PROJECT REPORT

OF

BROWN SUGAR MANUFACTURING UNIT

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Brown Sugar Manufacturing Unit.

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and management.

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]

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PROJECT AT GLANCE

1	**Name of Proprietor/Director**	XXXXXXXX
2	**Firm Name**	XXXXXXXX
3	**Registered Address**	XXXXXXXX
4	**Nature of Activity**	XXXXXXXX
5	**Category of Applicant**	XXXXXXXX
6	**Location of Unit**	XXXXXXXX
7	**Cost of Project**	23.94 Rs. In Lakhs
8	**Means of Finance**	
i)	**Own Contribution**	2.39 Rs. In Lakhs
ii)	**Term Loan**	17.55 Rs. In Lakhs
iii)	**Working Capital**	4.00 Rs. In Lakhs
9	**Debt Service Coverage Ratio**	2.50
10	**Break Even Point**	0.24
11	**Power Requiremnet**	20 KW
12	**Employment**	9 Persons
13	**Major Raw Materials**	Sugarcane, Limestone, Baking soda, Caster Oil, packing material, etc.,

14 Details of Cost of Project & Means of Finance

Cost of Project

Particulars	Amount in Lacs
Land	Owned/Leased
Building & Civil Work	Owned/Leased
Plant & Machinery	18.50
Furniture & Fixture	-
Other Misc Assets	1.00
Working Capital Requirement	4.44
Total	**23.94**

Means of Finance

Particulars	Amount in Lacs
Own Contribution	2.39
Term Loan	17.55
Working capital Loan	4.00
Total	**23.94**

1. INTRODUCTION

There are many different types and forms of caloric sweeteners that we collectively call “sugar.” Some sugars, such as high fructose corn syrup, come in liquid form as a mixture of the monosaccharides glucose and fructose. Other sugars, such as brown sugar, come in solid forms and primarily consist of sucrose, a disaccharide made of equal parts of two monosaccharides: fructose and glucose. Brown sugar is a sucrose sugar product with a distinctive brown color due to the presence of molasses. Brown sugar contains about the same number of calories per teaspoon as white table sugar. The main difference between table sugar and brown sugar is the presence of molasses, which gives brown sugar its distinct color, flavor, and moisture. Brown sugars can come in various forms (e.g., coarse or soft), depending on their moisture content, which can be modified through different processing techniques and by adjusting the amount of molasses they contain. The types of brown sugar that people are probably most familiar with are soft light and dark brown sugar. The kinds that are commonly used in baking. The Brown sugar processing is still made traditionally. Brown sugar can be made by adding molasses syrup to boiling sugar crystals that result from the sugar-refining process. It can also be made by coating white granulated sugar with molasses. Brown sugar contains slightly more minerals and marginally fewer calories than white sugar. White sugar is produced through a purifying process that removes a brown syrup called molasses. On the other

hand, brown sugar either undergoes less processing to retain its molasses content or is produced by mixing white sugar with molasses

2. PRODUCT DESCRIPTION

2.1 PRODUCT USES

Baking companies and kitchens are the top users of brown sugar. Since the presence of molasses gives a better texture, it has become the go-to choice.

2.2 PRODUCT RAW MATERIAL

- **Sugarcane**: Sugarcane is used to make Brown Sugar.

- **Other:** Limestone, Baking soda, Castor oil, packing material, etc.

2.3 MANUFACTURING PROCESS

This process can be broken down into the following steps-

- **Raw material procurement**
- **Production Process**
- **Testing**

Raw Material Procurement

To ensure complete quality control, all raw materials are checked strictly as per established quality standards and requirements. Individual supplier assessment and supplier rating are done depending upon the rejection levels at the incoming quality control stage. After quality control, sorting of raw material will be done. In the sorting procedure, the different types of materials will be sorted out and they will be stored in a neat storage area for further processing.

Production process

1) Raw material processing: After the cane arrives at the mill yards, it is mechanically unloaded, and excessive soil and rocks are removed. The cane is cleaned by flooding the carrier with warm water (in the case of sparse rock and trash clutter) or by spreading the cane on agitating conveyors that pass through strong jets of water and combing drums (to remove larger amounts of rocks, trash, and leaves, etc.) At this point, the cane is clean and ready to be milled.
2) Extraction: The cane is crushed using roller-type crushers extracting the juice and discharging the waste bagasse. The juice is collected in containers and allowed to stand for a few hours before use, to allow particles and fines to precipitate out. The juice is then poured into the boiling pan through a coarse cotton cloth to filter out the remaining particles. Tanks should be fitted with a mesh lid, through which the juice is poured, which goes about as a filter. The boiling pan is situated on top of a furnace that utilizes sun-dried bagasse, from the devastating activity, as fuel. A small amount of chemical is added such as limestone milk; during heating, trapping particles and foreign substances, and bringing them to the surface during boiling by the scumming process. This scum can then be skimmed off and disposed of. The juice is boiled until the necessary concentration is reached, around 105°C when most of the moisture has been boiled off

