

PROJECT REPORT

Of

RED IRON OXIDE

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding **Red Iron Oxide**

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and management.

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]



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PROJECT REPORT

ON

RED IRON OXIDE



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 byproduct in our country and 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.

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 p the gap between the demand and production.

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 15% on plant and machinery and 10 % on office furniture and fixture.
- (vi) Interest on total capital investment has been taken @ 11.5 % per annum on borrowing amount.

TECHNICAL ASPECTS:

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%.

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

Production Capacity (Per Annum) Quantity 300 MT

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.

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.

PROJECT AT A GLANCE

- 1 Name of the Entrepreneur XXXXXXXX
- 2 Constitution (legal Status) XXXXXXXX
- 3 Father's/Spouce's Name XXXXXXXX
- 4 Unit Address XXXXXXXX
- Taluk/Block: XXXXX
- District : XXXXX State:
- Pin: XXXXX
- E-Mail : XXXXX
- Mobile XXXXX
- 5 Product and By Product : **Magnesium Sulphate**
- 6 Name of the project / business activity proposed **Magnesium Sulphate**
- 7 Cost of Project : Rs21.50lac
- 8 Means of Finance
- Term Loan Rs.16.94 Lacs
- KVIC Margin Money - As per Project Eligibility
- Own Capital Rs.2.77 Lacs
- Working Capital Rs.7.98 Lacs
- 9 Debt Service Coverage Ratio : 3.83
- 10 Pay Back Period : 5 Years
- 11 Project Implementation Period : 8 Months
- 12 Break Even Point : 29%
- 13 Employment : 10 Persons
- 14 Power Requirement : 20.00 HP
- 15 Major Raw materials : Dead Burnt Magnetic MgO content and Sulphuric Acid
- 16 Estimated Annual Sales Turnover : 81.23 Lacs
- 16 Detailed Cost of Project & Means of Finance

COST OF PROJECT

(Rs. In Lacs)

Particulars	Amount
Land 7500 Sqft	Rented/Owned
Building /shed (5000 Sq Ft)	5.00
Plant & Machinery	12.60
Furniture & Fixtures	0.50
Pre-operative Expenses	0.72
Working Capital Requirement	8.86
Total	27.67

MEANS OF FINANCE

Particulars	Amount
Own Contribution @10%	2.77
Term Loan	16.94
Workign Capital Finance	7.98
Total	27.67

Beneficiary's Margin Money **General** **Special**
 (% of Project Cost) 10% 5%

PLANT & MACHINERY

PARTICULARS	QTY.	RATE	AMOUNT IN RS.
Hammer or Ball Mill	1	400,000.00	400,000.00
Rotary Kiln	1	175,000.00	175,000.00
M.S Storage tanks	2	50,000.00	100,000.00
Boiler Cap. 100 psi with chimney pipeline 100 kg/hr.	1	225,000.00	225,000.00
Centrifuge Basket type 24" diam.	1	80,000.00	80,000.00
Vacuum Evaporator	1	60,000.00	60,000.00
Drier 48 Trav. Model 32"x32"x4" Elec.	2	85,000.00	170,000.00
Misc. equipments such as M.S. Storagetank, pump & furniture etc.	LS	50,000.00	50,000.00
Total			1,260,000.00

PROJECTED BALANCE SHEET

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>SOURCES OF FUND</u>					
Capital Account	2.77	2.77	2.77	2.77	2.77
Retained Profit	9.76	22.06	36.10	53.13	73.02
Term Loan	16.94	12.70	8.47	4.23	1.02
Cash Credit	7.98	7.98	7.98	7.98	7.98
Sundry Creditors	1.21	1.41	1.61	1.81	2.02
Provisions & Other Liab	0.36	0.40	0.44	0.48	0.53
TOTAL :	39.01	47.31	57.36	70.41	87.33
<u>APPLICATION OF FUND</u>					
Fixed Assets (Gross)	18.10	18.10	18.10	18.10	18.10
Gross Dep.	2.42	4.52	6.33	7.90	9.25
Net Fixed Assets	15.69	13.58	11.77	10.20	8.85
Current Assets					
Sundry Debtors	4.06	4.95	5.66	6.38	7.09
Stock in Hand	6.01	7.01	8.02	9.02	10.02
Cash and Bank	10.75	19.01	28.89	41.48	57.71
Deposits & Advances	2.50	2.75	3.03	3.33	3.66
TOTAL :	39.01	47.31	57.36	70.41	87.33
	-	-	-	-	-

