

## 1 BAKERS YEAST

### 1.1 Introduction

Bakers yeast is a commercial preparation consisting of dried cells of one or more strains of the fungus *Saccharomyces cerevisiae*, used as a leavening in baking. The word "yeast" comes from the Sanskrit 'yas' meaning "to seethe or boil".

Yeast is a living microscopic organism which converts sugar or starch into alcohol and carbon dioxide, which is why beer brewers, wine makers and bread bakers like it. Baker's yeast is what we use most often for leavening when cooking. Baker's yeast is either active dry yeast (where the yeast is alive but inactive due to lack of moisture) or compressed fresh yeast (where the yeast is alive and extremely perishable as a result). Brewer's yeast is a non-leavening yeast used in brewing beer and can be eaten as a food supplement for its healthful properties (as you would wheat germ), unlike baker's yeast which is used for leavening. Brewer's yeast has a bitter hops flavor.

*Saccharomyces cerevisiae* is known as top-fermenting yeast. It is one of the major types of yeast used in the [brewing](#) of [beer](#) so called because during the fermentation process it rises to top of the fermentation vessel. Beers that use top-fermenting yeast are called [ales](#), and for that reason these yeasts are also sometimes called "ale yeasts".

Top-fermenting yeasts are unable to ferment some types of sugars, and the resulting beer is sweeter and "fruitier".

### 1.2 Objective

The proposed project envisions setting up of a Baker's Yeast manufacturing unit for compressed and dry yeast, to cater to the domestic and global markets of bakery industry.

The primary objective of the model report is to facilitate the entrepreneurs in understanding the importance of setting up unit of Baker's Yeast. This model report will serve as guidance to the entrepreneurs on starting up such a new project and basic technical knowledge for setting up such a facility.

### **1.3 Raw Material Availability**

*Sugarcane (molasses)* is the primary raw material for the manufacturing of Bakers Yeast. The production of sugarcane in MP in year 2004-05 is 2.14 Lakh MT. The highest production is in the district of Narsinghpur with 63600 MT of production in 2004-05.

### **1.4 Suitable Location**

The suitable location for this unit is Narsinghpur, Chhindwara, Betul and to some extent Burhanpur. These locations are suggested keeping in view the production and productivity of these districts. In addition to that these all districts are contiguous and lie in the southern part of the state.

### **1.5 Market Opportunities**

Within the past few years yeast extracts have become important components in savoury flavours as well as in fermentation media.

The growth of Bakers yeast market is directly linked to the increasing trend of processed and fast food consumption, especially bakery items. The European and Asian regions produced 51 million tons of bakery items, valued at US \$ 107 billion, in the year 2004-2005. As per the emerging global trend China is presently one of the most promising markets for Baker's yeast, as its demand is continuously increasing with the rise in population and changing demand of Bakery products.

Baker's yeast market in developing countries is touching new highs with increasing demand for processed foods and a consistent growth in Bakery items production, compensating for the slow growth averaging 1% to 2% in developed countries, where the market is saturated. India's bakery production in the year 2004-2005 registered a growth rate of around 20% producing approximately 50 Lac tons of bakery items; valued at INR 69 billion. Of the total bakery production, the bread production alone was estimated at around 27 Lac tons, indicating a growth rate of 7.5%. India's estimated per capita consumption of bread is 2 Kgs per annum, as compared to other European and developing countries of Asia it is far below the lowest.

As per Government of India trade statistics, the export for Baker's yeast in the current fiscal year 2006-2007(Apr-Jun), is 329.85 tons, valued at INR 28.44 million, with major export to Sri Lanka followed by Saudi Arabia, Lebanon, Nepal, Mali, Egypt and Iran, while imports for the last four years stand cumulatively at a minimal 39.18 tons valued at INR 2.556 million. Saf Yeast Co. Pvt. Ltd a Mumbai based unit with annual sales below US \$1 million is into

production of baker's yeast. Blue Bird India Pvt. Ltd, Mumbai is marketing Dry yeast in retail packing for home use.

The table below briefly highlights the traded quantum of Baker's Yeast for the last four years:

(Quantity – in Tonnes, Value – in Lakhs)

S. No.	Particulars	Years				Total
		2006-07 (Apr-June)	2005-06	2004-05	2003-04	
1	Export (Q)	329.85	874.68	19.17	142.94	1366.64
	(V)	284.4	707.65	8.38	106.41	1106.84
2	Import (Q)	16.5	20.5	1.96	0.22	39.18
	(V)	10.67	8.1	4.63	2.16	25.56

## 1.6 Project description

### 1.6.1 Applications

Baker's yeast, like baking powder and baking soda, is used to leaven baked goods (breads, danish pastries, brioche, croissants). The principle use of Baker's yeast is as an essential bakery ingredient- for causing fermentation in the dough used in making bakery items. This process helps making soft and fluffy bakery items like variety of breads, bread rolls, pizza base, cracker biscuits, sweet breads and burger buns etc.

