MINERAL GRINDING

1. INTRODUCTION

Varieties of mineral resources are located in various parts of the country. The details on available minerals, their chemical analysis, probable results and current utilization pattern data may be available from the respective state Geology & Mining dept. In this project file, mineral grinding of mainly used minerals is covered for preparation of project profile. The main minerals covered are bauxite, soap stone, calcite, kaolin, ball clay and china clay. The grinding of minerals is done using locally available equipment such as pulverize, material handling equipment, sieving machines, packing machines, etc. It is assumed that the average production capacity will be 3000 MT per annum.

2. PRODUCTS AND ITS APPLICATION

The grinding of natural minerals results in powder of different particle sizes, mainly measured as mesh size. Such powder minerals according to specifications and particle size are widely used in ceramic, glass, chemical, refractory, paint, plastic, rubber and large number of other industries such as paper and washing material manufacturing.

The powdered minerals are also exported outside India depending on the price parity, freight and chemical constituents. As India is having almost all major minerals, it is mostly self-sufficient except specialty minerals such as phosphotic and potash.

3. DESIRED QUALIFICATION FOR PROMOTER

Mineral grinding is a simple process and not much technical complexity involved. Therefore, motivated person with good communication skill to sell end products to industries will be a preferred promoter. However, some experience in mineral products will help in understanding raw materials & applications.

4. INDUSTRY OUTLOOK/TREND

Mineral processing sector is growing with growth in GDP of the country. Almost all types of industries use one or another mineral as main input or ingredient. The industrialization will increase the demand for minerals. The future of mineral processing sector is very bright due to increase in domestic consumption of steel, ceramic, sanitary wares, paper industry and plastic/rubber industries.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

The market for powdered minerals is almost everywhere in the country as most of the industries are using one or another kind of mineral. It is important to do market survey of local area to identify minerals used by the industries. The market will vary according to the concentration of the particular type of industry such as ceramic and glass. . In fact, it is important to link available local minerals with market as transportation of minerals is cost effective only if grinding and consumption are in nearby areas. Most minerals are high in volume and low in cost. Therefore, economical radius of transporting raw material and finished product become very important.

With rapid industrialization and rising exports of finished products, demand for powdered minerals is ever increasing. The main exportable minerals are bauxite, soap stone, iron ore and kaolin

6. RAW MATERIAL REQUIREMENTS

The main raw materials are in the form of mineral lumps obtained from respective mines. For the purpose of this profile, bauxite is taken as raw material and this can be changed according to the available mineral in the local area. Most of mineral grinding activity is carried out with multiple minerals. This can be done by changing raw material as most of the plant & machinery remain same. Therefore, one can utilize locally available minerals for grinding and sell in the nearby market. It is important to note that the same mineral has different chemical analysis in different locations. The price is also varying based on percentage of element required for end application.

To assess the availability of raw material, it is important to get information from State Directorate of Geology & Mining and also from existing mine owners of respective minerals,

7. MANUFACTURING PROCESS

It is simple but needs careful handling of equipment in order to prevent breakdown. Various minerals are assorted in batches. Then it is fed to the grinding unit where lumps are converted into powder. The particle size obtained as a result of grinding will depend on the screen used to sieve mineral. The grinding efficiency will depend on the hardness of the mineral. Therefore, production will vary according to hardness. The softer mineral such as soap stone will give high production compared to bauxite in the same machine.

After powdering minerals, it is passed through vibratory screens, magnetic separator and sieving using cyclone separator to obtain different particle sizes of the product. Higher mesh size will fetch higher price. Powdered minerals are normally packed in HDPE woven bag. Sometimes, used bag are also used for packing to reduce cost if that is acceptable to the buyer.

8. MANPOWER REQUIREMENT

At full capacity, following manpower will be required for day-to-day operation of the plant and office work:

Manpower Requirement

Sr.No.	Designation of Employees	Monthly Salary ₹	Number of employees required	Value Rs. in lacs
1	Supervisor	12,000	1	1.44
2	Skilled man power	5,000	5	3.00
3	Sales Man	7,000	1	0.84
4	Accountant	7,000	1	0.84
5	Office boy	3,500	1	0.42
6	Unskilled man power	4,000	8	3.84
	Total		17	10.38

9. IMPLEMENTATION SCHEDULE

The time required to implement 3000 MT/annum mineral grinding unit will be six months from the date of arranging the finance. It is desirable to identify land at early stage as requirement of open land is more for such activity to store raw materials.