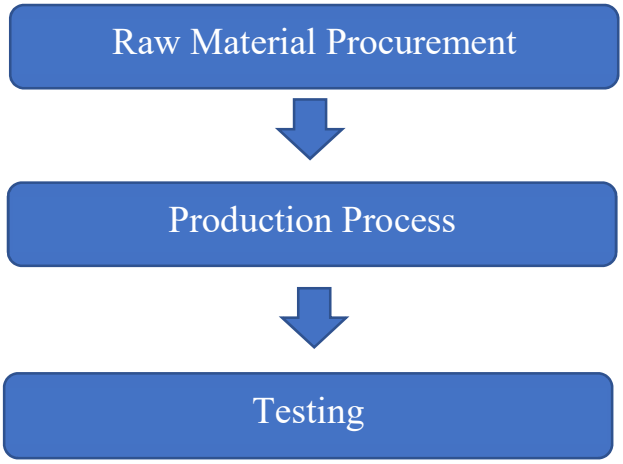
and crystallization starts. Juice is boiled and filtered to a point where a brown syrup-like substance or molasses transpires.

3) Centrifuging: The crystallized sugar achieved from the previous step is taken aside from the molasses- this composition is centrifuged. Centrifugation is a process where the substances undergo a considerable amount of spinning force. By this, the materials of different densities separate. Using this process, we get sugar crystals. This combination filters again and is washed in the presence of bone ash. It is this ash that gives the sugar its white color.
4) Packing: The combination is allowed to mix until the desired color, texture, and finish are archived. These are then packed and shipped to you at your nearby organic store in a clean and air-tight package. Packing is done by an automatic packing machine.

Testing

- Quality control

FLOW CHART OF THE PROCESS



3. PROJECT COMPONENTS

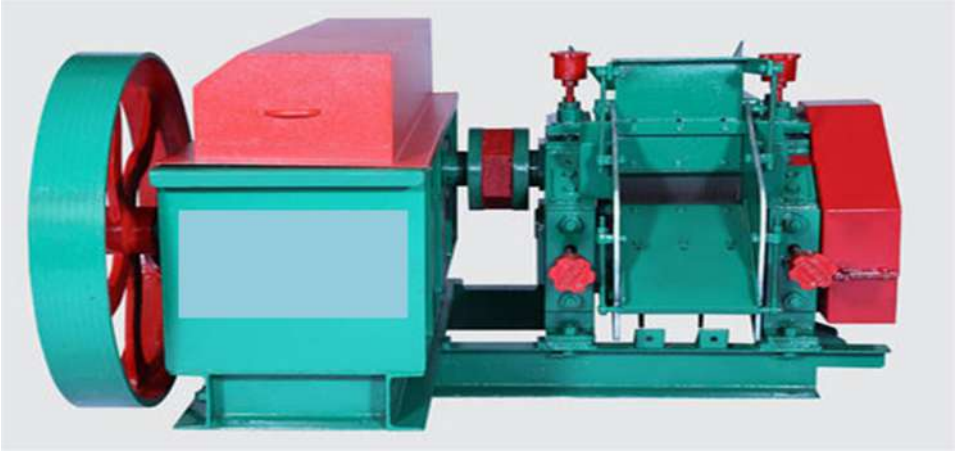
3.1 Land & Building

The land required for this manufacturing unit will be approx. around 2500-3000 square feet. Land Purchase and Building Civil Work Cost have not been considered as part of the cost of project. It is expected that the premises will be on rental and approximate rentals assumed of the same will be Rs.25000 to 30,000 per month.

Land and building requirement may vary depending on the size of project.

3.2 Plant & Machinery

- **Sugarcane crusher:** This machine is used to crush sugarcane. The hammer-type shredders of the crusher will shred the sugarcane without extracting the juice. A few intensely furrowed smasher rollers will break the cane and extract the juice. Spinning blades will cut the stalks into chips are beneficial to the crushers. The squeezing process includes crushing the stalks between the weighty and scored metal rollers to separate the bagasse from the juice that contains the sugar. As the cane is squashed, hot water (or a blend of high temp water and recuperated sullied juice) is sprayed onto the squashed cane counter currently as it leaves each mill for diluting.



