PROJECT PROFILE ON MAGNESITE REFACTORY BRIKCS

1	Product	Magnesite Refractory Bricks
2	Quality Standards	IS: 1749-2005
3	Production Capacity	6000 Mt
4	Value	90.38 Lakhs
5	Month and Year	June 2021
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1. Introduction:

All industries needing high temperature operations are depending o the Refractories Industry for materials of construction. The Refractories industry likewise depends upon these industries as the chief consumers of Refractories. Refractory materials have been classified I to three classes.

- Acid Refractories
- Neutral Refractories
- Basic Refractories.

Basic Refractories do not react with basic slag's and are thus of considerable importance of furnace linings where basic slag's are encountered as in basic open hearths and in furnaces for non ferrous metallurgical operations,. The basic Refractories are used for lining and construction of high temperature kilns and furnaces in the field of basic open hearth furnace, steel melting furnaces and other furnaces producing and refining non-ferrous metals etc.

2. Market Potential.

Throughout the Industrial world, the Refractories market is concerned by the requirements of traditional heavy industries such as Iron and Steel, cement and Allied Industries, Glass, Non –ferrous chemical, Petroleum and power, ceramic. Together with a multitude of miscellaneous requirements of these the iron and steel industry is by for the major consumer of Refractories. Particularly the demands of basic Refractories are increasing with development of Iron and Steel industry. These products are also required for repairing and maintenance of basic refractory furnaces.

In our country, few units are manufacturing magnesite refractory bricks, which they may not fulfill the actual demands, thus there is a wide scope for setting up a few more industries sin the line of activities.

3. Basis and Presumptions

- Total capacity of the unit is 20 ton, of magnesite refractory bricks per day in a single shift basis.
- The working capital requirements of full year i.e. 300 working days has been taken into consideration with 8 hours working in a day. The unit will be functioning on single shift basis for processing of body and shaping of the bricks where as firing operation of kiln will be continuous for three shifts.
- The salary proposed for the skilled and unskilled workers is taken in accordance with the minimum wages prescribed by the department of labour, Employment and Training, Govt. of Tamilnadu.
- Interest on fixed and working capital has been calculated @ 9.5 % p.a.
- Land and construction cost of building in the scheme are based on average rates prevailing in the local area.

4. Implementation Schedule

Activity code	Activity description	Duration of months	Predecessor activities
A	Market survey	2.0	-
B	Preparation of Project report	1	A
C	Provisional registration	0.5	B
D	Sanction of loan	3	C
E	Release of funds	2	D
F	Acquisition of land	1	E
G	Approval from Govt. Agencies including labour pollution control, plan etc.	1	F
H	Construction of building	5	G
I	Sanction of power connection	1	C
J	Recruitment of Administrative staff	2	I
K	Procurement of machinery and equipments.	2	G
L	Erection, installation and electrification	2	G,I,J,K
M	Procurement of raw materials	0.5	L
N	Recruitment of workmen	0.5	M
O	Commissioning and trail	1	N

5. Technical Aspects

5.1. Manufacturing Process :

The dead burnt magnesites are crushed under a Jaw Crusher and roll mill and then passed through screens to give 1/6" size particles. The magnesites particle can be obtained into three grades like 0.06-0.02 inch, 0.02 – 0.005 inch and less the no.005 inch.

These are mixed in the ratio of 45:10:45. After grinding the particles are passed through Magnetic separator to remove the metallic iron. After this, the bond is added, usually caustic magnesis, sulphite bye or Magnesium sulphate, Milk of lime etc. may be used as binding materials. The wet mixture is thoroughly mixed in a mixer and pressed into bricks in hydraulic press at a pressure of 14-15000 lbs/sp. And dried in well ventilated rooms in inch. After well dried bricks can be burnt in ol Kiln at temp. of 1500 ^{0}C.

5.2. Quality and Standards

IS:1749 – 2005

5.3. Production Capacity :

6000 Mt per annum

5.4. Value ; Rs.90.38 Lakhs

5.5 Approximate Power : 200 HP

5.6.Pollution Control Needs:

The flue gases bleaching out of chimney, the ash left out after burning of coal and dry magnesite dust are the main sources of pollution in the plant. In this scheme, the chimney of 30 meters height has been proposed which is sufficient for optimal dispersion of particulates matter. Moreover , the following precautions should be taken while setting up of a new unit.

1. Kiln should set up preferably at least two km away from residential areas and fruit gardens.
2. No unit should be set up in sensitive areas as notified by state pollution control board.
3. To avoid dusting of kiln in a locality, the distance between two kiln should be more than one km.