The useful physiological properties of yeast have led to their use in the field of xylitol [\[16\]](#) biotechnology. Fermentation of sugars by yeast is the oldest and largest application of this technology. Many types of yeasts are used for making many foods: Baker's yeast in [bread](#) production, brewer's yeast in [beer](#) fermentation, yeast in [wine](#) fermentation and for production. Yeasts are also one of the most widely used [model organisms](#) for [genetics](#) and cell biology.

### 1.6.2 Availability of know how and compliances

Baker's Yeast Technology is available from Central Food Technology Research Institute – CFTRI Mysore.

### 1.6.3 Capacity of the Project

The capacity of the proposed unit is 38 TPA

### 1.6.4 Critical Success Factors

Increasing consumption of bread as a staple food rather than just a breakfast item and the industry registering growth rate of around 7.5%, indicate good prospects for Baker's yeast in the domestic market.

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Increasing number of nuclear families and working women in India particularly in urban and semi urban areas and changing food consumption habits and pattern of people, will drive the growth of Bakery industry and in turn the growth of Baker's yeast demand.

Demand for bakery products is increasing as they are an essential content of many fast food items and people now increasingly prefer convenience products over traditional Indian food items.

### **1.6.5 Manufacturing process**

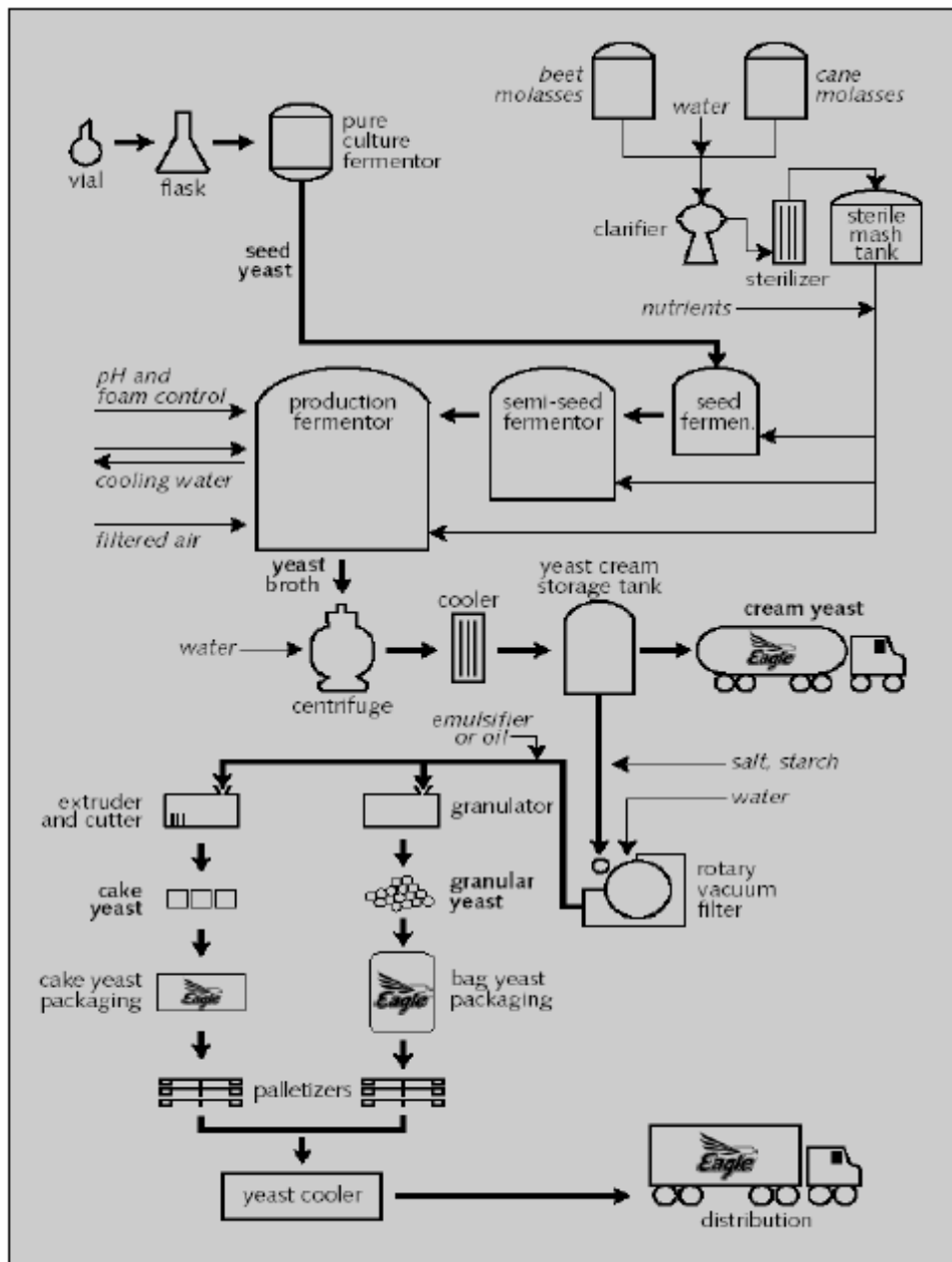
Sugarcane or beet molasses is the primary raw material for Baker's yeast production as it supplies the required sugar and energy with needed nitrogen for the growth of yeast. Cane molasses and beet molasses are the principal carbon sources to promote yeast growth. Molasses contains 45 to 55 weight percent fermentable sugars, in the forms of sucrose, glucose, and fructose.

