PROJECT REPORT

Of

INSULATOR

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Insulator 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**	20.42	Rs. In Lakhs
8	**Means of Finance**		
i)	**Own Contribution**	2.04	Rs. In Lakhs
ii)	**Term Loan**	13.41	Rs. In Lakhs
iii)	**Working Capital**	4.97	Rs. In Lakhs
9	**Debt Service Coverage Ratio**	3.15	
10	**Break Even Point**	39%	
11	**Power Requiremnet**	30	KW
12	**Employment**	10	Persons
13	**Major Raw Materials**	Ball clay, china clay, feldspar, quartz, glazing material, chemicals, color and packaging material	

14 Details of Cost of Project & Means of Finance

Cost of Project **Amount in Lacs**

Particulars	**Amount**
Land and building	Owned/Leased
Plant & Machinery	13.40
Furniture & Fixture	-
Other Misc Assets	1.50
Working Capital Requirement	5.52
Total	**20.42**

Means of Finance

Particulars	**Amount**
Own Contribution	2.04
Term Loan	13.41
Working capital Loan	4.97
Total	**20.42**

1. INTRODUCTION

Electricity plays a vital role in agricultural and industrial growth. Electricity is the primary need for developing and developed nations. Insulators are the most important arrangements for electricity production, distribution, and transmission. An insulator is electrical equipment that does not conduct electrical current. Insulating materials include paper, plastic, rubber, glass, and air. Vacuum is also an insulator but is not material. Most electrical conductors are covered by insulation. Magnet wire is coated with an extremely thin layer of insulation so that more turns or larger wire may be used in the winding of transformers etc. Insulators are generally rated at hundreds of volts, but some that are used in power distribution are rated as high as hundreds of thousands of volts. Insulators support and/or keep electrical conductors from making unintended contact with each other. An insulator made by a hard paste of Porcelain is also known as a true porcelain insulator. Out of all the wide varieties of ceramics & true porcelain is the hardest, the most durable – which is one of the reasons porcelain insulators are largely replaced by glass insulators. Insulators are used to protect us from the dangerous effects of electricity flowing through conductors. Sometimes the voltage in an electrical circuit can be quite high and dangerous.

If the voltage is high enough, electric current can be made to flow through even materials that are generally not considered to be good conductors. Our bodies will conduct electricity and you may have experienced this when you received an electrical shock. Generally, electricity flowing through the body is not pleasant and can cause injuries. The function of our heart can be disrupted by a strong electrical shock and the current can cause burns. Therefore, we need to shield our bodies from the conductors that carry electricity. The rubbery coating on wires is an insulating material that shields us from the conductor inside.

2 PRODUCT DESCRIPTION

2.1 PRODUCT USES

Overhead conductors for high-voltage electric power transmission are bare and are insulated by the surrounding air. Conductors for lower voltages in distribution may have some insulation but are often bare as well. Insulating supports called insulators are required at the points where they are supported by utility poles or transmission towers. House, Office, Scholl, Transformers wherever electric circuit is used, insulators are used. Insulators are also required where the wire enters buildings or electrical devices, such as transformers or circuit breakers, to insulate the wire from the case.

2.2 MANUFACTURING PROCESS

This process can be broken down into the following steps-

1. **Raw material procurement**
2. **Insulator Making Process**
3. **Testing**

Raw Material Procurement

The 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. Sorting of raw material will be done as per material type or specifications. The material will be stored in inventory.

Insulator Making Process

1. Grinding: Raw material grinding is done by using a ball mill to make a fine powder.

2. Wet grinding: It is a process of taking materials in a liquid form or slurry and reducing particles, such as agglomerates, by breaking them apart or shearing them down in size. A blunger usually consists of a round or octagonal tank with a mixer. Clay is added to the water-filled blunger and then mixed into a slurry, which is also called slip.
3. Filter pressing: Filter pressing is done to de-water the slurry. In this process, water content is removed from the slurry, and its cake is made.
4. De-airing: Cakes are then fed into a de-airing pug mill. By extrusion process, pugs are made.
5. Shaping: These pugs are molded into the required shape. Shaping is done by pressing or turning
6. Drying: To improve insulator strengths moisture content is removed by drying it.
7. Glazing: The glaze improves mechanical strength and provides a smooth, shiny surface. After a cooling-down period, metal fittings are attached to the porcelain with Portland cement.
8. Heating: Heating or firing is done to convert the raw material mixture is strong and vitreous porcelain.
9. Cutting and grinding: Insulator visual inspection is done and its cutting and grinding are done as per required dimensions.
10. Assembly: which involves fitting terminations to the porcelain shapes, so that they become insulators.
11. Packing: After QC it will be packed in wooden blocks and shipped.

