CEMENT MOSAIC FLOORING TILES

1. INTRODUCTION:

Building and construction Industry in India is always a growing industry. Flooring of any building requires different type of materials, viz: Mud, Stones, Tiles, Marble, Granite, etc. With increase of population, building and construction industry will grow and so Mosaic tiles industry has good scope.

2. PRODUCT & ITS APPLICATION:

Mosaic Floor Tiles, which are known as Terrazzo Tiles, are made of cement concrete and colored stone chips. These are very attractive and colorful with smooth shining surface. These tiles are made generally in the sizes of 200X200X20mm and 300X300 X25mm. These are extensively used for flooring purposes in building and commercial complexes. These tiles can also be made in various other sizes, shapes according to market demand. These are hard bearing termite proof impermeable and easily cleanable. The top surface of the tiles is decorated with marble stone chips of various colors with suitable addition of cement color.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Promoter must have basic knowledge of machine operation. It is desirable to have Graduate in any discipline.

4. INDUSTRY LOOK OUT AND TRENDS

Mosaic Floor Tiles, are known as Terrazzo Tiles, are made of cement concrete and coloured stone chips. These are very attractive and colourful with smooth shining surface. These tiles are made generally in the sizes of 200X200X20mm and

300X300 X25mm. These are extensively used for flooring purposes in building and commercial complexes. These tiles can also be made in various other sizes, shapes according to market demand. These are hard bearing termite proof impermeable and easily cleanable. The top surface of the tiles is decorated with marble stone chips of various colours with suitable addition of cement colour.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

Construction of floor by laying these tiles is time saving. It is also economical to repair the floor or do patch work by replacing the damaged tiles in course of use. Since the tiles are available in various decorative colours and sizes, the item is gaining popularity and the demand is increasing day-by-day. There is a great upsurge in the building construction activity due to increase in population. The requirement of residential houses hospitals and commercial buildings is increasing day by day. Government of India in its 10th Five Year Plan has given greater emphasis on housing activity. Socioeconomic changes in society, improved standards of living, renovation of old buildings and all-round development in the country, have increased building construction activity and the demand of Mosaic Flooring tiles.

6. RAW MATERIAL REQUIREMENTS:

Sr. No.	**Raw material & Consumables (Per Month)**	**Qty.**	**Rate(Rs.)**	**Value (Rs.)**
1.	Portland Cement (Grey)	40 M.T.	2800/-MT	1,12,000/-
2.	White cement	8 M.T.	8000/-MT	64,000/-
3.	Marble stone	60 M.T.	1500/-MT	90,000/-
4.	Black & Other colored chips	5 M.T.	500/-MT	2,500/-
5.	Sand	1000 Cft	5/Cft	5,000/-
6.	Oxalic acid, polishing materials, Coloring oxides etc.	L.S.		15,000/-
Total: -		**2,88,500/-**		

- **Utilities (Per Month)**

Sr No	Description	Rs.
1	Power	10,000/-
2	Water	4,000/-
Total		**14,000/**

7. MANUFACTURING PROCESS:

- **PRODUCTION DETAILS & PROCESS OF MANUFACTURE:**

The process for the manufactured of mosaic tiles consists of two layers, the facing and the backing layers. The mixtures for these layers are prepared and stored in compartments provided in the work tables on both sides of the hydraulic presses. Ratio of cement and colored stone chips in the facing mixture varies from 1:15 to 1:5 and the proportion of sand and gray cement in the backing mixture is 3:1. The moisture content of these mixtures differs from each other. The facing mixture should be in the form of slurry whereas the backing mixture is in the dump condition.

Four moulds are provided to 4 workmen who are engaged to work on one press one after another. The steel mould fitted up with a bottom plate is filled in first with facing mixture by means of a ladle to a depth of ¼” and over it moist backing mixtures are spread out up to an area all thickness exceeding ¾“. The top portion is lowered down and mixture is subjected to a pressure of approximately 2000 lbs. per sq. inch and the final thickness of the pressed tiles generally brought down to ¾”.