- **Sugarcane Juice Boiling House:** This plant is used for defecation and boiling extracted sugarcane juice. The extracted juice can be a dark green color and turbid. The clarification (or defecation) process is intended to eliminate both dissolvable and insoluble contaminations (such as sand, soil, and ground rock) that have not been removed by preliminary screening. The cycle utilizes lime and heat as the clarifying agents. Milk of lime kills the normal causticity of the juice, shaping insoluble lime salts. Warming the lime juice to boiling coagulates the albumin and some of the fats, waxes, and gums, and the precipitate forms entraps suspended solids as well as the minute particles. The muds separate from the reasonable juice through sedimentation. The non-sugar debasements are taken out by constant filtration. Generally, four vacuum-boiling cells or bodies are arranged in series so that each succeeding body has a higher vacuum (and therefore boils at a lower temperature). The vapors from one body can thus boil the juice in the next one—the steam introduced into the first cell does what is called multiple-effect evaporation. The vapor from the last cell goes to a condenser. The syrup leaves the last body persistently with about 65 percent solids and 35 percent water.

- **Centrifugal Machine:** The fast centrifugal action used to isolate the massecuite into crude sugar crystals and molasses is done in spinning machines called centrifugally. A centrifugal machine has a round and hollow bushel suspended on an axle, with perforated sides lined with wire cloth, inside which are metal sheets containing 400 to 600 perforations per square inch. The crate spins at speeds from 1,000 to 1,800 RPM. The raw sugar is retained in the centrifuge basket because the perforated lining retains the sugar crystals. The molasses goes through the coating (because of the centrifugal force exerted). The final molasses (blackstrap molasses) containing sucrose, diminishing sugars, organic non sugars, debris, and water, is shipped off enormous storage tanks. When the sugar is centrifuged, it is cut down and shipped off a granulator for drying. Sugarcane is processed in some small-scale industries without the utilization of centrifuges.

- **Crystallizer: C**rystallization is one of the important steps in the manufacture of brown sugar. Crystallization takes place in a single-stage vacuum pan. The syrup is evaporated until saturated with sugar. As soon as the saturation point has been exceeded, small grains of sugar are added to the pan or strike. These small grains, called seeds, serve as nuclei for the formation of sugar crystals. The additional syrup is added to the strike and evaporated so that the original crystals that were formed are allowed to grow in size. The growth of the crystals continues until the pan is full. When sucrose concentration reaches

the desired level, the dense mixture of syrup and sugar crystals, called massecuite, is discharged into large containers known as crystallizers. Crystallization continues in the crystallizers as the massecuite is slowly stirred and cooled. Massecuite from the mixers is allowed to flow into centrifuges, where the thick syrup, or molasses, is separated from the raw sugar by centrifugal force.

- **Granulator with Dryer:** By being tumbled through heated air in a granulator damp sugar crystals are dried. Vibrating screens are used to sort the dry sugar crystals by size and put them into storage containers.

- **Packing machine:** This machine is used to pack sugar in bags or pouches. This machine comes with an automatic weighing system.

4 LICENSE & APPROVALS

Basic registration required in this project:

- MSME Udyam registration
- GST registration
- NOC for fire safety board and from Pollution Control Board
- Trade License
- Factory License (Optional)
- BIS certification
- Choice of a Brand Name of the product and secure the name with Trademark if required.

PROJECTED BALANCE SHEET **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Liabilities					
Capital					
Opening balance		3.71	5.92	8.98	12.67
Add:- Own Capital	2.39				
Add:- Retained Profit	3.32	5.71	8.06	10.70	13.09
Less:- Drawings	2.00	3.50	5.00	7.00	9.00
Closing Balance	**3.71**	**5.92**	**8.98**	**12.67**	**16.76**
Term Loan	15.60	11.70	7.80	3.90	-
Working Capital Limit	4.00	4.00	4.00	4.00	4.00
Sundry Creditors	1.27	1.57	1.86	2.16	2.56
Provisions & Other Liability	0.40	0.48	0.58	0.80	0.96
TOTAL :	**24.98**	**23.67**	**23.21**	**23.53**	**24.28**
Assets					
Fixed Assets (Gross)	19.50	19.50	19.50	19.50	19.50
Gross Dep.	2.93	5.41	7.52	9.32	10.85
Net Fixed Assets	**16.58**	**14.09**	**11.98**	**10.18**	**8.65**
Current Assets					
Sundry Debtors	3.13	3.93	4.68	5.49	6.46
Stock in Hand	3.02	3.67	4.34	5.06	5.95
Cash and Bank	1.26	1.23	0.96	1.31	1.22
Loans & Advances	1.00	0.75	1.25	1.50	2.00
TOTAL :	**24.98**	**23.67**	**23.21**	**23.53**	**24.28**