**Raw materials:** Concentrated molasses is diluted with water, clarified and heat sterilized before being fed to the yeast.

**Fermentation:** Baker's yeast begins as a pure culture of the desired strain, which is inoculated from a small vial into a sterile flask of broth. From the flask it is transferred into a larger vessel and then passed through several fermentation stages of increasing volumes.

**Processing:** The yeast broth from the fermentor at about 5% solids is concentrated in a centrifuge to about 18% solids and washed with water. The cream liquid in this liquid form which is further cooled and passed through a filter that removes water and increases the solids concentration to about 30%. After filtering small amounts of emulsifiers or oils are added to assist in the extrusion, cutting and improving performance of the yeast's appearance.

The manufacturing process is shown in following diagram:



### 1.7 Project component and cost

Major components of the projects and their costs are described in the table hereunder:

### 1.7.1 Land and Building

Particulars	Unit	Qty	Cost/unit	Total
<b>LAND &amp; BUILDING</b>				<b>8.38</b>
Land	SqM	200	250.00	0.50
<b>Land Development</b>				
Land Area		200	500.00	1.00
<b>Building</b>				
<b>Production Block</b>				
Buildup Area	SqM	125	5,000.00	6.25
Contingencies		10%		0.63
<b>PLANT &amp; MACHINERY</b>				<b>2.52</b>
Micro pulveriser		1	65,000.00	0.65
Sifter		1	15,000.00	0.15
Mixer		1	40,000.00	0.40
Oven		1	80,000.00	0.80
Weighing scale	LS	1	10,000.00	0.10
Contingencies		20%		0.42
<b>MISCELLANEOUS FIXED ASSETS</b>				<b>0.60</b>
Misc Assets	LS	1	50,000	0.50
Contingencies		20%		0.10
<b>PRE-OPERATIVE EXPENSES</b>				<b>2.12</b>
Establishment		1	132,000	1.32
Professional Charges		1		-
Security Deposits		1	80,000	0.80
<b>TOTAL</b>				<b>13.62</b>

### 1.7.2 Plant and Machinery

The total cost of the plant and machinery is Rs. 2.52 Lakhs. The main plant and machinery required for this project are micro pulveriser, sifter, mixer, oven etc.

### 1.7.3 Building

The main production block will cost around Rs. 6.88 lakhs.

### 1.7.4 Miscellaneous Assets

A provision of Rs. 60000/- would take care of all the requirements.

### 1.7.5 Preliminary & Pre-operative Expenses

A provision of Rs. 2.12 lakhs would take care of pre-production expenses like establishment, professional charges, security deposits etc.

### 1.7.6 Working capital assessment

ITEMS	Year 1	Year 3	Year 5
STOCK OF RAW MATERIAL & PACKING MATERIAL	0.61	0.77	0.77
SUNDRY DEBTORS	4.10	5.13	5.13
<b>TOTAL</b>	<b>4.72</b>	<b>5.90</b>	<b>5.90</b>
<b>MARGIN</b>	1.18	1.47	1.47
<b>MPBF</b>	3.54	4.42	4.42
<b>INTEREST ON WC</b>	0.39	0.49	0.49

