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PROJECT REPORT

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PROJECT:

Ceramic Tiles Manufacturing Unit

PROJECT REPORT

OF

CERAMIC TILES MANUFACTURING UNIT

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Ceramic Tiles 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.]

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**	24.78 Rs. In Lakhs
8	**Means of Finance**	
i)	**Own Contribution**	2.48 Rs. In Lakhs
ii)	**Term Loan**	15.30 Rs. In Lakhs
iii)	**Working Capital**	7.00 Rs. In Lakhs
9	**Debt Service Coverage Ratio**	3.15
10	**Break Even Point**	0.42
11	**Power Requiremnet**	25 KW
12	**Employment**	8 Persons
13	**Major Raw Materials**	Clay minerals obtained from mining, Silica, sand, Talc etc.

14 Details of Cost of Project & Means of Finance

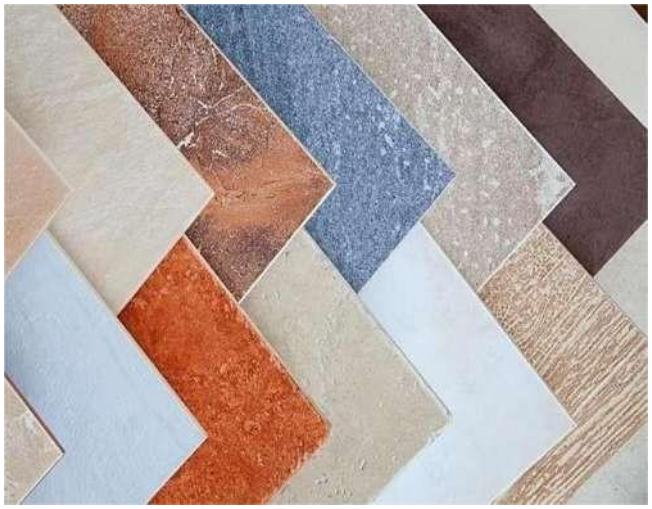
Cost of Project

Particulars	Amount in Lacs
Land	Owned/Leased
Building & Civil Work	Owned/Leased
Plant & Machinery	15.50
Furniture & Fixture	0.50
Other Misc Assets	1.00
Working Capital Requirement	7.78
Total	**24.78**

Means of Finance

Particulars	Amount in Lacs
Own Contribution	2.48
Term Loan	15.30
Working capital Loan	7.00
Total	**24.78**

1. INTRODUCTION



Ceramic tile is the form of flooring that can be used in any room in the building. Kitchens and toilets, as well as foyers, mudrooms, and other high-traffic locations, are the most popular places to find it. However, many homes, especially in warm climates, use tile in living rooms and bedrooms to get great effect. To put it another way, you can't go wrong with tile. If this long-lasting, luxurious flooring has some flaws, it's because it can be rough and cold to walk on, and it's a little difficult to mount for DIYers. The smooth, solid surface of ceramic tiles does not absorb or retain soil, dust, pollen, or other allergens. If tiny objects fall on a ceramic tile, they stick out against the wall, making them easy to clean away with a mop or sponge. This helps to keep the air safe and free of irritants that can affect asthma and allergy sufferers.

Ceramic manufacturers can now create products that can be printed or embossed in a variety of forms, thanks to modern processing techniques. Solid tiles may be used in patterns or embellished with personalised designs or motifs. They can also be printed to look like a variety of hardwoods and natural stones. However, the tiles can be made into triangles, rectangles, and planks by cutting and shaping them. Ceramic tile flooring is ideal for any home style, but it is a must-have in any Mediterranean or Southwest-style house. Since ceramic is incredibly rough, it is simple to clean and preserve. Hard ceramics, unlike durable floors, cannot be softened with padding underlayment. If the floor is well-maintained, a good installation will last for hundreds of years. If a single tile fractures as a result of a significant effect, repairing it is a relatively easy operation. There are actually hundreds of different ceramic tile brands to choose from, but just a few suppliers. This is due to the fact that particular manufacturers often sell several brands; they can establish exclusive brands for specific retail chains while still selling their own general brands.

2. PRODUCT DESCRIPTION

2.1 PRODUCT USES

Ceramics tiles have significant uses in almost all commercial and residential building as:

- A cover roofs
- A floors cover
- A cover walls
- As tabletops etc.

2.2 RAW MATERIAL REQUIREMENT

The raw materials used to form tile consist of clay minerals obtain from mining, silica sand, Talc.