PROJECTED PROFITABILITY STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	**30%**	**35%**	**40%**	**45%**	**50%**
SALES					
Gross Sale					
Brown Sugar	62.64	78.58	93.69	109.75	129.17
Total	**62.64**	**78.58**	**93.69**	**109.75**	**129.17**
COST OF SALES					
Raw Material Consumed	38.16	47.04	55.68	64.80	76.80
Electricity Expenses	1.15	1.34	1.54	1.73	1.92
Depreciation	2.93	2.49	2.11	1.80	1.53
Wages & labour	7.92	9.50	11.88	14.85	17.08
Repair & maintenance	1.25	1.57	1.87	2.20	2.58
Packaging	0.94	1.18	1.41	1.65	1.94
Cost of Production	52.35	63.12	74.49	87.02	101.85
Add: Opening Stock	-	1.74	2.10	2.48	2.90
Less: Closing Stock	1.74	2.10	2.48	2.90	3.39
Cost of Sales	50.60	62.77	74.11	86.60	101.35
GROSS PROFIT	**12.04**	**15.82**	**19.58**	**23.15**	**27.82**
GROSS PROFIT RATIO	**19.21%**	**20.13%**	**20.90%**	**21.10%**	**21.54%**
Salary to Staff	3.24	3.73	4.28	4.93	5.67
Interest on Term Loan	1.72	1.52	1.09	0.66	0.23
Interest on working Capital	0.44	0.44	0.44	0.44	0.44
Rent	3.00	3.45	3.97	4.56	5.25
Selling & Administrative Exp.	0.31	0.79	0.94	1.10	1.29
TOTAL	**8.72**	**9.92**	**10.72**	**11.69**	**12.88**
NET PROFIT	3.32	5.90	8.86	11.46	14.94
Taxation	-	0.19	0.80	0.77	1.85
PROFIT (After Tax)	3.32	5.71	8.06	10.70	13.09
NET PROFIT RATIO	**5.30%**	**7.27%**	**8.60%**	**9.75%**	**10.13%**

PROJECTED CASH FLOW STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
SOURCES OF FUND					
Own Margin	2.39				
Net Profit	3.32	5.90	8.86	11.46	14.94
Depreciation & Exp. W/off	2.93	2.49	2.11	1.80	1.53
Increase in Cash Credit	4.00	-	-	-	-
Increase In Term Loan	17.55	-	-	-	-
Increase in Creditors	1.27	0.30	0.29	0.30	0.40
Increase in Provisions & Oth labilities	0.40	0.08	0.10	0.22	0.16
	-				
TOTAL :	**31.86**	**8.76**	**11.36**	**13.79**	**17.03**
APPLICATION OF FUND					
Increase in Fixed Assets	19.50				
Increase in Stock	3.02	0.66	0.67	0.72	0.89
Increase in Debtors	3.13	0.80	0.76	0.80	0.97
Repayment of Term Loan	1.95	3.90	3.90	3.90	3.90
Increase in Loans & Advances	1.00	- 0.25	0.50	0.25	0.50
Drawings	2.00	3.50	5.00	7.00	9.00
Taxation	-	0.19	0.80	0.77	1.85
TOTAL :	**30.60**	**8.79**	**11.62**	**13.44**	**17.12**
Opening Cash & Bank Balance	-	1.26	1.23	0.96	1.31
Add : Surplus	1.26	-0.03	-0.27	0.35	-0.09
Closing Cash & Bank Balance	**1.26**	**1.23**	**0.96**	**1.31**	**1.22**

CALCULATION OF D.S.C.R

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	6.24	8.20	10.17	12.49	14.61
Interest on Term Loan	1.72	1.52	1.09	0.66	0.23
Total	7.97	9.72	11.26	13.15	14.85
REPAYMENT					
Instalment of Term Loan	1.95	3.90	3.90	3.90	3.90
Interest on Term Loan	1.72	1.52	1.09	0.66	0.23
Total	3.67	5.42	4.99	4.56	4.13
DEBT SERVICE COVERAGE RATIO	**2.17**	**1.79**	**2.26**	**2.88**	**3.59**
AVERAGE D.S.C.R.					**2.50**