PROJECTED PROFITABILITY STATEMENT

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>A) SALES</u>					
Gross Sale	81.23	99.04	113.29	127.54	141.79
Total (A)	81.23	99.04	113.29	127.54	141.79
<u>B) COST OF SALES</u>					
Raw Mateiral Consumed	51.84	60.48	69.12	77.76	86.40
Elecricity Expenses	1.72	2.01	2.29	2.58	2.86
Repair & Maintenance	-	0.99	1.13	1.28	1.42
Labour & Wages	5.28	5.81	6.39	7.03	7.73
Depriciation	2.42	2.10	1.81	1.56	1.35
Consumables,packaging and Other Expenses	4.06	4.95	5.66	6.38	7.09
Cost of Production	65.32	76.34	86.41	96.58	106.85
Add: Opening Stock /WIP	-	3.42	3.99	4.56	5.13
Less: Closing Stock /WIP	3.42	3.99	4.56	5.13	5.70
Cost of Sales (B)	61.90	75.77	85.84	96.01	106.28
<u>C) GROSS PROFIT (A-B)</u>					
	19.33	23.27	27.45	31.53	35.51
	24%	23%	24%	25%	25%
D) Bank Interest (Term Loan)	1.46	1.77	1.28	0.79	0.32
Bank Interest (C.C. Limit)	0.92	0.92	0.92	0.92	0.92
E) Salary to Staff	4.49	4.94	5.43	5.97	6.57
F) Selling & Adm Expenses Exp.	1.62	1.98	2.27	2.55	2.84
TOTAL (D+E)	8.49	9.60	9.89	10.23	10.64
H) NET PROFIT	10.84	13.67	17.55	21.29	24.86
I) Taxation	1.08	1.37	3.51	4.26	4.97
J) PROFIT (After Tax)	9.76	12.30	14.04	17.03	19.89

PROJECTED CASH FLOW STATEMENT

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>SOURCES OF FUND</u>					
Share Capital	2.77	-			
Reserve & Surplus	10.84	13.67	17.55	21.29	24.86
Depriciation & Exp. W/off	2.42	2.10	1.81	1.56	1.35
Increase in Cash Credit	7.98	-	-	-	-
Increase In Term Loan	16.94	-	-	-	-
Increase in Creditors	1.21	0.20	0.20	0.20	0.20
Increase in Provisions	0.36	0.04	0.04	0.04	0.05
TOTAL :	42.51	16.01	19.61	23.10	26.46
<u>APPLICATION OF FUND</u>					
Increase in Fixed Assets	18.10	-	-	-	-
Increase in Stock	6.01	1.00	1.00	1.00	1.00
Increase in Debtors	4.06	0.89	0.71	0.71	0.71
Increase in Deposits & Adv	2.50	0.25	0.28	0.30	0.33
Repayment of Term Loan	-	4.23	4.23	4.23	3.22
Taxation	1.08	1.37	3.51	4.26	4.97
TOTAL :	31.76	7.74	9.73	10.51	10.24
Opening Cash & Bank Balance	-	10.75	19.01	28.89	41.48
Add : Surplus	10.75	8.27	9.87	12.59	16.22
Closing Cash & Bank Balance	10.75	19.01	28.89	41.48	57.71

COMPUTATION OF MANUFACTURING OF RED OXIDE

Items to be Manufactured

Red Oxide

Manufacturing Capacity per day	-	1.00	MT
	-		
No. of Working Hour		8	
No of Working Days per month		25	
No. of Working Day per annum		300	
Total Production per Annum		300.00	MT
Year		Capacity	MT
		Utilisation	
IST YEAR		60%	180
IIND YEAR		70%	210
IIIRD YEAR		80%	240
IVTH YEAR		90%	270
VTH YEAR		100%	300

COMPUTATION OF RAW MATERIAL

Item Name		Quantity of Raw Material MT	Recovery	Unit Rate of /MT	Total Cost Per Annum (100%)
Ferrous Sulphate heptahydrate	100%	300.00	100.00%	22,000.00	6,600,000.00
Sulphuric Acid	100%	150.00	100.00%	10,000.00	1,500,000.00
Sodium Carbonate	100%	180.00	100.00%	3,000.00	540,000.00
Total (Rounded off in lacs)					8,640,000.00
Annual Consumption cost	(In Lacs)				86.40

Raw Material Consumed	Capacity Utilisation	Amount (Rs.)
IST YEAR	60%	51.84
IIND YEAR	70%	60.48
IIIRD YEAR	80%	69.12
IVTH YEAR	90%	77.76
VTH YEAR	100%	86.40