2.3 MANUFACTURING PROCESS

Ceramics are typically produced by the application of heat upon processed clays and other natural raw materials to form a rigid product. To control purity, particle size, particle size distribution, and heterogeneity, ceramic products that use naturally occurring rocks and minerals as a starting material must go through special processing. These characteristics have a significant impact on the finished ceramic's properties. Chemically prepared powders also are used as starting materials for some ceramic products. The chemical composition and particle size of powders made from these synthetic materials can be precisely controlled. The ceramic particles are then shaped into the desired shape. The addition of water and/or additives such as binders, followed by a shape-forming process, accomplishes this. Extrusion, slip casting, pressing, tape casting, and injection moulding are some of the most common ceramic forming methods. The most common processes for ceramic tile are given below

- **Raw material procurement and storage**

Once raw material is procured and stored properly, a number of steps take place to obtain the finished product. These steps include batching, mixing and grinding, spray-drying, compacting, drying, glazing, and sintering. Many of these steps are accomplished using automated equipment.

- **Batch mixing**

The amount and type of raw materials determine the body composition of many ceramic

products, including tile. The colour of the tile body is also determined by the raw materials, which can be red or white depending on the amount of iron-containing raw materials used. As a result, it's critical to combine the right ingredients in the right proportions to achieve the desired results. Batch calculations are thus required, which must take into account both the raw materials' physical properties and chemical compositions. The raw materials must be mixed together after the appropriate weight of each raw material has been determined. Once the ingredients are weighed, they are added together into a ribbon mixer to mix ingredients properly prior to grinding.

- **Grinding and slurry formation**

This step further grinds the ingredients, resulting in a finer particle size that improves the subsequent forming process

It is sometimes necessary to add water to a multiple-ingredient batch to improve mixing and achieve fine grinding. Wet milling is the term for this procedure, which is commonly carried out in a Bead mill. A slurry or slip is the resultant water-filled mixture. Filter pressing (which removes 40-50 percent of the moisture) and dry milling is used to remove the water from the slurry.

- **Spray drying**

The excess water is usually removed via spray drying if wet milling is used first. The slurry is pumped to an atomizer, which consists of a rapidly rotating disc or nozzle. The slip is dried asit is heated by a rising hot air column, resulting in small, free-flowing granules and a powder suitable for forming.

Dry grinding and granulation can also be used to create tile bodies. Granulation is a process in which a mixture of previously dry-ground material is combined with water to form granules, which are then ground into a powder ready for forming.

- **Compacting**

Most tiles are formed by dry pressing. In this method, the free-flowing powder, this contains a binder or a low percentage of moisture, flows from a hopper into the forming die. Steel plungers compress the material in a steel cavity, which is then ejected by the bottom plunger with operating pressures of up to 2,500 tonnes. Several other methods are also used where the tile body is in a wetter, more mouldable form. Extrusion plus punching is used to produce irregularly shaped tile and thinner tile faster and more economically. This involves compacting a plastic mass in a high-pressure cylinder and forcing the material to flow out of the cylinder into short slugs. These slugs are then punched into one or more tiles using hydraulic or pneumatic punching presses.

- **Drying**

After forming, ceramic tile must usually be dried (at a high relative humidity), especially if a wet method is used. Drying removes the water at a slow enough rate to prevent shrinkage cracks, which can take several days. Continuous or tunnel driers, heated by gas or oil, infrared lamps, or microwave energy, are used.

- **Glazing**

To prepare the glaze, similar methods are used as for the tile body. The glaze is fed through a rotating disc that flings or throws the glaze onto the tile in glazing machine. A stream of glaze falls onto the tile as it passes on a conveyor underneath in the bell/waterfall method. The glaze is sometimes simply sprayed on. Screen printing on, under, or between wet glazed tiles is used for multiple glaze applications.

The glaze is fed through a rotating disc that flings or throws the glaze onto the tile in centrifugal glazing or disking. A stream of glaze falls onto the tile as it passes on a conveyor underneath in the bell/waterfall method. The glaze is sometimes simply sprayed on. Screen printing on, under, or between wet glazed tiles is used for multiple glaze applications.

- **Sintering**

The tile must be intensely heated after glazing to strengthen it and give it the desired porosity. For firing tile generally, kilns are used. With temperatures around 1,300 degrees Celsius, tunnel kiln firing can take two to three days. The tile is ready to be packaged and shipped after it has been fired and tested.