After withdrawing the moulds from the press the tiles are removed and stocked in a wooden rack fitted with handles on both sides where they are allowed to remain for about a day. The tiles are then taken to task where they are submerged under water for about 48 hours. After removing from the tanks, the tiles are kept under a curing shed for about 2 weeks by spraying water every day. Then the tiles are semi-polished in disc or super leveling machines.

8. MANPOWER REQUIREMENT:

The enterprise requires 9 employees as detailed below**:**

Sr. No.	**Designation of Employees**	**Monthly Salary ₹**	**Number of employees required**				
			Year-1	**Year-2**	**Year-3**	**Year-4**	**Year-5**
1	Machine Operators	18,000	1	1	2	3	3
2	Helpers	10,000	3	3	3	3	3
1	Sales/ Purchase man	18,000	1	1	1	1	1
2	Accounts/Stores Asset	12,500	1	1	1	1	1
3	Office Boy	9,500	1	1	1	1	1
	Total		7	7	8	9	9

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 3 months' time as detailed below:

Sr. No.	**Activity**	**Time Required *(in months)***
1	Acquisition of premises	1.00
2	Construction (if applicable)	
3	Procurement & installation of Plant & Machinery	2.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required *(some activities shall run concurrently)*	3.00

10. COST OF PROJECT:

- **BASIS & PRESUMPTIONS:**

a. It is envisaged that the unit will work for 300 working days in a year on a single shift basis of 8 hours per day.

b. Full plant capacity 1 to 2 months trial production is required to achieve.

c. The normal operative period is estimated 10 years, like considering the technology involved in this type of industry. The usual payment period of loan is about 8 years.

PRODUCTION TARGET (Per Annum):

1	Grey Mosaic Tiles 300 * 300	4.00 lakhs nos. Qty
2	Colored Tiles 300 * 300	1.00 lakhs nos. Qty
3	**Value**	**Rs. 55,00,000/-**

FINANCIAL ASPECTS:

A. Fixed Capital:

Sr. No.	**Particulars**	**Value (Rs.)**
i)	**Land 400 sq. mtrs**	10,00,000/-
ii)	**Built up area** Working Shed 50 sq. mtrs. Tanks & Workers Convenience Well with pump set Fencing on Compound Wall	 5,50,000/- 90,000/- 40,000/- 70,000/-
Total: Rs.		17.50 lakhs

The project shall cost ₹ 32.50 lacs as detailed below:

Sr. No.	**Particulars**	**₹ in Lacs**
1	Land	10.00
2	Building	7.50
3	Plant & Machinery	5.50
4	Furniture, Electrical Installations	0.80
5	Other Assets including Preliminary / Pre-operative expenses	0.70
6	Margin for Working Capital	8.00
	Total Cost of Project	**32.50**

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	8.125
2	Bank Finance	24.375
	Total	**32.50**

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 18.0 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	8.00	25.00	2.00	6.00
2	Receivables	8.00	50.00	4.00	4.00
3	Overheads	2.00	100%	2.00	-
4	Creditors	-	40%	-	-
	Total	18.00		8.00	10.00

13. LIST OF MACHINERY REQUIRED:

Sr. No	Description	Qty. (Nos.)	Amount (Rs.)
1.	Hydraulic Press with gauge capacity 150 Kgs per sq. cm (2000 lbs. per sq. inch)	2	1,60,000/-
2.	Hydraulic pump (double piston with 5 HP motor of 940 RPM combined type V belt drive capable of feeding 4 to 5 presses attached with safety valve, works automatically with accumulator.	1	35,000/-
3.	Hydraulic accumulation complete with pressure valve and connecting pipe.	1	25,000/-
4.	Super leveling (grinding) machine motor combined type V belt drive with 5 HP motor of 1440 RPM attached with automatic device for matching the plate of 6’ dia when work put. Grinding capacity 4 tiles of 250X250mm at a time.	1	60,000/-
Sr. No	**Description**	**Qty. (Nos.)**	**Amount (Rs.)**