Testing

Quality control: Testing implies a series of mechanical and electrical tests to ensure the technical integrity of the products. Parallelism, Eccentricity, Visual defects, Dimension, Product-specific requirement, etc. will be tested.

3 PROJECT COMPONENTS

3.1 Land & Building

The land required for this manufacturing unit will be approx. around 1500 square meter. 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.20,000 per month.

- Workshop Area- This area includes the setup and foundation space for all equipment's, work floor area, etc. Total workshop area is approx.800 Sqmt.

- Inventory Area- This area includes the storage space for all the raw materials and finished goods. Total inventory area is approx. 400 Sqmt.
- Office Area – This space includes staff working region, their accommodation space. Total workshop area is approx. 200 Sqmt. This may be considered above the ground floor.
- Parking Space, Electric Mounting Space, and Others. This could be approx. 100 Sqmt.

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

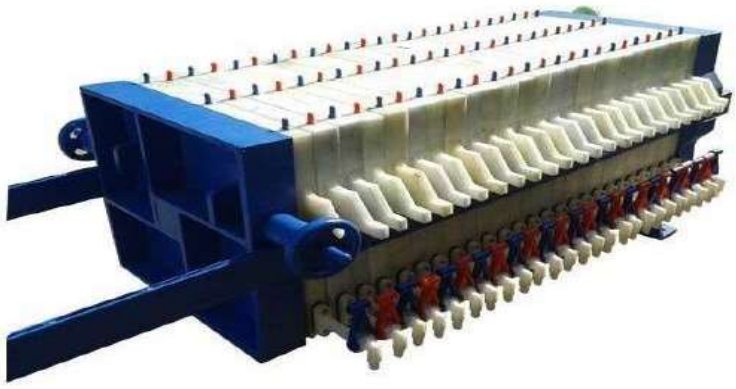
3.2 Plant & Machinery

- **Ball Mill:** This machine is used for clay milling. Raw material grinding is done by using this machine.

Blunger Machine: This machine is used for mixing slurry. A blunger usually consists of a round or octagonal tank with a mixer. Clay is added to the water-filled blunger and then mixed into slurry.

- **Filter Pressing Machine:** A filter press is a batch operation, fixed volume machine that separates liquids and solids using pressure filtration. Slurry is pumped into the filter press

and dewatered under pressure. It is used for water and wastewater treatment in a variety of different applications ranging from industrial to municipal.



- **De Airing Pug Mill:** The De-Airing Pug mill machine is widely used for Shaping, Pugging, and Extruding ceramic clay by a plastic process where De-airing is necessary. It consists of three chambers in one line. A) feeding and mixing chamber, B) vacuum chamber C) auger chamber.

- **Insulator Shaping Machine:** Used for shaping of the external shape of Insulator.

- **Glazing Machine:** This machine is designed to dip the insulator in the Glaze bath automatically. The machine consists of 16 to 25 nos dipping arms rotating with the rotation of the housing shaft.

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

Equipment:

Racks: It is a framework, typically with rails, bars, hooks, or pegs, for holding or storingthings.

Molds: Molds are hollow containers used to give shape to clay when it cools and hardens.

Material Handling Equipment

Machine	Quantity	Price
Ball Mill	1	1,00,000

Blunger	1	40,000
Filter Press	1	1,00,000
De- Airing Pug Mill	1	2,00,000
Shaping machine	1	2,00,000
Glazing machine	1	3,00,000
Klin	1	1,00,000
Other equipment (Racks, Shatter, Molds, Material Handling Equipments)		3,00,000
TOTAL		**13,40,000**

Note: Total Plant & Machineries cost shall be Rs. 13.40 lakhs (Approx.) including GST and transportation cost.

4 LICENSE & APPROVALS

Basic registration required in this project:

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

Projected Profitability

PROJECTED PROFITABILITY STATEMENT					(in Lacs)
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation %	**55%**	**60%**	**65%**	**70%**	**75%**
SALES					
Gross Sale					
Insulator	70.50	83.54	95.07	107.31	120.83
Total	**70.50**	**83.54**	**95.07**	**107.31**	**120.83**
COST OF SALES					
Raw Material Consumed	42.04	48.20	54.76	61.70	69.62
Electricity Expenses	3.17	3.46	3.74	4.03	4.32
Depreciation	2.24	1.90	1.61	1.37	1.17
Wages & labour	10.44	12.32	14.17	16.29	17.92
Repair & maintenance	1.27	1.67	1.90	2.15	2.42
Packaging	0.70	1.00	1.14	1.61	1.81
Cost of Production	59.86	68.55	77.32	87.15	97.25
Add: Opening Stock	-	2.00	2.29	2.58	2.91
Less: Closing Stock	2.00	2.29	2.58	2.91	3.24
Cost of Sales	57.86	68.26	77.03	86.82	96.92
GROSS PROFIT	**12.64**	**15.28**	**18.04**	**20.48**	**23.91**
	17.92%	**18.29%**	**18.98%**	**19.09%**	**19.79%**
Salary to Staff	3.24	3.56	4.21	4.63	5.46
Interest on Term Loan	1.32	1.16	0.83	0.51	0.18
Interest on working Capital	0.55	0.55	0.55	0.55	0.55
Rent	2.40	2.76	3.17	3.65	4.20
Selling & Administrative Exp.	0.07	0.08	0.10	0.11	0.12
TOTAL	**7.58**	**8.12**	**8.85**	**9.44**	**10.50**
NET PROFIT	5.06	7.16	9.19	11.05	13.41
	7.18%	**8.57%**	**9.66%**	**10.30%**	**11.10%**
Taxation	0.01	0.45	0.87	0.64	1.38
PROFIT (After Tax)	5.05	6.71	8.31	10.41	12.03