COMPUTATION OF CLOSING STOCK & WORKING CAPITAL

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>Finished Goods</u>					
(30Days requirement)	3.42	3.99	4.56	5.13	5.70
<u>Raw Material</u>					
(30 Days requirement)	2.59	3.02	3.46	3.89	4.32
Closing Stock	6.01	7.01	8.02	9.02	10.02

COMPUTATION OF WORKING CAPITAL REQUIREMENT

Particulars			Total
			Amount
Stock in Hand			6.01
Sundry Debtors			4.06
		Total	10.07
Sundry Creditors			1.21
Working Capital Requirement			8.86
Margin			0.89
Working Capital Finance			7.98

BREAK UP OF LABOUR

Particulars		Wages	No of	Total
		Per Month	Employees	Salary
Chemist/Supervisor		12,000.00	1	12,000.00
Skilled Worker		8,000.00	2	16,000.00
Unskilled Worker		6,000.00	4	24,000.00
				40,000.00
Add: 10% Fringe Benefit				4,000.00
Total Labour Cost Per Month				44,000.00
Total Labour Cost for the year (In Rs. Lakhs)			7	5.28

BREAK UP OF SALARY

Particulars		Salary	No of	Total
		Per Month	Employees	Salary
Manager		15,000.00	1	15,000.00
Accountant		9,000.00	1	9,000.00
Sales		10,000.00	1	10,000.00
Total Salary Per Month				34,000.00
Add: 10% Fringe Benefit				3,400.00
Total Salary for the month				37,400.00
Total Salary for the year (In Rs. Lakhs)			3	4.49

COMPUTATION OF DEPRECIATION

Description	Land	Building/shed	Plant & Machinery	Furniture	TOTAL
Rate of Depreciation		10.00%	15.00%	10.00%	
Opening Balance	Leased	-	-	-	-
Addition	-	5.00	12.60	0.50	18.10
	-	5.00	12.60	0.50	18.10
Less : Depreciation	-	0.50	1.89	0.03	2.42
WDV at end of Ist year	-	4.50	10.71	0.48	15.69
Additions During The Year	-	-	-	-	-
	-	4.50	10.71	0.48	15.69
Less : Depreciation	-	0.45	1.61	0.05	2.10
WDV at end of IInd Year	-	4.05	9.10	0.43	13.58
Additions During The Year	-	-	-	-	-
	-	4.05	9.10	0.43	13.58
Less : Depreciation	-	0.41	1.37	0.04	1.81
WDV at end of IIIrd year	-	3.65	7.74	0.38	11.77
Additions During The Year	-	-	-	-	-
	-	3.65	7.74	0.38	11.77
Less : Depreciation	-	0.36	1.16	0.04	1.56
WDV at end of IV year	-	3.28	6.58	0.35	10.20
Additions During The Year	-	-	-	-	-
	-	3.28	6.58	0.35	10.20
Less : Depreciation	-	0.33	0.99	0.03	1.35
WDV at end of Vth year	-	2.95	5.59	0.31	8.85

REPAYMENT SCHEDULE OF TERM LOAN

11.5%

Year	Particulars	Amount	Addition	Total	Interest	Repayment	CI Balance
IST YEAR	Opening Balance						
	Ist Quarter	-	16.94	16.94	-	-	16.94
	Iind Quarter	16.94	-	16.94	0.49	-	16.94
	IIIrd Quarter	16.94	-	16.94	0.49	-	16.94
	Ivth Quarter	16.94	-	16.94	0.49	-	16.94
					1.46	-	
IIND YEAR	Opening Balance						
	Ist Quarter	16.94	-	16.94	0.49	1.06	15.88
	Iind Quarter	15.88	-	15.88	0.46	1.06	14.82
	IIIrd Quarter	14.82	-	14.82	0.43	1.06	13.76
	Ivth Quarter	13.76		13.76	0.40	1.06	12.70
					1.77	4.23	
IIIRD YEAR	Opening Balance						
	Ist Quarter	12.70	-	12.70	0.37	1.06	11.64
	Iind Quarter	11.64	-	11.64	0.33	1.06	10.59
	IIIrd Quarter	10.59	-	10.59	0.30	1.06	9.53
	Ivth Quarter	9.53		9.53	0.27	1.06	8.47
					1.28	4.23	
IVTH YEAR	Opening Balance						
	Ist Quarter	8.47	-	8.47	0.24	1.06	7.41
	Iind Quarter	7.41	-	7.41	0.21	1.06	6.35
	IIIrd Quarter	6.35	-	6.35	0.18	1.06	5.29
	Ivth Quarter	5.29		5.29	0.15	1.06	4.23
					0.79	4.23	
VTH YEAR	Opening Balance						
	Ist Quarter	4.23	-	4.23	0.12	1.06	3.18
	Iind Quarter	3.18	-	3.18	0.09	1.06	2.12
	IIIrd Quarter	2.12	-	2.12	0.06	0.55	1.57
	Ivth Quarter	1.57		1.57	0.05	0.55	1.02
					0.32	3.22	