3. PROJECT COMPONENTS

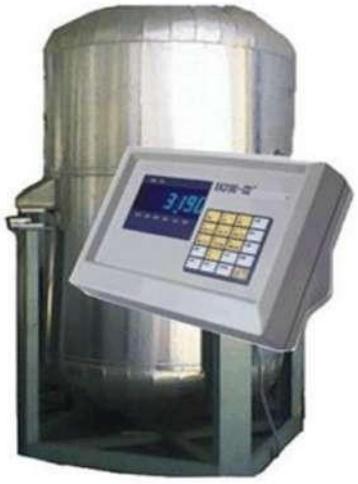
3.1 Land /Civil Work

The land require for this manufacturing unit will be approx. around 6000 Square feet. The rent for the Land can be expected between Rs. 40000 to Rs. 50000.

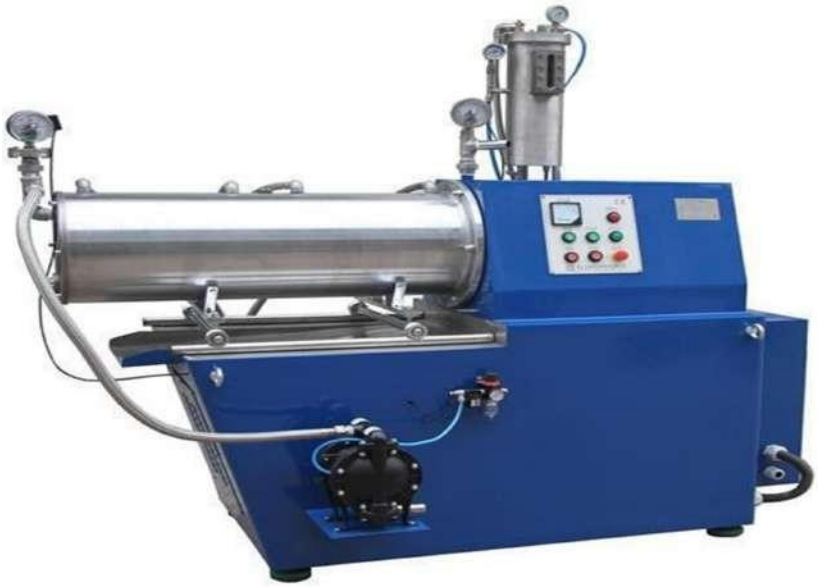
Land and building requirement may vary depending on the size of project.

3.2 Main Machine

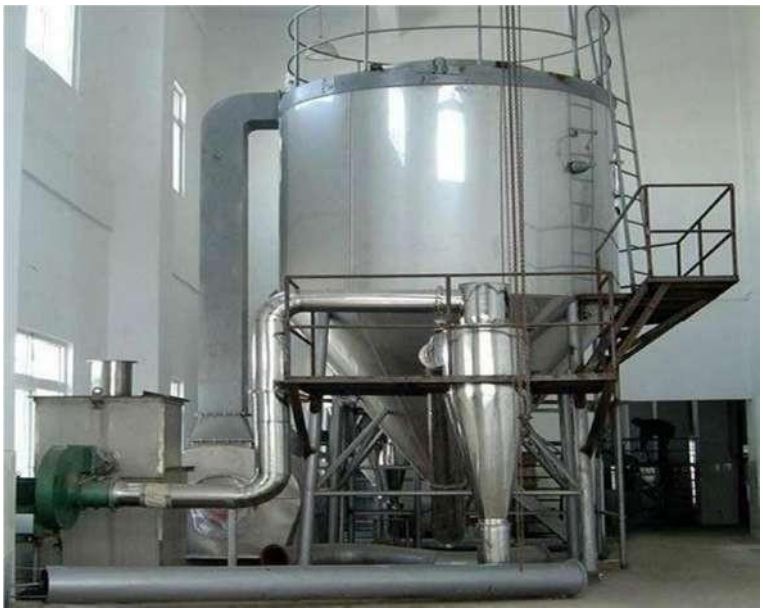
- **Weighing and measuring tank:** Weighing machine are widely used in industry for various measurements.



