

# **STONE CUTTING AND POLISHING UNIT**

## **1. INTRODUCTION:**

India has major resources of marble, granite, sandstone, Kota stone, quartzite & slate. Granite resources are largely in South India and Marble deposits are largely in Western India (Rajasthan & Gujarat). Natural stone or sand stone are the most widely used. Variety of stone used for flooring and front elevation or decoration of outer walls. The stones used for front elevation or frontal decoration can be of 4 mm to 14 mm while the stone used in flooring is of 25 mm to 40 mm thickness. Artistic use of stones not only increases the beauty of the house but also reduces the cost of construction.

The stones will be procured from quarries and undertake polishing in the unit. Polished stones are abundantly used in floorings, kitchen slabs, toilets etc. in house constructions in Karnataka and Andhra Pradesh. These slabs are normally available in one inch thickness. Slabs of various length and breadth are cut in to required sizes and polished into high polishing machine with sand / emery materials as well as water as local lubricants for polishing. The first polishing machine for rough polishing and second one for smooth polishing. There is no specific quality specification prescribed by any institutions. With the growth in the construction industry in the country in general and the State in particular, there has been a growth in the usage of flooring tiles made of stone. This is all the more pronounced by the fact that usage of stones like granite, marble, cudappah are increasingly finding acceptance as flooring materials in the country. These are not only durable but also lend aesthetics to the buildings. . Much would depend on the cost price and the quality of materials supplied.

## **2. PRODUCT & ITS APPLICATION:**

Polished stone tiles or slabs are now being widely used for construction of buildings. They enhance the beauty of the building and reduce maintenance cost.

The market for these products is growing in urban areas particularly in middle and upper middle class houses in cities and commercial complexes. The proposed sizes are of the order of 1' x 1' and 1' x 2' (tiles). The product has good market prospects in all important towns in the country.

### **3. DESIRED QUALIFICATIONS FOR PROMOTER:**

Graduate in any science. Promoter with high skill of chemical processing and having contacts with builders is advantage.

### **4. INDUSTRY LOOK OUT AND TRENDS**

At present, most of the mining crushing and industrial sand making plant produced a lot of limestone powder waste (limestone powder content is high). This not only pollute the environment, and the raw material waste is serious. It is imperative to find a reasonable solution to deal with limestone powder waste "waste into treasure".

The results show that the limestone powder as the admixture of concrete has the effect of improving the concrete structure, enhancing the workability of anti - sulphate attack ability of concrete under low temperature. In recent years, limestone powder into the concrete as a binder has become the hot topic and development trend in the concrete industry.

Commercial concrete mixing plant generally uses 325 mesh limestone powders; the sieving rate is not less than 85%. The research shows that C30 ~ C50 limestone powder for concrete can be produced completely.

### **5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:**

Highest producer of dimensional stones in the world accounting for over 35 % of the world stone production. 16.16 million tons of stone production in the year

1997-98 out of a total world production of 61 million tons. And nowadays more than 35million tons of stone produce. Over 3 million people are employed in stone sector.

Export of Stones -India ranks 3rd in world stone exports with a 12 % share. India ranks 1st in Raw Siliceous product (Granite & Sandstone) exports. India ranks 5th in Raw Calcareous product (Marble & Flagging Limestone) exports. India ranks 9th in exports of finished stone products. The bulk (80%) of the Indian stone exports is by way rough granite and marble blocks and only about 20% is by way of value added or branded products. Indian stone industry and the Government have set a target of raising this to 50% over the next 5 years. The bulk of the Indian stones are produced in the Indian states of Rajasthan, Tamil Nadu, Karnataka and Andhra Pradesh. Rajasthan accounts for nearly 90% of all the marble produced and the other three states in Southern India produce almost all the granite exported.

## **6. RAW MATERIAL REQUIREMENTS:**

The basic raw material required is different type of stone slab.

## **7. MANUFACTURING PROCESS:**

The technique used for stone polishing is quite simple. Rough stones are first put in the circle of polishing machine; stones can be polished by the machine at a time. During running the machine, small amount of fine sand and water is added at regular intervals. After grating of the surface and the edges, stone is ready for building purpose.

