it can be increased according to the selling strategy.)



Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per liter. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

## 15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 25.04% of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	307.13
2	Variable costs	₹. In Lacs	192.01
3	Fixed costs incl. interest	₹. In Lacs	28.82
4	$BEP = FC/(SR-VC) \times 100 =$	% of capacity	25.04%

## 16. STATUTORY / GOVERNMENT APPROVALS

The Ministry of Food Processing Industries has been operating several plan schemes for the development of processed food sector in the country during the 10th Plan. One of the schemes relates to the Technology Up-gradation/ Establishment/ Modernization of food processing industries.

The Indian food processing industry is regulated by several laws which govern the aspects of sanitation, licensing and other necessary permits that are required to start up and run a food business. The legislation that dealt with food safety in India was the Prevention of Food Adulteration Act, 1954 (hereinafter referred to as "**PFA**"). The PFA had been in place for over five decades and there was a need for change due to varied reasons which include the changing requirements of our food industry. The act brought into force in place of the PFA is the Food Safety and Standards Act, 2006 (hereinafter referred to as "**FSSA**") that overrides all other food related laws.

FSSAI initiates harmonization of India's food regulations as per international standards. It establishes a new national regulatory body, the Food Safety and Standards Authority of India (hereinafter referred to as "**FSSAI**"), to develop science based standards for food and to regulate and monitor the manufacture, processing, storage, distribution, sale and import of food so as to ensure the availability of safe and wholesome food for human consumption. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

**All food imports will therefore be subject to the provisions of the FSSAI and rules and regulations which as notified by the Government on 5th of August 2011 will be applicable.**

### **Key Regulations of FSSAI**

- A. Packaging and Labeling
- B. Signage and Customer Notices
- C. Licensing Registration and Health and Sanitary Permits

## **17. BACKWARD AND FORWARD INTEGRATIONS**

The objective of the scheme is to provide effective and seamless backward and forward integration for processed food industry by plugging the gaps in supply chain in terms of availability of raw material and linkages with the market. Under the scheme, financial assistance is provided for setting up of primary processing centers/ collection centers at farm gate and modern retail outlets at the front end along with connectivity through insulated/ refrigerated transport.

The Scheme is applicable to perishable horticulture and non-horticulture produce such as, fruits, vegetables, dairy products, meat, poultry, fish, Ready to Cook Food Products, Honey, Coconut, Spices, Mushroom, Retailers Shops for Perishable Food Products etc. The Scheme would enable linking of farmers to processors and the market for ensuring remunerative prices for agri produce.

The scheme is implemented by agencies/ organizations such as Govt. / PSUs/ Joint Ventures/ NGOs/ Cooperatives/ SHGs / FPOs / Private Sector / individuals etc.

**Backward Linkage:**

- Integrated Pack-house(s) (with mechanized sorting & grading line/ packing line/ waxing line/ staging cold rooms/cold storage, etc.)
- Pre Cooling Unit(s)/ Chillers
- Reefer boats
- Machinery & equipment for minimal processing and/or value addition such as cutting, dicing, slicing, pickling, drying, pulping, canning, waxing, etc.
- Machinery & equipment for packing/ packaging.

**Forward Linkage:**

- Retail chain of outlets including facilities such as frozen storage/ deep freezers/ refrigerated display cabinets/cold room/ chillers/ packing/ packaging, etc.
- Distribution center associated with the retail chain of outlets with facilities like cold room/ cold storage/ ripening chamber.

**18. TRAINING CENTERS AND COURSES**

There are few specialized Institutes provide degree certification in Food Technology, few most famous and authenticate Institutions are as follows:

1. Indian Institute of Food Science & Technology,  
Plot No.1, Near Maa-Baap ki Dargah, Opp to Nath Seeds,  
Paithan Road Aurangabad  
Aurangabad - 431005  
Maharashtra, India
2. MIT College of Food Technology, Pune  
Gate.No.140, Raj Baugh Educational Complex,  
Pune Solapur Highway,  
Loni Kalbhor, Pune – 412201

Maharashtra, India

3. CSIR - Central Food Technological Research Institute (CFTRI)  
Cheluvamba Mansion, Opp. Railway Museum,  
Devaraja Mohalla, CFTRI Campus, Kajjihundi, Mysuru  
Karnataka – 570020

Udyamimitra portal (link : [www.udyamimitra.in](http://www.udyamimitra.in) ) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

**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.