PROJECT PROFILE

Product : Red Iron Oxide

Product Code : 24117, 31251

IS : 05 : 1994

Production Capacity ( Per Annum) : Quantity - 300M.T
Value - Rs.1,50,00,000/-

Month & Year of Preparation : February, 2011

Prepared by : MSME Development Institute,
Govt. of India, Ministry of MSME
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1. **INTRODUCTION:**

Red iron oxide finds wide application in paints, plastics, rubber, ceramic and other industries, since huge quantities of spent pickle liquor from steel industries is obtained as a by product in our country and it contains an average of 15-20 % of ferrous sulphate.

Three methods are developed for converting ferrous sulphate content of these liquors into Iron Oxides, suitable for use in pigments. These primers are fairly good water resistance, they are widely used in structural steel work such as bridges and in industries to avoid corrosion on various articles.

2. **MARKET POTENTIAL:**

It has wide applications in Iron Industry, polishing, pigment, biomedical etc. According to the recent survey carried out on Red Iron Oxide the demand is more than the production i.e. the available product is unable to meet the demand. Therefore, it is suggested to establish few more new units to produce Iron Oxide so as to fill the gap between the demand and production.

3. **BASIS AND PRESUMPTIONS:**

(i) The profile is based on single shift basis and 300 working days in a year.
(ii) All the operations are proposed to be carried out within the industry premises.
(iii) Costs of machinery and equipments indicated refer to a particular make and approximately to those prevailing at the time of preparation of this project.
(iv) Cost of installation and erection is taken @ 10 % of cost of machinery & equipment.
(v) Depreciation has been considered as 10% on plant and machinery and 20 % on office furniture and fixture.
(vi) Interest on total capital investment has been taken @ 14.5 % per annum on borrowing amount.

4. **IMPLEMENTATION SCHEDULE**

Following steps are involved in the implementation of this project-

(i) Preparation of project report 15 days
(ii) Selection of site/working shed 1 month
(iii) Filing of entrepreneurs memorandum 15 days
(iv) Obtaining NOC from State Pollution Control Board 15 days
(v) Arrangement of finance 2 months
(vi) Procurement of machinery & equipment 1 month
(vii) Plant Erection & electrification 1 month
(viii) Recruitment of staff 1 month
(ix) Trial run 15 days

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Total 8 Months
5. **TECHNICAL ASPECTS:**

5.1 **Process of Manufacture :-**

(i) In the first method the ferrous sulphate heptahydrate is reacted with sodium carbonate at moderate temperature. The reacted mass is then treated with water when sodium sulphate dissolves leaving a residue of iron Oxide. The solution containing sodium sulphate is decanted and Iron Oxide is washed to make it free from sodium sulphate and at last it is dried. Sodium Sulphate is recovered by evaporation and crystallization.

(ii) In the second method the crystals of ferrous sulphate obtained from spent liquor are calcified with lime to produce a range of pigments called Venetians reds which contain varying proportions of ferric oxide and calcium sulphate. The products are then pulverized and classified. Blends of this product are made by further addition of calcium sulphate or other extenders to get various varieties of product having ferric oxide between 35-40%.

5.2. **Quality Control & Standards:-**

Bureau of Indian Standards has formulated a Standard Specification for Red Iron Oxide for various purposes as mentioned below-

- IS - 44 – 1991
- IS - 05 – 1994

5.3. **Production Capacity (Per Annum)**

| Quantity | 300 MT |
| Value    | Rs 1,50,00,000/- |

5.4. **Pollution Control Needs:**

The unit does come under the polluting Industries, however, necessary clearance from State Pollution Control Board is required to run a manufacturing enterprise.

5.5. **Energy Conservation.**

Proper maintenance of power operated machines and judicious use of them will conserve energy and proper attention should be given to install energy efficient machinery and equipment.

6. **FINANCIAL ASPECTS**

6.1 **Fixed Capital**
6.1.1 Land and building:

<table>
<thead>
<tr>
<th>Description</th>
<th>Area</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total area</td>
<td>700 Sq. Meter</td>
<td>Rs. 8,00,000/-</td>
</tr>
<tr>
<td>Covered area</td>
<td>500 Sq. Meters</td>
<td>Rs. 2,00,000/-</td>
</tr>
<tr>
<td>Uncovered area</td>
<td>200 Sq. Meters</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>Rs. 10,00,000/-</strong></td>
</tr>
</tbody>
</table>