5.	Color mixing machine with reduction gear system and 5 HP motor	1	30,000/-
6.	Standard size pulveriser having capacity of 300 kg/hr. of marble to a fineness of 100-250 mesh with connecting motor 40 HP and 2000 RPM.	1	50,000/-
7.	Semi-Polishing machine with 1 Hp motor for sample polishing and test tiles	1	10,000/-
8.	Electrification & installation charges @ 10%		35000/-
9.	Tiles moulds		50,000/-
10	Weighing Machine work, working table, rocks, sieves, shelves etc.	L.S.	25,000/-
11	Office equipment		80,000/-
Total: - Rs.			**5,50,000/-**

All the machines and equipment are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

- Kamdhenu Agro Machinery
  Plot No. 6, Near Power House,
  Wathoda Road, Wathoda
  Nagpur - 440035
  Maharashtra, India

- Future Industries Private Limited
  Shed No. 15, Ambica Estate,
  Corporation Municipal Plot,
  Opposite Sadvichar Hospital,
  Naroda, Ahmedabad - 382330,
  Gujarat, India

- The Global Pharma Equipments
  Star Industrial Estate,
  D-32, Naik Pada,

Near Hanuman Mandir,
Opposite Dwarka Industrial Estate,
Vasai East, Vasai - 401208,
Maharashtra, India

14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	60%	70%	80%	80%
2	Sales	₹. In Lacs	33.00	33.00	38.50	44.00	44.00
3	Raw Materials & Other direct inputs	₹. In Lacs	21.60	21.60	25.20	28.80	28.80
4	Gross Margin	₹. In Lacs	11.40	11.40	13.30	15.20	15.20
5	Overheads except interest	₹. In Lacs	8.00	8.00	9.50	10.00	10.00
6	Interest @ 10 %	₹. In Lacs	2.00	2.00	1.70	1.30	1.00
7	Depreciation	₹. In Lacs	1.10	1.10	1.10	1.10	1.10
8	**Net Profit before tax**	₹. In Lacs	**0.30**	**0.30**	**1.00**	**2.90**	**3.20**

The basis of profitability calculation:
The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study; it can be increased according to the selling strategy.)

Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per litre. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 57.89% of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value

1	Sales at full capacity	₹. In Lacs	55.00
2	Variable costs	₹. In Lacs	36.00
3	Fixed costs incl. interest	₹. In Lacs	11.00
4	BEP = FC/(SR-VC) x 100 =	% of capacity	57.89

16. STATUTORY / GOVERNMENT APPROVALS

As per the allocation of business rules under the Constitution, labour is in the concurrent list of subjects. It is dealt with by the MOLE at the Central and Departments of Labour under State Governments in respective States / UTs. The MOLE has enacted workplace safety and health statutes concerning workers in the manufacturing sector, mines, ports and docks and in construction sectors.

Further, other Ministries of the Government of India have also enacted certain statutes relating to safety aspects of substances, equipment, operations etc. Some of the statutes applicable in the manufacturing sector are discussed below:

The Static and Mobile Pressure Vessels (Unfired) Rules, 1981

These (SMPV) Rules are notified under the Explosives Act, 1884. These rules regulate storage, handling and transport of compressed gases. These rules stipulate requirements regarding construction and fitments, periodic testing, location, fire protection, loading and unloading facilities, transfer operations etc. in respect of pressure vessels whose water capacity exceeds one thousand litres. These rules are enforced by the Chief Controller of Explosives under the Ministry of Industry and Commerce, Govt. of India (PESO).

The Manufacture, Storage and Import of Hazardous Chemicals Rules (MSIHC), 1989

These MSIHC Rules are notified under the Environment (Protection) Act, 1986. These rules are aimed at regulating and handling of certain specified hazardous chemicals. The rules stipulate requirements regarding notification of site, identification of major hazards, taking necessary steps to control major accident,

notification of major accident, preparation of safety report and on-site emergency plan; prevention and control of major accident, dissemination of information etc. These rules are notified by the Ministry of Environment and Forests (MOEF) but enforced by the Inspectorates of Factories of respective States / UTs in the manufacturing sector.