### 1.8 Means of finance

<b>EQUITY CAPITAL</b>			25.00%	<b>3.70</b>
<b>MOFPI SUBSIDY</b>	25%	50.00	25.00%	<b>3.70</b>
<b>TERM LOAN</b>				
FINANANCIAL INSTITUTIONS		10.00%	50.00%	<b>7.40</b>
<i>-Payable half yearly Installments</i>	10	0.70		
<b>TOTAL</b>			100%	<b>14.79</b>

### 1.9 Cash flow statement

PARTICULARS	Year 1	Year 3	Year 5	Year 7
<b>SOURCES OF FUNDS</b>				
EQUITY CAPITAL	-	-	-	-
SUBSIDY				
NET PROFIT	1.18	2.88	2.27	1.64
DEPRECIATION	0.56	0.56	0.56	0.56
PRELIMINARY EXP.W/O	0.30	0.30	0.30	0.30
INCREASE IN TERM LOAN	-	-	-	-
INCREASE IN BANK BORROWINGS-WC	3.54	0.44	-	-
<b>TOTAL</b>	<b>5.58</b>	<b>4.18</b>	<b>3.13</b>	<b>2.50</b>

### 1.10 Projected balance sheet

PARTICULARS	Year 1	Year 3	Year 5	Year 7
<b>LIABILITIES</b>				
EQUITY CAPITAL	3.70	3.70	3.70	3.70
RESERVES & SURPLUS	3.75	6.46	9.75	12.30
TERM LOAN	6.70	3.90	1.10	-
BANK BORROWINGS-WC	<b>3.54</b>	<b>4.42</b>	<b>4.42</b>	4.42
<b>TOTAL</b>	<b>17.68</b>	<b>18.48</b>	<b>18.97</b>	<b>20.42</b>

### 1.11 Projected profit and loss account

PARTICULARS	Year 1	Year 3	Year 5	Year 7
<b>NET REVENUE REALISATION</b>	27.36	34.20	34.20	34.20
<b>TOTAL EXPENSES</b>	<b>25.32</b>	<b>30.46</b>	<b>31.07</b>	<b>31.70</b>
<b>GROSS PROFIT</b>	<b>2.04</b>	<b>3.74</b>	<b>3.13</b>	<b>2.50</b>
DEPRECIATION	0.56	0.56	0.56	0.56
INTEREST	1.13	0.98	0.70	0.49
PRELIMINARY EXP.W/O	0.30	0.30	0.30	0.30
PROFIT BEFORE TAX	0.05	1.89	1.57	1.15
RETAINED PROFIT	0.05	1.89	1.57	1.15
NET CASH ACCURALS	0.91	2.75	2.43	2.01
<b>PROFIT &amp; LOSS ACCOUNT</b>				
OPENING BALANCE	-	0.82	1.72	1.40
CLOSING BALANCE	0.05	1.89	1.57	1.15

### 1.11.1 Key indicators

NET PRESENT VALUE at current Inflation (Rs. in lakhs)	15.11
INTERNAL RATE OF RETURN %	23.50
AVERAGE DSCR	1.54
BREAK EVEN POINT %	92.77
PAY BACK PERIOD ( YEARS)	5.25

### 1.11.2 Manpower Requirement

PARTICULARS	NO.
<b>SUPERVISORY STAFF</b>	
PRODUCTION SUPERVISORS	1
<b>WORKERS</b>	
SKILLED WORKERS	1
SEMI-SKILLED LABOUR	2
SALESMAN	3

### 1.11.3 Assumptions

<b>Project &amp; Financing</b>			
Contingencies on Building			10%
Contingencies on Equipment			20%
Term Loan			50%
Rate of Interest on Term Loan			10%
Subsidy Considered	Subject to ceiling		25%
Expected time of Installation		Months	4
Moratorium		Months	6
<b>CAPACITY</b>			
Rated Capacity Per Annum	80% of Installed capacity	TPA	38
Number of Operational Days	DAYS		300
Working Hours Per day	Hrs		8
<b>CAPACITY UTILIZATION</b>			
Year I			80%
Year II			90%
Year III			100%
<b>SALES PRICE</b>			
W S Price			90000
<b>OTHER EXPENSE</b>			
Commission			10%
Marketing Expenses			5%
<b>POWER</b>			
Connected Load	HP		20
<b>DEPRICIATION AS PER COMPANY'S ACT</b>			
BUILDING			3.34%
PLANT & MACHINERY			10.34%
MISC. FIXED ASSETS			7.07%
LAND & SITE DEVELOPMENT			1.63%
<b>MAINTENANCE</b>			
BUILDING			1.00%
PLANT & MACHINERY			3.00%
MISC. FIXED ASSETS			1.50%
LAND & SITE DEVELOPMENT			1.00%

The actual cost of projects may deviate on change of any of the assumptions.