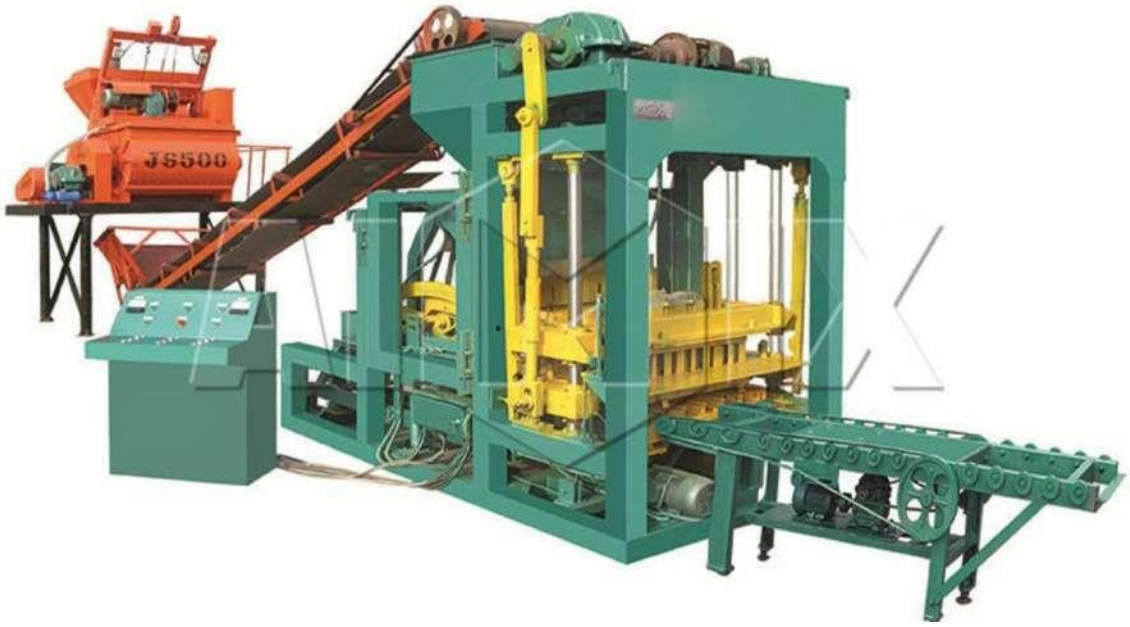
- **Bead mill:** Bead mills are grinding and dispersing machines that grind and/or disperse particles at micro and Nano scales.



- **Spray dryer:** Spray drying is a unit continuous operation that involves spraying a liquid, slurry, an emulsion, a suspension, or a low viscosity paste into a hot gaseous drying medium, usually air, to reduce the moisture content.

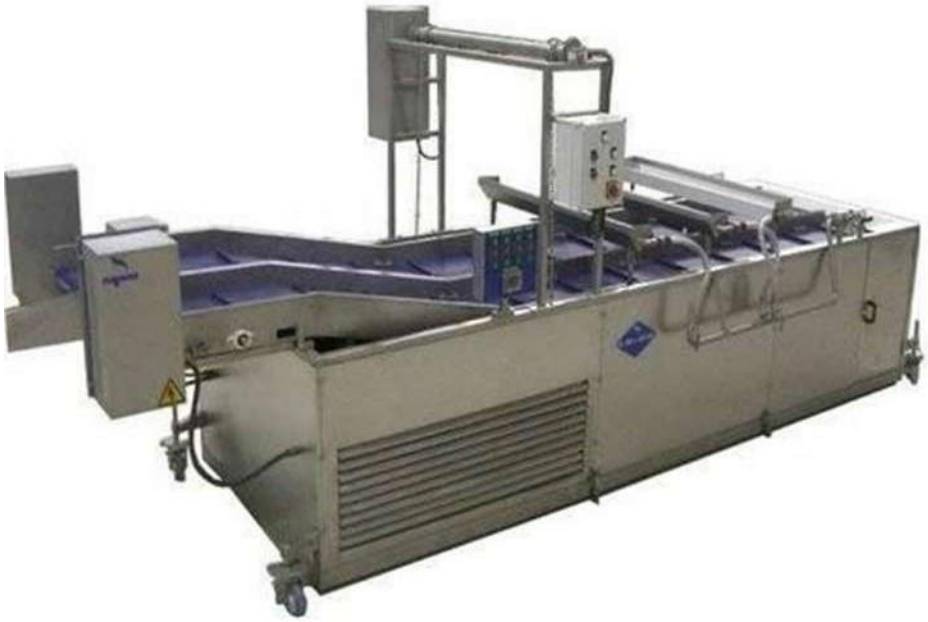


- **Compacting press:** Compacting presses are used to create ceramic tiles. Depending on the material being pressed, the presses can also be operated in a hot or cold environment.