The Factories Act, 1948 and State Factories Rules

The Factories Act, 1948 is very comprehensive legislation dealing with the matters of safety, health and welfare of workers in factories. The Act places duties on the occupier to ensure safety, health and welfare of workers at work. Some of the salient provisions of the Act include:

- Guarding of machinery
- Hoists and Lifts; Lifting Machines and Appliances
- Revolving Machinery
- Pressure Plant
- Excessive Weight
- Protection of Eyes
- Precautions against dangerous fumes, gases etc.
- Explosive or inflammable dust, gas etc.
- Precautions in case of fire
- Safety of buildings and machinery
- Permissible limits of exposure of chemical and toxic substances
- Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATIONS

Chemical companies often become integrated and undergo other activities outside the chemical industry. Increased competition prompts many companies to

reduce supply chain costs by looking outside the chemical sector at suppliers and customers. While most companies within the chemicals sector primarily produce chemicals, some companies also conduct other manufacturing activities. The exact proportion of chemicals sector companies that are integrated with other sector activities is unknown, but many companies actively seek vertical integration. Many manufacturers pursue vertical integration to secure suppliers and customers for their products.

Mergers and acquisitions are a common way for companies to undertake new chemical ventures. By purchasing their chemical suppliers, some manufacturers secure future chemical feedstock for their products or other chemicals that they use in manufacturing. The company making the purchase obtains valuable expertise and equipment. Some mining and petrochemical production is more cost-effective when integrated within a chemical company.

Energy and feedstock costs are often a significant expense for chemical companies. Integrating chemical production with activities that secure supplies of chemical feedstock and energy is relatively common as chemical companies grow. Chemical companies are located near mines, oil fields, ammonia factories and water supplies. This reduces transportation costs and increases the reliability of supplies by reducing the distance between feedstock and the factory.

Some companies, such as Sino-Coking Coal and Coke Chemical Industries Incorporated, own their mines. BHP Billiton operates a broad range of mines and is primarily a mining company. It does, however, also produce petrochemical feedstock for the chemical industry and therefore operates within the chemical industry as well. These companies technically operate within both the chemical and mining industries in their normal business operations.

Integrating a chemical company with other activities provides several direct benefits for the company and is becoming increasingly common. High energy costs necessitate greater control of energy resources and minimal reliance on expensive transportation. Chemical companies experience volatile profitability due to fluctuations in feedstock and energy expenses. Some companies control this volatility through careful supply chain management and by charging supply surcharges. Actively researching and developing alternative feedstock and energy supplies helps the company reduce costs.

Vertical integration supports these activities by eliminating redundant activities at multiple companies and increasing efficiency. By consolidating activity among multiple, similar operations, chemical companies achieve cost savings that contribute to higher profitability. End products are often very profitable, and some chemical companies purchase their former customers to take advantage of the marked-up prices of products further along in the supply chain.

Integration may become more common for many chemical companies as competition strengthens and traditional feedstock becomes more expensive. Market demand for chemical feedstock increases as emerging market economies grow and result in increased consumer spending around the world.

18. TRAINING CENTERS AND COURSES

There is no such training required to start this business but, basic chemical bachelor’s degree is plus point for enterpriser. Promoter may train their employees in such specialized institutions to grow up the business. There are few specialised Institutes provide degree certification in chemical Technology, few most famous and authenticate Institutions are as follows:

1. Department of chemical LD college of engineering

No.120, Circular Road, University Area, Navrangpura,
Opposite Gujarat University, Ahmedabad, Gujarat 380015

2. MIT College of chemical Engineering**, Pune**
   Gate.No.140, Raj Baugh Educational Complex,
   Pune Solapur Highway,
   Loni Kalbhor, Pune – 412201
   Maharashtra, India

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.

Source:- Udyami Mitra/Sidbi