6.1.2 Plant & Machinery:

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of machinery</th>
<th>Indigenous/Imported</th>
<th>Quantity</th>
<th>Price (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i)</td>
<td>Hammer or Ball Mill</td>
<td>Indigenous</td>
<td>01 No.</td>
<td>3,00,000/-</td>
</tr>
<tr>
<td>(ii)</td>
<td>Rotary Kiln</td>
<td>Indigenous</td>
<td>1 No.</td>
<td>1,25,000/-</td>
</tr>
<tr>
<td>(iii)</td>
<td>M.S Storage tanks</td>
<td>Indigenous</td>
<td>2 Nos.</td>
<td>1,00,000/-</td>
</tr>
<tr>
<td>(iv)</td>
<td>Boiler</td>
<td>Indigenous</td>
<td>1 No.</td>
<td>70,000/-</td>
</tr>
<tr>
<td>(v)</td>
<td>Drier</td>
<td>Indigenous</td>
<td>2 Nos.</td>
<td>65,000/-</td>
</tr>
<tr>
<td>(vi)</td>
<td>Centrifuge Baskets</td>
<td>Indigenous</td>
<td>2 Nos.</td>
<td>57,000/-</td>
</tr>
<tr>
<td>(vii)</td>
<td>Vacuum Evaporator</td>
<td>Indigenous</td>
<td>1 No.</td>
<td>40,000/-</td>
</tr>
<tr>
<td>(viii)</td>
<td>Fixtures &amp; Miscellaneous equipments</td>
<td>Indigenous</td>
<td>LS</td>
<td>30,000/-</td>
</tr>
</tbody>
</table>

**Total** 7,87,000/-

6.1.3 Other fixed assets

<table>
<thead>
<tr>
<th>Description</th>
<th>Price (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Office equipment, furniture etc.</td>
<td>40,000/-</td>
</tr>
<tr>
<td>(x) Erection &amp; installation @ 10 % Machine &amp; equipments</td>
<td>78,700/-</td>
</tr>
<tr>
<td>(xi) Pre-operative expenses</td>
<td>20,000/-</td>
</tr>
</tbody>
</table>

**Total** Rs. 1,38,700/-
6.1.4 Total fixed capital (6.1.1 + 6.1.2+6.1.3) Rs. 19,25,700/-

6.2 Working Capital (Per Month)

6.2.1 Personnel (Per Month)

<table>
<thead>
<tr>
<th>Designation</th>
<th>Nos.</th>
<th>Salary</th>
<th>Total Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Manager</td>
<td>1</td>
<td>7,000/-</td>
<td>7,000/-</td>
</tr>
<tr>
<td>(ii) Chemist</td>
<td>2</td>
<td>6,000/-</td>
<td>12,000/-</td>
</tr>
<tr>
<td>(iii) Skilled Worker</td>
<td>2</td>
<td>4,000/-</td>
<td>8,000/-</td>
</tr>
<tr>
<td>(iv) Helpers</td>
<td>1</td>
<td>3,500/-</td>
<td>7,000/-</td>
</tr>
<tr>
<td>(v) Watchman cum peon</td>
<td>1</td>
<td>3,000/-</td>
<td>3,000/-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>37,000/-</strong></td>
</tr>
</tbody>
</table>

Total ________________

6.2.2 Raw Materials (Per Month):

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Item</th>
<th>Quantity</th>
<th>Rate</th>
<th>Value Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i)</td>
<td>Ferrous Sulphate heptahydrate 25 MT</td>
<td></td>
<td>18/- Kg</td>
<td>4,50,000/-</td>
</tr>
<tr>
<td>(ii)</td>
<td>Sodium Carbonate</td>
<td>15 MT</td>
<td>5/- Kg</td>
<td>75,000/-</td>
</tr>
<tr>
<td>(iii)</td>
<td>Sulphuric Acid</td>
<td>12.5 MT</td>
<td>9/- Kg</td>
<td>1,12,500/-</td>
</tr>
<tr>
<td>(iv)</td>
<td>Packing Material LS</td>
<td></td>
<td></td>
<td>1,50,000/-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Total Rs. 7,87,500/-</strong></td>
</tr>
</tbody>
</table>

6.2.3 Utilities (Per Month):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity, 4000 KW @ 5/-</td>
<td>20000/-</td>
</tr>
<tr>
<td>Water LS</td>
<td>2,000/-</td>
</tr>
<tr>
<td>Total</td>
<td>Rs. <strong>22,000/-</strong></td>
</tr>
</tbody>
</table>