5.7. Energy Conservation Needs

The refractory industry is highly energy intensive. Therefore, proper energy conservation system must be incorporated to ensure higher productivity, in order to ensure optimum combustion of fuel, provision of orsat apparatus has been made which will give the ratio of combustion products in the fire gases enabling close control of primary and secondary air.

6. FINANCIAL ASPECTS :

6.1. Fixed Capital

6.2. Land one acre : Value Rs. 75,00,000/

6.3 Building Details

S.N	Description	Area (meter square)	Rater per (meter square) Rs	Amount Rs
	Administrative Block	80	5,000	4,00,000
2	Production shed	400	4,000	16,00,000
3	Laboratory and quality control	50	5,000	2,50,000
4	Boundary wall etc.	1000	200	2,00,000
			Total	24,50,000

6.4. Machinery and Equipment :

S.N	Description	Qty	Value. Rs	Amount Rs
1	Jaw crusher size 12" x12" with 15 HP motor with complete accessories	1	3,20,000	3,20,000
2	Perforated pan mill pan size 7' dia. Roller with 42"x 12 complete with 30 HP electric motor etc.	1	3,50,000	3,50,000
3	Impact Grinder Disc size 18" with 30 HP Motor etc	1	1,20,000	1,20,000
4	Vibrating screen size 4' x2' with 2 HP motor	1	50,000	50,000
5	Rotary screen comprising different meshes with 5HP motor	1	60,000	60,000
6	Bucket elevator with 5HP motor	1	60,000	60,000
7	Electric magnetic separator Drum type	1	50,000	50,000
8	Double shaft u mixer size of barrel 6'x2'x2' with 10HP motor etc	1	150,000	1,50,000
9	Horizontal pug mill fitted with wire cutting table with 20HP motor	1	3,70,000	2,70,000
10	Friction screw press suitable for making both bricks and deep articles stroke 21" complete with 15HP Motor	2	3,50,000	7,00,000
11	Hand press screw type with die	2	75,000	1,50,000
12	Shuttle kiln	1	35,00,000	35,00,000
13	Platform type weighing machine	1	15,000	15,000
14	Thermo –couple	1	30,000	30,000
15	Water pumping set complete with pipe fittings and 2 HP motor	1 set	1,50,000	1,50,000
			Total	59,75,000
			GST IN 18%	10,75,500
			Total	**70,50,500**

6.5. Testing equipments (Indigenous) Rs

S.N	Description	Qty	Amount
1	Drying oven 12"x12"12"	1 no	1,00,000
2	Chemical Balance	1 no	50,000
3	Platinum crucible with lid 25ml capacity	1 set	75,000
4	Calorimeter	1 no	15,000
5	Agate pestle and motor side 6" to ID	1set	15,000
6	Hot plate punching champers water bath	LS	30,000
7	Glass apparatus, test sieves and other misc, items		50,000
8	Cold MOR testing machine		80,000
	Total		**4,15,000**

6.6.Energy Conservation Equipments (Indigenous) Rs

S.N	Description	Qty	Amount
1	Energy meter	1 no	20,000
2	Power factor meter	1 no	20,000
3	Onset apparatus	1no	50,000
	Total		**90,000**

6.7. Pollution equipments (Indigenous) Rs

S.N	Description	Qty	Amount
1	Vacuum cleaner	1 no	25,000
2	Dust collector	1 no	25,000
	Total		**50,000**

6.8. other Expenses. Rs

S.N	Description	Qty	Amount
1	Electrification and installation charges @ 10% of machinery and equipments on	Ls	7,05,050
2	Cost of dies & moulds etc	Ls	2,00,000
3	Cost of office equipments working tables racks etc	Ls	2,50,000
	Total		**11,55,050**

6.9. Total plant and machinery Rs. 87,60,550/-

6.10. Pre-operative Expenses **Rs**

S.N	Description	Amount
1	Consultancy charges and project preparation etc	2,00,000
2	Travelling expenses	50,000
3	Misc. expenses including non refundable deposits, insurance etc.	1,50,000
	Total	**4,00,000**

6.11 . Total Fixed Capital. **Rs**

S.N	Description	Amount
1	Land	75,00,000
2	Building	24,50,000
3	Plant and machinery	8,76,0550
4	Pre-operative expenses	4,00,000
	Total	**1,91,10,550**

7. Recurring Expenditure (Per Month) : **Rs**

7.1. Raw Material Per Month:

S.N	Description	Qty	Rate	Amount
1	Magneasite powder clinker	500mt	7000	35,00,000
	Total			**35,00,000**

7.2.Salaries & Wages Per Month : **Rs**.