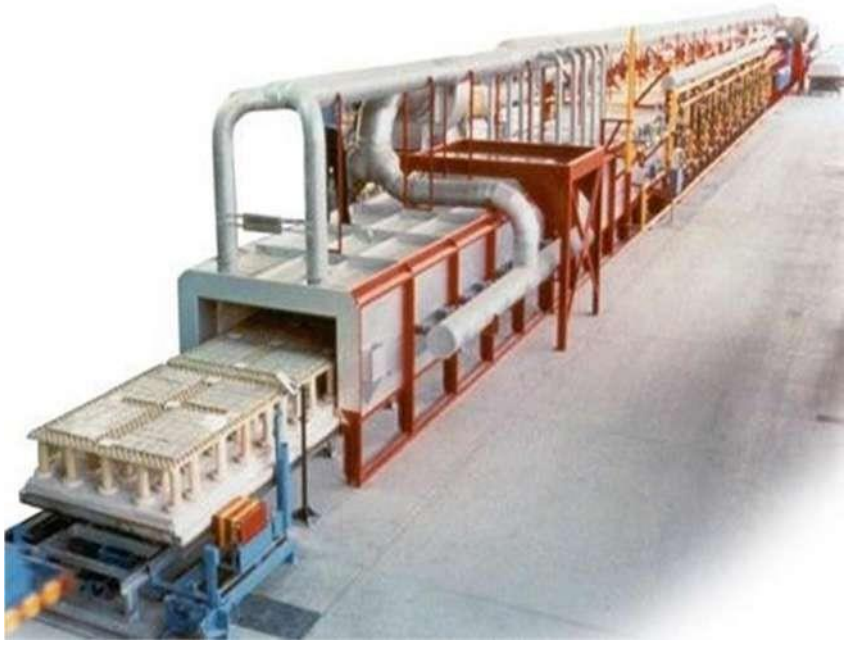


- **Hot air dryer** A hot air dryer works very simply. It consists of a heater blower unit Ambient air is drawn through a filter into a heater/blower unit and heated. The temperature can be adjusted up to 150^0C.

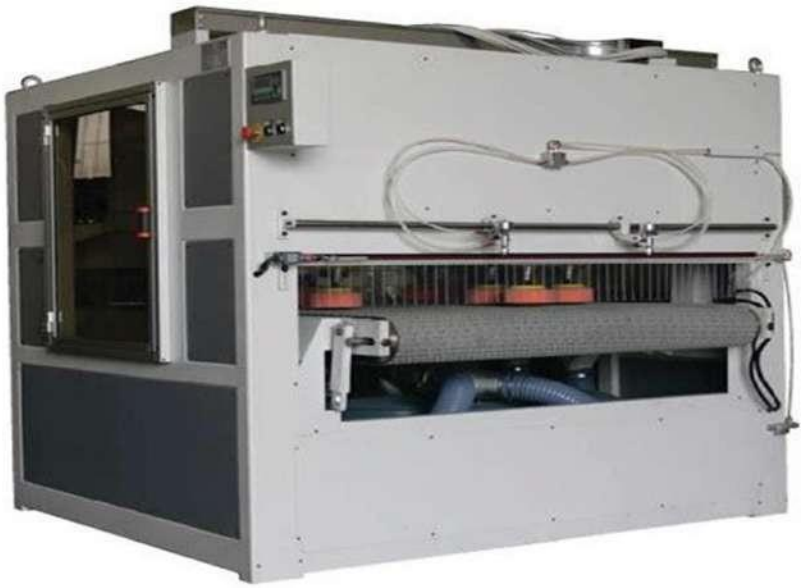
- **Glazing machine:** A glazing machine is a type of machine used for polishing tiles.



- **Kiln:** A kiln is a type of oven with a thermally insulated chamber that produces temperatures high enough to complete a process such as hardening, drying, or chemical changes.