Projected Balance Sheet

PROJECTED BALANCE SHEET					(in Lacs)
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Liabilities					
Capital					
Opening balance		3.59	5.70	8.32	10.93
Add:- Own Capital	2.04				
Add:- Retained Profit	5.05	6.71	8.31	10.41	12.03
Less:- Drawings	3.50	4.60	5.70	7.80	8.80
Closing Balance	**3.59**	**5.70**	**8.32**	**10.93**	**14.16**
Term Loan	11.92	8.94	5.96	2.98	-
Working Capital Limit	4.97	4.97	4.97	4.97	4.97
Sundry Creditors	1.40	1.61	1.83	2.06	2.32
Provisions & Other Liability	0.40	0.48	0.58	0.80	0.96
TOTAL :	**22.28**	**21.70**	**21.65**	**21.73**	**22.41**
Assets					
Fixed Assets (Gross)	14.90	14.90	14.90	14.90	14.90
Gross Dep.	2.24	4.13	5.75	7.12	8.29
Net Fixed Assets	**12.67**	**10.77**	**9.15**	**7.78**	**6.61**
Current Assets					
Sundry Debtors	3.52	4.18	4.75	5.37	6.04
Stock in Hand	3.40	3.89	4.40	4.96	5.56
Cash and Bank	0.19	0.16	0.14	0.13	0.19
Loans & Advances /Other Current Assets	2.50	2.70	3.20	3.50	4.00
TOTAL :	**22.28**	**21.70**	**21.65**	**21.73**	**22.41**

Projected Cash Flow Statement

PROJECTED CASH FLOW STATEMENT					**(in Lacs)**
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
SOURCES OF FUND					
Own Margin	2.04				
Net Profit	5.06	7.16	9.19	11.05	13.41
Depreciation & Exp. W/off	2.24	1.90	1.61	1.37	1.17
Increase in Cash Credit	4.97	-	-	-	-
Increase In Term Loan	13.41	-	-	-	-
Increase in Creditors	1.40	0.21	0.22	0.23	0.26
Increase in Provisions & Oth labilities	0.40	0.08	0.10	0.22	0.16
	-				
TOTAL :	**29.52**	**9.35**	**11.11**	**12.88**	**15.00**
APPLICATION OF FUND					
Increase in Fixed Assets	14.90				
Increase in Stock	3.40	0.50	0.51	0.56	0.60
Increase in Debtors	3.52	0.65	0.58	0.61	0.68
Repayment of Term Loan	1.49	2.98	2.98	2.98	2.98
Loans & Advances /Other Current Assets	2.50	0.20	0.50	0.30	0.50
Drawings	3.50	4.60	5.70	7.80	8.80
Taxation	0.01	0.45	0.87	0.64	1.38
TOTAL :	**29.32**	**9.38**	**11.14**	**12.89**	**14.93**
Opening Cash & Bank Balance	-	0.19	0.16	0.14	0.13
Add : Surplus	0.19	(0.03)	(0.02)	(0.01)	0.07
Closing Cash & Bank Balance	**0.19**	**0.16**	**0.14**	**0.13**	**0.19**

DSCR

CALCULATION OF D.S.C.R					
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
CASH ACCRUALS	7.28	8.61	9.93	11.78	13.20
Interest on Term Loan	1.32	1.16	0.83	0.51	0.18
Total	8.60	9.77	10.76	12.29	13.38
REPAYMENT					
Instalment of Term Loan	1.49	2.98	2.98	2.98	2.98
Interest on Term Loan	1.32	1.16	0.83	0.51	0.18
Total	2.81	4.14	3.81	3.49	3.16
DEBT SERVICE COVERAGE RATIO	**3.06**	**2.36**	**2.82**	**3.53**	**4.24**
AVERAGE D.S.C.R.					**3.15**