REPAYMENT SCHEDULE OF TERM LOAN							
					Interest		11.00%
Year	**Particulars**	**Amount**	**Addition**	**Total**	**Interest**	**Repayment**	**Closing Balance**
1st	Opening Balance						
	1st month	-	17.55	17.55	-	-	17.55
	2nd month	17.55	-	17.55	0.16	-	17.55
	3rd month	17.55	-	17.55	0.16	-	17.55
	4th month	17.55	-	17.55	0.16		17.55
	5th month	17.55	-	17.55	0.16		17.55
	6th month	17.55	-	17.55	0.16		17.55
	7th month	17.55	-	17.55	0.16	0.33	17.23
	8th month	17.23	-	17.23	0.16	0.33	16.90
	9th month	16.90	-	16.90	0.15	0.33	16.58
	10th month	16.58	-	16.58	0.15	0.33	16.25
	11th month	16.25	-	16.25	0.15	0.33	15.93
	12th month	15.93	-	15.93	0.15	0.33	15.60
					1.72	**1.95**	
2nd	Opening Balance						
	1st month	15.60	-	15.60	0.14	0.33	15.28
	2nd month	15.28	-	15.28	0.14	0.33	14.95
	3rd month	14.95	-	14.95	0.14	0.33	14.63
	4th month	14.63	-	14.63	0.13	0.33	14.30
	5th month	14.30	-	14.30	0.13	0.33	13.98
	6th month	13.98	-	13.98	0.13	0.33	13.65
	7th month	13.65	-	13.65	0.13	0.33	13.33
	8th month	13.33	-	13.33	0.12	0.33	13.00
	9th month	13.00	-	13.00	0.12	0.33	12.68
	10th month	12.68	-	12.68	0.12	0.33	12.35
	11th month	12.35	-	12.35	0.11	0.33	12.03
	12th month	12.03	-	12.03	0.11	0.33	11.70
					1.52	**3.90**	
3rd	Opening Balance						
	1st month	11.70	-	11.70	0.11	0.33	11.38
	2nd month	11.38	-	11.38	0.10	0.33	11.05
	3rd month	11.05	-	11.05	0.10	0.33	10.73
	4th month	10.73	-	10.73	0.10	0.33	10.40
	5th month	10.40	-	10.40	0.10	0.33	10.08
	6th month	10.08	-	10.08	0.09	0.33	9.75
	7th month	9.75	-	9.75	0.09	0.33	9.43
	8th month	9.43	-	9.43	0.09	0.33	9.10
	9th month	9.10	-	9.10	0.08	0.33	8.78
	10th month	8.78	-	8.78	0.08	0.33	8.45
	11th month	8.45	-	8.45	0.08	0.33	8.13
	12th month	8.13	-	8.13	0.07	0.33	7.80
					1.09	**3.90**	

4th	Opening Balance						
	1st month	7.80	-	7.80	0.07	0.33	7.48
	2nd month	7.48	-	7.48	0.07	0.33	7.15
	3rd month	7.15	-	7.15	0.07	0.33	6.83
	4th month	6.83	-	6.83	0.06	0.33	6.50
	5th month	6.50	-	6.50	0.06	0.33	6.18
	6th month	6.18	-	6.18	0.06	0.33	5.85
	7th month	5.85	-	5.85	0.05	0.33	5.53
	8th month	5.53	-	5.53	0.05	0.33	5.20
	9th month	5.20	-	5.20	0.05	0.33	4.88
	10th month	4.88	-	4.88	0.04	0.33	4.55
	11th month	4.55	-	4.55	0.04	0.33	4.23
	12th month	4.23	-	4.23	0.04	0.33	3.90
					0.66	**3.90**	
5th	Opening Balance						
	1st month	3.90	-	3.90	0.04	0.33	3.58
	2nd month	3.58	-	3.58	0.03	0.33	3.25
	3rd month	3.25	-	3.25	0.03	0.33	2.93
	4th month	2.93	-	2.93	0.03	0.33	2.60
	5th month	2.60	-	2.60	0.02	0.33	2.28
	6th month	2.28	-	2.28	0.02	0.33	1.95
	7th month	1.95	-	1.95	0.02	0.33	1.63
	8th month	1.63	-	1.63	0.01	0.33	1.30
	9th month	1.30	-	1.30	0.01	0.33	0.98
	10th month	0.98	-	0.98	0.01	0.33	0.65
	11th month	0.65	-	0.65	0.01	0.33	0.33
	12th month	0.33	-	0.33	0.00	0.33	-
					0.23	**3.90**	

DOOR TO DOOR	60	MONTHS
MORATORIUM PERIOD	6	MONTHS
REPAYMENT PERIOD	54	MONTHS

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