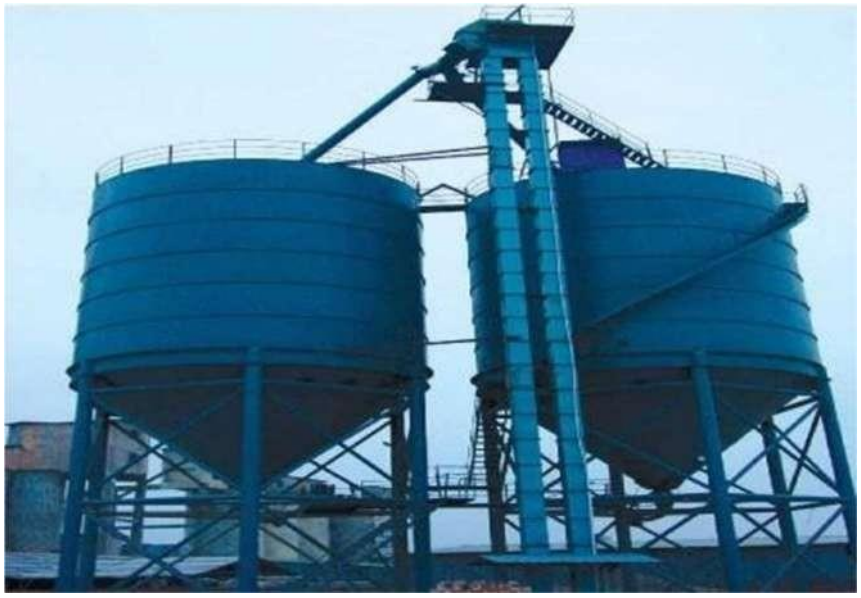


- **Buffing machine:** The Polishing Machine is used to polish tiles to provide better finishing.

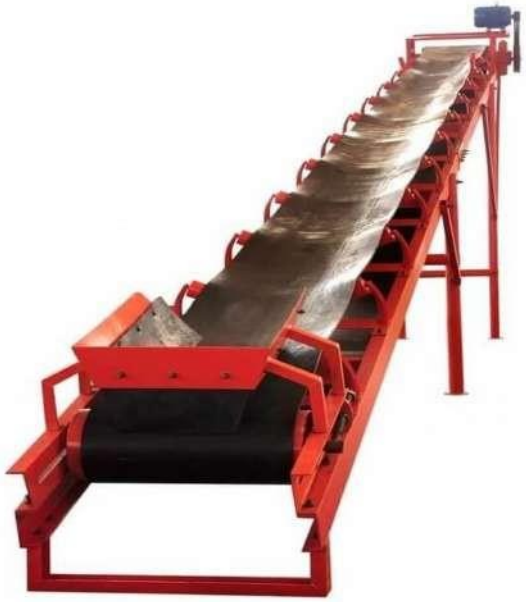


Tools-

- **Bucket Elevator and Silo:** A bucket elevator is a simple machine that transports bulk materials or powders vertically, and bulk storage is commonly done in silos.



- **Conveyors:** The use of this conveyor system is to move objects from one location to another. The design allows for the movement of objects that are too heavy or too bulky for humans to carry by hand.



Note: This project is prepared on the sample standard size of 12*18 mm tile size.

4. LICENSE & APPROVALS

Basic registration required in this project:

- Registration at Bureau of Indian standards.
- Trade License from the local authority.
- MSME Udyam online registration.
- GST Registration
- Factory license
- NOC from pollution board
- NOC from fire safety board

PROJECTED BALANCE SHEET **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Liabilities					
Capital					
Opening Balance		3.49	5.94	9.00	13.18
Add:- Own Capital	2.48				
Add:- Retained Profit	3.02	6.44	9.56	12.68	16.13
Less:- Drawings	2.00	4.00	6.50	8.50	10.00
Closing Balance	3.49	5.94	9.00	13.18	19.30
Term Loan	13.60	10.20	6.80	3.40	-
Working Capital Limit	7.00	7.00	7.00	7.00	7.00
Sundry Creditors	2.79	3.96	4.46	4.97	5.51
Provisions & Other Liabilities	0.75	1.00	1.20	1.44	1.73
TOTAL :	**27.63**	**28.10**	**28.45**	**29.99**	**33.54**
Assets					
Fixed Assets (Gross)	17.00	17.00	17.00	17.00	17.00
Gross Depriciation	2.53	4.67	6.50	8.06	9.38
Net Fixed Assets	**14.48**	**12.33**	**10.50**	**8.94**	**7.62**
Current Assets					
Sundry Debtors	3.85	4.63	5.27	5.94	6.72
Stock in Hand	7.60	8.96	10.15	11.41	12.81
Cash and Bank	1.21	0.68	0.54	2.20	4.41
Loans and advances/other current assets	0.50	1.50	2.00	1.50	2.00
TOTAL :	**27.63**	**28.10**	**28.45**	**29.99**	**33.54**

