GRANITE TILES UNIT

1. INTRODUCTION:

Granite is the most beautiful and reliable material for the building industry. It is used as a building material in the form of tiles and slabs and is a modular element for flooring, internal and external cladding, steps, sills, etc., in houses, offices, hotels, restaurants, hospitals, temples, etc. It is also used in the monuments. Granite has been scarcely used in the past on account of high degree of hardness and difficulties in processing. The development of new and advanced technology and machinery has made it possible for the granite industry to reduce its production costs and considerably increase its production capabilities.

2. PRODUCT & ITS APPLICATION:

Granite tiles have application in building as well as decorative stone. The fascination for granite is due to its taking mirror-like polish, high compressive strength, longevity and beauty. India possesses enormous deposits of all types of granite. It is one of the largest producers of granite in the world. The granite industry employs over one million workforces. This industry plays a vital role in the economy of states like TamilNadu, Andhra Pradesh, Karnataka and Rajasthan. Rural economy of many developing states like Madhya Pradesh, Uttar Pradesh, Orissa and North-Eastern States is dependent on this industry. The granite used for decorative purposes is a costly material in comparison with other materials. Hence, its utilization and trade within the country has been at a low profile compared with the exports. With the emergence of the rich middle class and spurt in construction activity, the internal trade is on the rise. Although granite is a minor mineral, it is a major contributor in foreign exchange earnings. India is the second largest exporter of raw granite after China and ahead of Brazil and South Africa. India ranked fifth in the export of processed (value added finished) product.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Graduate in any discipline.

4. INDUSTRY LOOK OUT AND TRENDS

Granite tiles having good demandinthe world market as decorative monumentalmaterials. There is vast scope for using granite formeteorological purpose withgoodexport prospects. There is rising trend in theuse of granite stonefor their strength,glassy finish and everlasting colour. Granite can be used to create beautiful novelty designs. These products have good market inthe country and abroad.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

India is the second largest producer of granite after South Africa. Besides a Flooring Tiles (Granite), decorative pieces and granite sands have good domestic demand due to steady growth in the commercial complexes and other building industry; there is a good export potential for granite tiles. India has an established market in Singapore, Taiwan, Australia, Japan, USA, UK, Italy and Germany. Although there is an export potential for the product, with the envisaged scale of operation, it is advisable to concentrate on domestic market initially before stepping in for an ambitious export market.

6. RAW MATERIAL REQUIREMENTS:

India is endowed with abundant resources of a wide variety of granite. As on1.4.2015, resources of granite dimension stone of all types are estimated at 40,000 million cubic meters. Of these resources, 1,400 million cubic meters (about 3%) fall in reserves category while remaining 39000 million cubic meters or about 97% fall in resources category. Grade-wise classification reveals that about 8% resources fall under black granite while 91% under colored granite. About 1% reserves and resources are unclassified grade. Under reserve category, about 30 million cubic meters of all grades fall under proved category while 1,380

million cubic meters fall under probable category. State wise breakup of resources reveals that Karnataka with about 25% resources is leading followed by Jharkhand (24%), Rajasthan (23%), Andhra Pradesh (6%), Madhya Pradesh (5%) and Orissa (5%) which together accounted for 88% resources. With regards to reserves, about 93% reserves are located in Madhya Pradesh (86%) and Orissa (7%).

7. MANUFACTURING PROCESS:

Granite blocks of 1 cft and 2 cft in size are procured from quarry owners. Blocks of various colors and shades are to be chosen depending on the customers' requirements. Varieties of Graniteis available in various colors and shades in Karnataka, Maharashtra, Andhra Pradesh and Rajasthan. These are Himalayan blue, Ilkal red, cherry blossom, Blue rose, S K fantasy, Kanakpuramulti-color, Hassan green, etc. Granite blocks are fed into a fully automatic circular sawing machine for slicing. The spacing between the cuts is preset depending on the thickness of tiles to be required. The depth of the cut is adjusted depending on the hardness of the granite. The hardness varies depending on the varieties of granite. Diamond segmented blade is used for cutting or slicing in which, water is the coolant. Water re-circulation system is suggested for minimizing water consumption. The tiles could be of different sizes viz. 6"- 6", 12"- 12" and 12" - 24". The thickness of the tiles ranges between 10 mm and 20 mm. The sliced granite is sent for further processing in the following sequence: a) Rough surface grinding b) Smooth surface grinding c) Polishing For the above three processes different grades of abrasive powders and polishing heads are used. Manual mode of operation of the machine is suggested for the above three processes. Polishing heads are replaceable for different operations on a single machine. Alternatively, three operations can be done on three different machines for increased production. After polishing the individual tiles can be fed into an edge-cutting machine with double blade for parallel cutting of the two edges. Then, the tiles are positioned so that the other two parallel edges are also cut. Double blade edge-cutting machines are preferred over single blade edge.