10. COST OF PROJECT

The cost of project as per market rate of factory building, machinery, miscellaneous items, working capital margin and preliminary and pre-operative expenses works out as under.

Cost of Project

Sr.No.	Particulars	₹ in Lacs
1	Land	10.00
2	Building	25.00
3	Plant & Machinery	35.75
4	Furniture, Electrical Installations	4.00
5	Other Assets	0.50
6	Margin for Working Capital	4.89
	Total	**80.14**

11. MEANS OF FINANCE

Based on the present norms of the bank, means of finance is worked out as under.

Means of Finance

Sr.No.	Particulars	₹ in Lacs
1	Promoter's contribution	24,04,200.00
2	Bank Finance	56,09,800.00
	Total	**80,14,000.00**

12. WORKING CAPITAL CALCULATION

Working capital required for storage of raw materials and finished goods, monthly overheads, goods in process, receivables and trade credit is worked out based on the present norms of the bank as under.

Working Capital Calculations

Sr.No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	1.50	40%	-	1.50
2	Receivables	10.00	40%	-	10.00
3	Overheads	1.77	50%	-	1.77
4	Creditors	-1.50	40%	-	-1.50
	Total	**11.77**		**-**	**11.77**

13. LIST OF MACHINERY REQUIRED AND THEIR MANUFACTURERES

The main items of machinery are jaw crusher, pulverizer, vibratory screen, magnetic separator, testing instruments, material handling equipment, cyclone separator and weighing machine. All these items are available in India. It is also easy to repair and maintain proposed machinery with help of local fabricator.

- Torsa Machines Limited
  Torsa Spare & Services
  Export Promotion Industrial Park

Amingaon, North Guwahati 781 031
Assam, India.

- Laxmi En-Fab Pvt. Ltd
  25, Nilisin Plot,
  GIDC Phase 1,
  Vatva, Ahmedabad,
  Gujarat

14. PROFITABILITY CALCULATIONS

The profitability is worked out as under after taking into account all variable and fixed expenses as under.

Profitability Calculations

Sr. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
1	Sales	84	96	108	108	108
2	Raw Materials & Other direct inputs	48.258	55.152	62.046	62.046	62.046
3	Gross Margin	35.742	40.848	45.954	45.954	45.954
4	Overheads except interest	7.448	8.512	9.576	9.576	9.576
5	Interest	0.63	0.72	0.81	0.81	0.81
6	Depreciation	3.801	4.344	4.887	4.887	4.887
7	**Net Profit before tax**	23.87	27.28	30.69	30.69	30.69

The proposed unit will have the production capacity of 4,000 MT per year. The unit cost of power is taken at Rs. 8. The depreciation on building is taken at the rate of 5% whereas for plant and machinery it is at 10%.

The sales price of mineral powder on an average is taken at the rate of Rs. 3,000 per MT.

15. BREAKEVEN ANALYSIS

The Break-Even point as percentage of targeted sales works out as under.

Cash Break-Even (as % of Targeted sales)

Sr.No.	Particulars		Value
			Year-1
1	Sales Realization	Rs. Lacs	120.00
2	Variable costs	Rs. Lacs	68.94
3	Fixed costs incl. interest	Rs. Lacs	10.64
4	BEP = FC/SR-VC x 100 =		20.85%

16. STATUTORY/ GOVERNMENT APPROVALS

There is no specific statutory requirement for mineral processing industry.Moreover clearance from state pollution control board is must for producing mineral products. However MSME & GST registration, IEC Code for Export of end products and local authority clearance may be required for Shops and Establishment, for Fire and Safety requirement and registration for ESI, PF and Labour laws may be required if applicable.

17. BACKWARD AND FORWARD INTEGRATION

As forward integration, Entrepreneur may think of producing pesticides formulations or nano particles or various kinds of minerals. Backward integration by acquiring mining lease may be done to secure raw material for mineral processing.

18. TRAINING CENTERS/COURSES

India Institute of Mines, Dhanbad can help in acquiring knowledge on minerals and their processing.

Udyamimitraportal (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 development programs help to run businesses successfully and are 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.