PROJECTED PROFITABILITY STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	**50%**	**55%**	**60%**	**65%**	**70%**
SALES					
CEILING FAN	96.19	115.80	131.75	148.60	167.92
Total	**96.19**	**115.80**	**131.75**	**148.60**	**167.92**
COST OF SALES					
Raw material cost	69.75	79.20	89.10	99.45	110.25
Electricity Expenses	2.40	2.64	2.88	3.12	3.36
Depreciation	2.53	2.15	1.83	1.56	1.32
Wages & labour	6.72	7.06	7.41	7.78	8.17
Repair & maintenance	0.96	1.16	1.32	1.49	1.68
Consumables	1.44	1.74	1.98	2.23	2.52
Packaging cost	1.92	2.32	2.63	2.97	3.36
Cost of Production	85.72	96.26	107.15	118.59	130.66
Add: Opening Stock	-	4.81	5.79	6.59	7.43
Less: Closing Stock	4.81	5.79	6.59	7.43	8.40
Cost of Sales	80.91	95.28	106.35	117.75	129.69
GROSS PROFIT	**15.27**	**20.52**	**25.40**	**30.85**	**38.23**
GROSS PROFIT RATIO	**15.88%**	**17.72%**	**19.28%**	**20.76%**	**22.77%**
Salary to Staff	3.12	3.43	3.78	4.15	4.57
Interest on Term Loan	1.50	1.32	0.95	0.58	0.20
Interest on working Capital	0.77	0.77	0.77	0.77	0.77
Rent	6.00	6.30	6.62	6.95	7.29
Selling & Administration Expenses	1.20	1.74	2.31	2.97	5.04
TOTAL	**12.60**	**13.56**	**14.42**	**15.42**	**17.87**
NET PROFIT	2.68	6.96	10.98	15.43	20.36
Taxation -	0.34	0.52	1.42	2.76	4.23
PROFIT (After Tax)	3.02	6.44	9.56	12.68	16.13
NET PROFIT RATIO	**3.14%**	**5.56%**	**7.26%**	**8.53%**	**9.60%**

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

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
SOURCES OF FUND					
Own Margin	2.48				
Net Profit	2.68	6.96	10.98	15.43	20.36
Depriciation & Exp. W/off	2.53	2.15	1.83	1.56	1.32
Increase in Cash Credit	7.00	-	-	-	-
Increase In Term Loan	15.30	-	-	-	-
Increase in Creditors	2.79	1.17	0.50	0.52	0.54
Increase in Provisions & Other liabilities	0.75	0.25	0.20	0.24	0.29
TOTAL :	**33.52**	**10.53**	**13.51**	**17.75**	**22.51**
APPLICATION OF FUND					
Increase in Fixed Assets	17.00				
Increase in Stock	7.60	1.36	1.19	1.26	1.40
Increase in Debtors	3.85	0.78	0.64	0.67	0.77
Increase in loans and advances	0.50	1.00	0.50	- 0.50	0.50
Repayment of Term Loan	1.70	3.40	3.40	3.40	3.40
Drawings	2.00	4.00	6.50	8.50	10.00
Taxation	- 0.34	0.52	1.42	2.76	4.23
TOTAL :	**32.31**	**11.06**	**13.65**	**16.09**	**20.30**
Opening Cash & Bank Balance	-	1.21	0.68	0.54	2.20
Add : Surplus	1.21	-0.53	-0.14	1.66	2.21
Closing Cash & Bank Balance	**1.21**	**0.68**	**0.54**	**2.20**	**4.41**

CALCULATION OF D.S.C.R

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	5.54	8.59	11.39	14.24	17.45
Interest on Term Loan	1.50	1.32	0.95	0.58	0.20
Total	7.05	9.91	12.34	14.81	17.65
REPAYMENT					
Instalment of Term Loan	1.70	3.40	3.40	3.40	3.40
Interest on Term Loan	1.50	1.32	0.95	0.58	0.20
Total	3.20	4.72	4.35	3.98	3.60
DEBT SERVICE COVERAGE RATIO	**2.20**	**2.10**	**2.84**	**3.72**	**4.90**
AVERAGE D.S.C.R.					**3.15**