Repayment schedule

REPAYMENT SCHEDULE OF TERM LOAN							
					Interest		11.00%
Year	**Particulars**	**Amount**	**Addition**	**Total**	**Interest**	**Repayment**	**Closing Balance**
1st	Opening Balance						
	1st month	-	13.41	13.41	-	-	13.41
	2nd month	13.41	-	13.41	0.12	-	13.41
	3rd month	13.41	-	13.41	0.12	-	13.41
	4th month	13.41	-	13.41	0.12		13.41
	5th month	13.41	-	13.41	0.12		13.41
	6th month	13.41	-	13.41	0.12		13.41
	7th month	13.41	-	13.41	0.12	0.25	13.16
	8th month	13.16	-	13.16	0.12	0.25	12.91
	9th month	12.91	-	12.91	0.12	0.25	12.67
	10th month	12.67	-	12.67	0.12	0.25	12.42
	11th month	12.42	-	12.42	0.11	0.25	12.17
	12th month	12.17	-	12.17	0.11	0.25	11.92
					1.32	**1.49**	
2nd	Opening Balance						
	1st month	11.92	-	11.92	0.11	0.25	11.67
	2nd month	11.67	-	11.67	0.11	0.25	11.42
	3rd month	11.42	-	11.42	0.10	0.25	11.18
	4th month	11.18	-	11.18	0.10	0.25	10.93
	5th month	10.93	-	10.93	0.10	0.25	10.68
	6th month	10.68	-	10.68	0.10	0.25	10.43

	7th month	10.43	-	10.43	0.10	0.25	10.18
	8th month	10.18	-	10.18	0.09	0.25	9.93
	9th month	9.93	-	9.93	0.09	0.25	9.69
	10th month	9.69	-	9.69	0.09	0.25	9.44
	11th month	9.44	-	9.44	0.09	0.25	9.19
	12th month	9.19	-	9.19	0.08	0.25	8.94
					1.16	**2.98**	
3rd	Opening Balance						
	1st month	8.94	-	8.94	0.08	0.25	8.69
	2nd month	8.69	-	8.69	0.08	0.25	8.44
	3rd month	8.44	-	8.44	0.08	0.25	8.20
	4th month	8.20	-	8.20	0.08	0.25	7.95
	5th month	7.95	-	7.95	0.07	0.25	7.70
	6th month	7.70	-	7.70	0.07	0.25	7.45
	7th month	7.45	-	7.45	0.07	0.25	7.20
	8th month	7.20	-	7.20	0.07	0.25	6.95
	9th month	6.95	-	6.95	0.06	0.25	6.71
	10th month	6.71	-	6.71	0.06	0.25	6.46
	11th month	6.46	-	6.46	0.06	0.25	6.21
	12th month	6.21	-	6.21	0.06	0.25	5.96
					0.83	**2.98**	
4th	Opening Balance						
	1st month	5.96	-	5.96	0.05	0.25	5.71
	2nd month	5.71	-	5.71	0.05	0.25	5.46
	3rd month	5.46	-	5.46	0.05	0.25	5.22

	4th month	5.22	-	5.22	0.05	0.25	4.97
	5th month	4.97	-	4.97	0.05	0.25	4.72
	6th month	4.72	-	4.72	0.04	0.25	4.47
	7th month	4.47	-	4.47	0.04	0.25	4.22
	8th month	4.22	-	4.22	0.04	0.25	3.97
	9th month	3.97	-	3.97	0.04	0.25	3.73
	10th month	3.73	-	3.73	0.03	0.25	3.48
	11th month	3.48	-	3.48	0.03	0.25	3.23
	12th month	3.23	-	3.23	0.03	0.25	2.98
					0.51	**2.98**	
5th	Opening Balance						
	1st month	2.98	-	2.98	0.03	0.25	2.73
	2nd month	2.73	-	2.73	0.03	0.25	2.48
	3rd month	2.48	-	2.48	0.02	0.25	2.24
	4th month	2.24	-	2.24	0.02	0.25	1.99
	5th month	1.99	-	1.99	0.02	0.25	1.74
	6th month	1.74	-	1.74	0.02	0.25	1.49
	7th month	1.49	-	1.49	0.01	0.25	1.24
	8th month	1.24	-	1.24	0.01	0.25	0.99
	9th month	0.99	-	0.99	0.01	0.25	0.75
	10th month	0.75	-	0.75	0.01	0.25	0.50
	11th month	0.50	-	0.50	0.00	0.25	0.25
	12th month	0.25	-	0.25	0.00	0.25	-
					0.18	**2.98**	
	DOOR TO DOOR	60	MONTHS				
	MORATORIUM PERIOD	6	MONTHS				
	REPAYMENT PERIOD	54	MONTHS				

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