## **8. MANPOWER REQUIREMENT:**

The enterprise requires 8 employees as detailed below:

<b>Sr. No.</b>	<b>Designation</b>	<b>of</b>	<b>Salary Per</b>	<b>Monthly</b>	<b>Number of employees required</b>
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	Employees	Person	Salary ₹					
				Year-1	Year-2	Year-3	Year-4	Year-5
1	Machine Operators	12,000	12000.00	1	1	1	1	1
2	Helpers	8,000	24000.00	3	3	3	4	4
3	Production supervisor	15,000	15000.00	1	1	1	1	1
4	Accounts/Stores Asst	12,500	12500.00	1	1	1	1	1
5	Office Boy	9,000	9000.00	1	1	1	1	1
	<b>Total</b>		72500.00	7	7	7	8	8

## 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)	1.00
3	Procurement & installation of Plant & Machinery	1.00
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 ₹ 20.25 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	2.00
2	Building	2.00
3	Plant & Machinery	7.50
4	Furniture, Electrical Installations	1.00

5	Other Assets including Preliminary / Pre-operative expenses	0.75
6	Working Capital	7.00
	<b>Total</b>	<b>20.25</b>

## 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	5.06
2	Bank Finance	15.19
	<b>Total</b>	<b>20.25</b>

## 12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 7.00 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	3.50	0.25	0.88	2.63
2	Receivables	1.75	0.25	0.44	1.31
3	Overheads	1.75	100%	1.75	0.00
4	Creditors	-		0.00	0.00
	<b>Total</b>	7.00		3.06	3.94

## 13. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below: Power Requirement: 25 HP

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value
					(₹ in Lacs)
	<b>Plant &amp; Machinery / equipments</b>				
<b>a)</b>	<b>Main Machinery</b>				
i.	Stone cutting machine	NOS.	1	275000	2.75
ii.	Stone polishing Machine	Nos	1	125000	1.25

iii.	Stone Lifting machines	Nos	1	150000	1.50
<b>IV</b>	pumps, Water tanks, tools	Nos	1	100000	1.00
V	Installation, erection electr.			50,000	0.50
Vi	taxes and transportation			50000	0.50
	<i>sub-total Plant &amp; Machinery</i>				<b>7.50</b>
	<b>Furniture / Electrical installations</b>				
a)	Office furniture	LS	1	50000	0.50
b)	Stores Almira	LS	1	0	0.00
c)	Computer & Printer	L. S.	1	50000	0.50
	<i>sub total</i>				<b>1.00</b>
	<b>Other Assets</b>				
a)	preliminary and preoperative				0.75
	<i>sub-total Other Assets</i>				0.75
	<b>Total</b>				<b>9.25</b>

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%	70%	80%	90%	100%
2	Sales	₹. In Lacs	21.00	24.50	28.00	31.50	35.00
3	Raw Materials & Other direct inputs	₹. In Lacs	13.33	15.55	17.78	20.00	22.22
4	Gross Margin	₹. In Lacs	7.67	8.95	10.22	11.50	12.78
5	Overheads except interest	₹. In Lacs	4.30	4.57	5.11	5.27	5.38
6	Interest	₹. In Lacs	1.52	1.52	1.01	0.76	0.61
7	Depreciation	₹. In Lacs	5.25	3.75	2.63	1.88	1.69
8	<b>Net Profit before tax</b>	₹. In Lacs	<b>-3.40</b>	<b>-0.90</b>	<b>1.48</b>	<b>3.60</b>	<b>5.10</b>

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 46.85 % of projected capacity as detailed below:

<b>Sr. No.</b>	<b>Particulars</b>	<b>UOM</b>	<b>Value</b>
1	Sales at full capacity	₹. In Lacs	35.00
2	Variable costs	₹. In Lacs	22.22
3	Fixed costs incl. interest	₹. In Lacs	5.99
4	$BEP = FC/(SR-VC) \times 100$ =	% of capacity	46.85%

## **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](http://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 all over India.

**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