

PROJECT REPORT

Of

MAGNESIUM SULPHATE

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding **Magnesium Sulphate**

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 MAGNESIUM SULPHATE



INTRODUCTION:

Magnesium sulphate is a chemical compound containing Magnesium Sulphur & Oxygen with the formula $MgSO_4$. It has a tendency to absorb water from the atmosphere, so it is often found in hydrated form i.e. $MgSO_4 \cdot 7H_2O$. Magnesium Heptahydrate, also known as Epsom Salt is the most commonly available form of Magnesium sulphate. It is an important raw material used in Pharmaceuticals.

MARKET POTENTIAL:

Magnesium Sulphate has a variety of uses, both in anhydrous (powder / flakes) form as well as hydrated form. The product is used in pharmaceutical industries as a purgative and has a wide market in pharmaceutical industries in different parts of the country. Some of the key medicinal values of Magnesium sulphate or Epsom salt are as under :

- When used orally, it acts as a laxative. It helps the removal of undigested food present in the large intestine and by stimulating bowel movement, it acts as a remedy for constipation.
- Magnesium Sulphate when administered in the veins or muscles of pregnant women, helps to delay premature labor and thereby prevent a premature birth.
- Magnesium Sulphate is also used to treat severe attacks of Asthma.
- Epsom salts dissolved in water and applied on the joints can give relief to joint pains of arthritic patients.
- It acts as a cosmetic agent and is easily absorbed in to the skin. Thus it helps in cleanings, soothing inflammations like boils and preventing wrinkling of the skin.
- Epsom salt is also good for many hair – related problems. When applied with shampoo, it absorbs the excess oil from oily hair, and adds glow and bounce to the hair. A warm mixture of Hair conditioner and Epsom salt, when used on hair is said to give it a shine.

In Agriculture & gardening, it is used to correct Magnesium deficiency. Magnesium Sulphate is used in bath salts, particularly in flotation therapy, where high concentrations raise the bath water's specific gravity, effectively making the body more buoyant. Anhydrous Magnesium Sulphate is commonly used as a desiccant in organic synthesis due to its affinity to water. It may also be used as a coagulant for making tofu.

BASIS AND PRESUMPTIONS:

- The estimates are drawn for a production capacity generally considered techno economically viable for model type of manufacturing activity.
- The production is based on single shift of eight hours and 300 working days per annum.
- The cost in respect of Plant & Machinery has been taken at the time of preparation of Project Profile, which may vary from place to place and time to time.
- The project is based on standard type of manufacturing activity utilizing conventional techniques of production at optimum levels of performance.

IMPLEMENTATION SCHEDULE:

It will take about eight months to start commercial production as under:

Sr. No.	Activity	Estimated Period
1.	Registration under MSME Act	0-1 Month
2.	Preparation of scheme	0-1 Month
3.	Sanction of loan	1-5 Month
4.	Placement of Order for Plant & Machinery	5-6 Month
5.	Power & Water Connection	5-6 Month
6.	Installation of Plant & Machinery	6-7 Month
7.	Procurement of Raw material & Trial Run	7-8 Month
8.	Commercial Production	8 th Month onwards

TECHNICAL ASPECTS:

a. Production Capacity : 450 M.T. Per Annum

b. Quality Control & Standards : As per IP Standards

Physical & Chemical Properties:

Appearance : Transparent Crystals or
White Powder. Odor : Odorless
Solubility : Soluble in water.
pH : Aqueous solution is neutral or
slightly acidic. Melting Point : 1124⁰C
Stability : Stable under ordinary conditions of use & storage.

MANUFACTURING METHOD :

Calcined Magnetite Powder is purified mainly from iron impurities by passing it through magnetic separator. Magnesite powder is then reacted with dilute Sulphuric Acid solution. After completion of the reaction the solution is transferred to evaporator, where it is concentrated. The hot concentrated solution is then fed to Crystallizer. The crystals are then centrifuged, dried and packed.

HANDLING AND STORAGE :

Keep in tightly closed containers, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous, when empty since they retain product residues (Dust, solids etc.).

FINANCIAL ASPECTS:

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.14.15 Lacs
 KVIC Margin Money - As per Project Eligibility
 Own Capital Rs.2.15 Lacs
 Working Capital Rs.5.21 Lacs
- 9 Debt Service Coverage Ratio : 2.50
- 10 Pay Back Period : 5 Years
- 11 Project Implementation Period : 8 Months
- 12 Break Even Point : 37%
- 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 : 30.38 Lacs
- 16 Detailed Cost of Project & Means of Finance

COST OF PROJECT

(Rs. In Lacs)

Particulars	Amount
Land	Rented/Owned
Building & Civil Work (2500 Sq Ft)	5.00
Plant & Machinery	9.50
Furniture & Fixtures	0.50
Pre-operative Expenses	0.72
Working Capital Requirement	5.79
Total	21.50

MEANS OF FINANCE

Particulars	Amount
Own Contribution @10%	2.15
Term Loan	14.15
Workign Capital Finance	5.21
Total	21.50