6.2.4 Other Contingent Expenses (Per Month) :

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postage stationery</td>
<td>1,000/-</td>
</tr>
<tr>
<td>Telephone</td>
<td>1,000/-</td>
</tr>
<tr>
<td>Repair and maintenance</td>
<td>3,000/-</td>
</tr>
<tr>
<td>Transportation Charges &amp; sales expenses</td>
<td>3,000/-</td>
</tr>
<tr>
<td>Advertisement &amp; Publicity</td>
<td>2,000/-</td>
</tr>
<tr>
<td>Miscellaneous Expenses</td>
<td>3,000/-</td>
</tr>
</tbody>
</table>

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Total Rs. **13,000/-**
6.2.5 Total Recurring Expenditure (Per Month):

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff and Labour</td>
<td>37,000/-</td>
</tr>
<tr>
<td>Raw materials</td>
<td>7,87,500/-</td>
</tr>
<tr>
<td>Utilities</td>
<td>22,000/-</td>
</tr>
<tr>
<td>Other Contingent Expenses.</td>
<td>13,000/-</td>
</tr>
</tbody>
</table>

Total Rs. 8,59,500/-

6.2.6 Working Capital on 3 Months basis:

8,59500 X 3 = Rs. 2578500/-

6.2.7 TOTAL CAPITAL INVESTMENT:

(i) Fixed Capital                  19,25,700/-
(ii) Working Capital for 3 months  25,78,500/-

Total Rs. 45,04,200/-

7. MACHINERY UTILISATION:

Capacity utilization is considered as 75 % of installed capacity.

8. FINANCIAL ANALYSIS:

8.1 Cost of Production (Per Year)

i) Total Recurring expenditure 1,03,14,000/-
ii) Depreciation on Plant and Machinery @ 10% of cost of Machinery & equipment 78,700 /-
iii) Depreciation on building @ 50 % 4,00,000/-
iv) Depreciation on Office equipment @ 15 % 6000/-
v) Interest on total capital investment @ 14.5% 6,53,109/-

Total Rs. 11451809/-

8.2 Turn Over (Per Year):

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Rate(Rs.)</th>
<th>Value (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Iron Oxide</td>
<td>300 MT</td>
<td>50000 per MT</td>
<td>1,50,00,000/-</td>
</tr>
</tbody>
</table>
8.3 Net Profit (Per Year):

= Turn Over - Cost of Production

= 1,50,00,000 - 1,14,51,809/-

= Rs. 35,48,191/-

8.3.1 Net Profit Ratio:

= Net Profit Per Year x 100
Turn Over Per Year.

= 3548191 x 100
15000000

= 23.65 %

8.3.2 Rate of Return:

= Net profit per year x 100
Total capital investment

= 3548191 x 100
4504200

= 78.77 %

8.4 Break Even Analysis:

8.4.1 Fixed Cost:

(i) Total Depreciation 484700
(ii) Interest on total capital investment @ 14.5% 653109
(iii) 40% of salaries 14800
(iv) Insurance 15000
(v) 40% of other contingent expenses 5200

Total Rs. 1172809/-

8.4.2 Profit before tax Rs. 35,48,191/-

8.4.3 B.E.P.

= Fixed Cost X 100
Fixed cost + Profit

= 1172809 x 100
1172809 + 3548191

= 1172809 x 100
4721000

= 24.84 %
9. NAMES AND ADDRESSES OF MACHINERY SUPPLIERS

1. M/s Dipesh Engineering works, No. 3 Sheroo Villa,  
   1st Floor No. 87 JP Road, Near Andheri  
   Sports Complex, Opp. Bank of India, Anderi (West)  
   Mumbai-400053.

2. M/s. Kwality Engineering corporation India  
   Plot No. 198, Sector 1 Vasai Taluka Industrial Estate, Guaaipada  
   Thane, Maharashtra-401208.

3. M/s Air Care Equipment  
   Dreams Aakruti, C-102, Plot No.01  
   Street No. 52, Kalepadad, Hadapsar, Pune-411208.

4. M/s Apollo Machinery  
   No. 712/1, Parmeshwa Estate, Phase IV  
   GIDC, Vatva, Ahmedabad-382445.

5. M/s NSI Equipments private Limited  
   Opposite Block Development Office  
   Delhi Road, Meerut, Uttar Pradesh-250002.

10. NAMES AND ADDRESSES OF RAW MATERIAL SUPPLIERS

1. M/s. Raghav Steels, C-48, Ambabari, Jaipur-302023  
   701-702, Divya Amber, JS Road Near Rustamjee, Dhisar, Mumbai-400068.  
3. M/s. Triveni Chemicals, No.135, Pancharatna Char Rasta, GIDC, Vapi  
   Gujrat-396195.  
4. M/s. Sushil Corporation No. 325, Vikram Tower, IInd Floor  
   Sapan Sangita Road, Indore-452001.  

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