REPAYMENT SCHEDULE OF TERM LOAN							
					Interest		11.00%
Year	Particulars	Amount	Addition	Total	Interest	Repayment	Closing Balance
ist	Opening Balance	-					
	1st month		15.30	15.30	-	-	15.30
	2nd month	15.30	-	15.30	0.14	-	15.30
	3rd month	15.30	-	15.30	0.14	-	15.30
	4th month	15.30	-	15.30	0.14	-	15.30
	5th month	15.30	-	15.30	0.14	-	15.30
	6th month	15.30	-	15.30	0.14	-	15.30
	7th month	15.30	-	15.30	0.14	0.28	15.02
	8th month	15.02	-	15.02	0.14	0.28	14.73
	9th month	14.73	-	14.73	0.14	0.28	14.45
	10th month	14.45	-	14.45	0.13	0.28	14.17
	11th month	14.17	-	14.17	0.13	0.28	13.88
	12th month	13.88	-	13.88	0.13	0.28	13.60
					1.50	**1.70**	
2nd	Opening Balance						
	1st month	13.60	-	13.60	0.12	0.28	13.32
	2nd month	13.32	-	13.32	0.12	0.28	13.03
	3rd month	13.03	-	13.03	0.12	0.28	12.75
	4th month	12.75	-	12.75	0.12	0.28	12.47
	5th month	12.47	-	12.47	0.11	0.28	12.18
	6th month	12.18	-	12.18	0.11	0.28	11.90
	7th month	11.90	-	11.90	0.11	0.28	11.62
	8th month	11.62	-	11.62	0.11	0.28	11.33
	9th month	11.33	-	11.33	0.10	0.28	11.05
	10th month	11.05	-	11.05	0.10	0.28	10.77
	11th month	10.77	-	10.77	0.10	0.28	10.48
	12th month	10.48	-	10.48	0.10	0.28	10.20
					1.32	**3.40**	
3rd	Opening Balance						
	1st month	10.20	-	10.20	0.09	0.28	9.92
	2nd month	9.92	-	9.92	0.09	0.28	9.63
	3rd month	9.63	-	9.63	0.09	0.28	9.35
	4th month	9.35	-	9.35	0.09	0.28	9.07
	5th month	9.07	-	9.07	0.08	0.28	8.78
	6th month	8.78	-	8.78	0.08	0.28	8.50
	7th month	8.50	-	8.50	0.08	0.28	8.22
	8th month	8.22	-	8.22	0.08	0.28	7.93
	9th month	7.93	-	7.93	0.07	0.28	7.65
	10th month	7.65	-	7.65	0.07	0.28	7.37
	11th month	7.37	-	7.37	0.07	0.28	7.08
	12th month	7.08	-	7.08	0.06	0.28	6.80
					0.95	**3.40**	

4th Opening Balance						
1st month	6.80	-	6.80	0.06	0.28	6.52
2nd month	6.52	-	6.52	0.06	0.28	6.23
3rd month	6.23	-	6.23	0.06	0.28	5.95
4th month	5.95	-	5.95	0.05	0.28	5.67
5th month	5.67	-	5.67	0.05	0.28	5.38
6th month	5.38	-	5.38	0.05	0.28	5.10
7th month	5.10	-	5.10	0.05	0.28	4.82
8th month	4.82	-	4.82	0.04	0.28	4.53
9th month	4.53	-	4.53	0.04	0.28	4.25
10th month	4.25	-	4.25	0.04	0.28	3.97
11th month	3.97	-	3.97	0.04	0.28	3.68
12th month	3.68	-	3.68	0.03	0.28	3.40
				0.58	**3.40**	
5th Opening Balance						
1st month	3.40	-	3.40	0.03	0.28	3.12
2nd month	3.12	-	3.12	0.03	0.28	2.83
3rd month	2.83	-	2.83	0.03	0.28	2.55
4th month	2.55	-	2.55	0.02	0.28	2.27
5th month	2.27	-	2.27	0.02	0.28	1.98
6th month	1.98	-	1.98	0.02	0.28	1.70
7th month	1.70	-	1.70	0.02	0.28	1.42
8th month	1.42	-	1.42	0.01	0.28	1.13
9th month	1.13	-	1.13	0.01	0.28	0.85
10th month	0.85	-	0.85	0.01	0.28	0.57
11th month	0.57	-	0.57	0.01	0.28	0.28
12th month	0.28	-	0.28	0.00	0.28	-
				0.20	**3.40**	
DOOR TO DOOR	60	MONTHS				
MORATORIUM PERIOD	6	MONTHS				
REPAYMENT PERIOD	54	MONTHS				

DISCLAIMER

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