8. MANPOWER REQUIREMENT:

The enterprise requires 18 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 @ 12000	12,000	1	1	2	2	2
2	Helpers @ 8000	64,000	8	8	10	10	10
3	General Manager@15000	15,000	1	1	1	1	1
4	Accounts/Stores Asst@12500	37,500	3	3	3	3	3
5	Office Boy/Peon@9000	18,000	2	2	2	2	2
	Total	1,46,500	15	15	18	18	18

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 4 months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	1.00
2	Construction (if applicable)	2.00
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)	4.00

10. COST OF PROJECT:

The project shall cost ₹ 57.00 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land @ 1000 sq. mtrs @ Rs. 400	4.00
2	Building @ 500 Sq. Mtrs @ Rs. 1000	5.00

3	Plant & Machinery	20.10
4	Furniture, Electrical Installations	2.00
5	Other Assets including Preliminary / Pre-operative expenses	0.90
6	Working Capital	25.00
	Total	57.00

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	14.25
2	Bank Finance	42.75
	Total	57.00

12. WORKING CAPITAL CALCULATION:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	12.00	25	9.00	9.00
2	Receivables	10.00	25	2.50	7.50
3	Overheads	3.00	100	2.00	-
4	Creditors	-		-	-
	Total	25.00		13.50	16.50

13. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below:

The major machineries are Granite Cutting @ Rs 5 Lakh/Piece, Granite Single Cutter Machine 20 Feet (2.5 m cutter), and Circular saw machine (20 feet) Machine specifications: The circular saw is a reliable and robust machine built with latest technology for sawing of block into slab of various thickness's. As per present automatic programs, Granite Cutting

MachineGranite Block CutterGranite Block Cutter MachineThis cutter machine is very useful in large scale of granite sellers. Available @Rs 12 Lakh/Piece, Multi Blade Granite CutterGranite Block Cutter @Rs 8.75 Lakh/Piece, Granite Multi Cutter 9/10 blade @ Rs 26 Lakh/Piece, Multi Blade Granite Block Cutter MachinesGranite Cutting Machine, Granite Cutter @ Rs 5 Lakh/Piece, Granite Block Cutter Machine @ Rs 3 Lakh/Unit, Marble and Granite Mining Cutting Machine @ Rs 9.5 Lakh/Piece

Machinery and Equipment required for the project is as under.

Sr. No.	Particulars	UOM	Qtty	Rate (₹)	Value (₹ in Lacs)
	Plant & Machinery / equipments				
a)	Main Machinery				
i.	Circular sawing machine (Automatic), max. Cutting depth 375 mm	Nos	3	350000	10.50
ii.	diamond segmented circular saw of 1000 mm dia., 25 HP main motor, 1 HP elevating motor and other accessories	Nos	1	450000	4.50
iii.	Double blade edge cutting machine		1		1.50
b)	Ancillary machinery				
i.	Heavy duty polishing machine (manual),	Nos	1.00		2.00
Sr. No.	**Particulars**	**UOM**	**Qtty**	**Rate (₹)**	**Value (₹ in Lacs)**
ii.	polishing heads and other accessories Testing equipment	LS	2.00		1.60
	sub-total Plant & Machinery				20.10
	Furniture / Electrical installations				
a)	Office furniture	LS	1.00		0.40
b)	Stores /cupboard	LS	1.00		0.40

c)	Computer & Printer	Nos	2.00	1,00,000	1.10
	sub total				1.90
	Other Assets				
a)	Rent Deposits		2.00	50,000	1.00
	sub-total Other Assets				1.00
	Total				23.00

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:

Production Capacity (per annum) Granite

Tiles size	Quantity (Nos.)	Price (Rs.)	Value (Rs.)
6" x 6"	50000	100	5000000
12" x 12"	20000	200	4000000
12" x 24"	5000	300	1500000
Total	75000		10500000

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	80%	80%
2	Sales	₹. In Lacs	63.00	73.50	84.00	84.00	84.00
3	Raw Materials & Other direct inputs	₹. In Lacs	38.00	44.35	50.65	50.65	50.65
4	Gross Margin	₹. In Lacs	25.00	29.15	33.35	33.35	33.35
5	Overheads except interest	₹. In Lacs	20.40	20.90	21.50	22.00	22.50
6	Interest @ 10 % on 42.750	₹. In Lacs	4.25	4.25	3.75	2.60	1.80
7	Depreciation@ 30 % WDV	₹. In Lacs	6.00	3..80	2.90	2.35	1.90
8	Net Profit before tax	₹. In Lacs	-5.65	-0.20	5.20	6.40	7.15

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 61.22 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	105.00
2	Variable costs	₹. In Lacs	63.35
3	Fixed costs incl. interest	₹. In Lacs	25.50
4	BEP = FC/(SR-VC) x 100 =	% of capacity	61.22

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 chemicalEngineering**, Pune**
   Gate.No.140, Raj Baugh Educational Complex,
   Pune Solapur Highway,
   LoniKalbhor, 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.