CALCULATION OF D.S.C.R

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>CASH ACCRUALS</u>	12.17	14.41	15.86	18.60	21.24
Interest on Term Loan	1.46	1.77	1.28	0.79	0.32
Total	13.63	16.17	17.14	19.39	21.56
<u>REPAYMENT</u>					
Instalment of Term Loan	4.23	4.23	4.23	3.22	3.22
Interest on Term Loan	1.46	1.77	1.28	0.79	0.32
Total	5.70	6.00	5.51	4.01	3.54
DEBT SERVICE COVERAGE RAT	2.39	2.70	3.11	4.84	6.10
AVERAGE D.S.C.R.			3.83		

COMPUTATION OF SALE

Particulars	IST YEAR	IIND YEAR	IIRD YEAR	IVTH YEAR	VTH YEAR
Op Stock	-	9.00	10.50	12.00	13.50
Production	180.00	210.00	240.00	270.00	300.00
	180.00	219.00	250.50	282.00	313.50
Less : Closing Stock	9.00	10.50	12.00	13.50	15.00
Net Sale	171.00	208.50	238.50	268.50	298.50
Sale Price per MT	47,500.00	47,500.00	47,500.00	47,500.00	47,500.00
Sale (in Lacs)	81.23	99.04	113.29	127.54	141.79

COMPUTATION OF ELECTRICITY**(A) POWER CONNECTION**

Total Working Hour per day	Hours	8	
Electric Load Required	HP	20	
Load Factor		0.7460	
Electricity Charges	per unit	8.00	
Total Working Days		300	
Electricity Charges (8 Hrs Per day)			286,464.00

Add : Minimim Charges (@ 10%)

(B) D.G. SET

No. of Working Days		300	days
No of Working Hours		-	Hour per day
Total no of Hour		-	
Diesel Consumption per Hour		8	
Total Consumption of Diesel		-	
Cost of Diesel		65.00	Rs. /Ltr
Total cost of Diesel		-	
Add : Lube Cost @15%		-	
Total		-	

Total cost of Power & Fuel at 100%

2.86

Year	Capacity	Amount (in Lacs)
IST YEAR	60%	1.72
IIND YEAR	70%	2.01
IIIRD YEAR	80%	2.29
IVTH YEAR	90%	2.58
VTH YEAR	100%	2.86

BREAK EVEN POINT ANALYSIS

Year	I	II	III	IV	V
Net Sales & Other Income	81.23	99.04	113.29	127.54	141.79
Less : Op. WIP Goods	-	3.42	3.99	4.56	5.13
Add : Cl. WIP Goods	3.42	3.99	4.56	5.13	5.70
Total Sales	84.65	99.61	113.86	128.11	142.36
Variable & Semi Variable Exp.					
Raw Material & Tax	51.84	60.48	69.12	77.76	86.40
Electricity Exp/Coal Consumption at 85%	1.46	1.70	1.95	2.19	2.43
Manufacturing Expenses 80%	3.25	4.75	5.44	6.12	6.81
Wages & Salary at 60%	5.86	6.45	7.09	7.80	8.58
Selling & administrative Expenses 80%	1.30	1.58	1.81	2.04	2.27
Intt. On Working Capital Loan	0.92	0.92	0.92	0.92	0.92
Total Variable & Semi Variable Exp	64.63	75.89	86.33	96.83	107.41
Contribution	20.02	23.72	27.53	31.28	34.95
Fixed & Semi Fixed Expenses					
Manufacturing Expenses 20%	0.81	1.19	1.36	1.53	1.70
Electricity Exp/Coal Consumption at 15%	0.26	0.30	0.34	0.39	0.43
Wages & Salary at 40%	3.91	4.30	4.73	5.20	5.72
Interest on Term Loan	1.46	1.77	1.28	0.79	0.32
Depreciation	2.42	2.10	1.81	1.56	1.35
Selling & administrative Expenses 20%	0.32	0.40	0.45	0.51	0.57
Total Fixed Expenses	9.18	10.05	9.98	9.98	10.09
Capacity Utilization	60%	70%	80%	90%	100%
OPERATING PROFIT	10.84	13.67	17.55	21.29	24.86
BREAK EVEN POINT	28%	30%	29%	29%	29%
BREAK EVEN SALES	38.81	42.21	41.26	40.89	41.09

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