S.N	Designation	No	Salary	Amount
1	Works manager	1	40,000	40,000
2	Foreman	1	30,000	30,000
3	Supervisor (Tech)	2	15,000	30,000
4	Sales Assistant	2	15,000	30,000
5	Fireman	1	12,000	12,000
6	Machine operator	4	10,000	40,000
7	Skilled workers	6	10,000	60,000
8	Lab. Assistant	1	12,000	12,000
9	Mechanical/ Elect. Technician	1	12,000	12,000
10	Die marker	1	15,000	15,000
11	Semi –skilled workers	32	10,000	3,20,000
12	Accountant	1	12,000	12,000
13	Clerk	2	10,000	20,000
14	Peon	1	8,000	8,000
	Total	56		6,41,000
	15% perquisites			96,150
	Total			**7,37,150**

7.3. Utilities Per Month : **Rs**.

S.N	Description	Amount
1	Power 200 HP (29840Unit 2Rs. 7.00 per unit)	2,08,880
2	Oil 15,300 liter @Rs.95/- per liter	14,53,500
	Total	**16,62,380**

7.4. Other Expenses Per Month : **Rs.**

S.N	Description	Amount
1	Maintenance and repair	10,000
2	Stationery	1,500
3	Telephone,	5,000
4	Advertisement publicity	15,000
5	Insurance	2,000
6	Travelling expenditure and transportation	56500
7	Consumable stores	5,000
8	Miscellaneous	5,000
	Total	**1,00,000**

7.5.Recurring Expenditure Per Month:

a + b + c + d = Rs. 59,99,530/

7.6.Recurring expenditure for 3 Months

59,99,530 X 3 = 1,79,98,590/

8. Total Project Cost : **Rs**

Sl No	Description	Total
1	Fixed Capital	1,91,10,550
2	Working Capital	1,79,98,590
	Total Project Cost	**3,71,09,140**

Financial Aspects

11.1Cost of Production (Per Year) **Rs**

Sl.No	Description	Total .
1	Recurring expenditure	7,19,94,360
2	Depreciation on building @10%	2,45,000
3	Depreciation on plant and machinery @10%	7,15,550
4	Depreciation on dies & moulds @ Rs.25%	50,000
5	depreciation on furniture @ Rs.20%	62,500
6	Interest on total investment 9.5 %	35,25,368
	Total	**7,65,92,778**

11.1.Turnover Per Annum :

By sale of 6,000Mt Magnesite bricks and blocks of standard size and specialsize of different grades at an average rate of Rs.15,063 per tone and total turnover per annum Rs: 9,03,78,000/-

11.2. Profit Per Annum :

Turnover- Cost of Production

Rs. 9,03,78,000 -7,65,92,778

Rs. = 1,37,85,222/-

11.3. % of profit on sales = $\frac{\text{Profit/annum X 100}}{\text{Turnover}}$

= $\frac{\text{1,37,85,222 X 100}}{\text{9,03,78,000}}$

= **15.25%**

11.4. Rate of Return = $\frac{\text{Profit/annum X 100}}{\text{Total Capital investment}}$

= $\frac{\text{1,37,85,222 X 100}}{\text{3,71,09,140}}$

= **37%**

12. **Break Even Analysis:**

A	**Fixed Cost per annum**	**Rs**
1	Total Depreciation	10,73,050
2	Interest on investment	35,25,368
3	40% of salary and wages	35,38,320
4	40% of other expenses & Utilities excluding Insurance	84,49,824
5	Insurance	24,000
	Total	**1,66,10,562**

(B). Profit per annum Rs. 1,37,85,222/-

(C). Break Even Point

$$\frac{\text{Fixed Cost/annum X 100}}{\text{Fixed cost/annum + Profit/annum}}$$

$$= \frac{1,37,85,222 \text{ X } 100}{3,03,95,784}$$

= 45%

Suppliers of Machinery & Equipments

1. M/s. Vijaya Prakash
   Industries N.H.18, Near
   Sarada Mandiram,
   P.O.Kolathara, Calicut, Kerala – 675655

2. M/s. St Vincents Industries
   Convent Road, Calicut, Kerala – 673033.

3 M/s. John's and sons Foundry & Engg
works Veliyur, Trichur, Kerala – 680021.

4 M/s. Mookens Engg. Poothols, Tirchur, Kerala.

5 M/s. AMIC Industries (P) Ltd.,
No:10, BT Road, Belghoria, Kolkata – 700056.

6 M/s. Keshab Engg.Co. Ltd.,
No:25, Swallow Lane,
Kolkata. 1.

Suppliers of raw materials :

M/s. Tamilnadu Magnesite Limited

5/53, Omalur Main Road, Jagir Ammapalayam Post, Salem- 636 302

Tamilnadu .