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

PLANT & MACHINERY

PARTICULARS	QTY.	RATE	AMOUNT IN RS.
Magnetic Separator	2	15,000.00	30,000.00
Stone ware vessels 100 Lit. capacity	15	4,000.00	60,000.00
Evaporator S.S.M.S. Jacket 500 Lit.capacity	2	50,000.00	100,000.00
Crystallizer SS with M.S. cooling jacket500 lit. capacity.	2	55,000.00	110,000.00
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
Filter Press 16 M.S. Plates	1	60,000.00	60,000.00
Drier 48 Tray. Model 32"x32"x4" Elec.	1	125,000.00	125,000.00
Laboratory Equipments	1S	25,000.00	25,000.00
Misc. equipments such as M.S. Storage tank, pump & furniture etc.	1S	50,000.00	50,000.00
Installation of plant & machinery @ 10%of the cost of plant & Machinery.			85,000.00
Total			950,000.00

PROJECTED BALANCE SHEET

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>SOURCES OF FUND</u>					
Capital Account	2.15	2.15	2.15	2.15	2.15
Retained Profit	4.08	9.95	17.18	26.31	37.25
Term Loan	14.15	10.61	7.07	3.54	0.67
Cash Credit	5.21	5.21	5.21	5.21	5.21
Sundry Creditors	0.29	0.34	0.39	0.43	0.48
Provisions & Other Liab	0.36	0.40	0.44	0.48	0.53
TOTAL :	26.25	28.66	32.44	38.13	46.29
<u>APPLICATION OF FUND</u>					
Fixed Assets (Gross)	15.00	15.00	15.00	15.00	15.00
Gross Dep.	1.95	3.66	5.14	6.41	7.52
Net Fixed Assets	13.05	11.34	9.86	8.59	7.48
Current Assets					
Sundry Debtors	1.52	1.94	2.22	2.50	2.78
Stock in Hand	4.56	5.32	6.08	6.84	7.61
Cash and Bank	4.61	7.31	11.24	16.87	24.76
Deposits & Advances	2.50	2.75	3.03	3.33	3.66
TOTAL :	26.25	28.66	32.44	38.13	46.29
	-	-	-	-	-

PROJECTED PROFITABILITY STATEMENT

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>A) SALES</u>					
Gross Sale	30.38	38.81	44.44	50.06	55.69
Total (A)	30.38	38.81	44.44	50.06	55.69
<u>B) COST OF SALES</u>					
Raw Mateiral Consumed	12.42	14.49	16.56	18.63	20.70
Elecricity Expenses	1.72	2.01	2.29	2.58	2.86
Repair & Maintenance	-	0.39	0.44	0.50	0.56
Labour & Wages	6.07	6.68	7.35	8.08	8.89
Depriciation	1.95	1.71	1.48	1.28	1.11
Consumables,packaging and Other Expenses	1.52	1.94	2.22	2.50	2.78
Cost of Production	23.68	27.21	30.34	33.57	36.90
Add: Opening Stock /WIP	-	2.70	3.15	3.60	4.05
Less: Closing Stock /WIP	2.70	3.15	3.60	4.05	4.50
Cost of Sales (B)	20.98	26.76	29.89	33.12	36.45
<u>C) GROSS PROFIT (A-B)</u>					
	9.40	12.05	14.55	16.94	19.24
	31%	31%	33%	34%	35%
D) Bank Interest (Term Loan)	1.22	1.47	1.07	0.66	0.26
Bank Interest (C.C. Limit)	0.52	0.52	0.52	0.52	0.52
E) Salary to Staff	2.51	2.76	3.03	3.34	3.67
F) Selling & Adm Expenses Exp.	0.61	0.78	0.89	1.00	1.11
TOTAL (D+E)	4.86	5.53	5.51	5.52	5.57
H) NET PROFIT	4.54	6.52	9.03	11.42	13.66
I) Taxation	0.45	0.65	1.81	2.28	2.73
J) PROFIT (After Tax)	4.08	5.87	7.23	9.14	10.93

PROJECTED CASH FLOW STATEMENT

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>SOURCES OF FUND</u>					
Share Capital	2.15	-			
Reserve & Surplus	4.54	6.52	9.03	11.42	13.66
Depriciation & Exp. W/off	1.95	1.71	1.48	1.28	1.11
Increase in Cash Credit	5.21	-	-	-	-
Increase In Term Loan	14.15	-	-	-	-
Increase in Creditors	0.29	0.05	0.05	0.05	0.05
Increase in Provisions	0.36	0.04	0.04	0.04	0.05
TOTAL :	28.65	8.31	10.60	12.79	14.87
<u>APPLICATION OF FUND</u>					
Increase in Fixed Assets	15.00	-	-	-	-
Increase in Stock	4.56	0.76	0.76	0.76	0.76
Increase in Debtors	1.52	0.42	0.28	0.28	0.28
Increase in Deposits & Adv	2.50	0.25	0.28	0.30	0.33
Repayment of Term Loan	-	3.54	3.54	3.54	2.87
Taxation	0.45	0.65	1.81	2.28	2.73
TOTAL :	24.04	5.62	6.66	7.17	6.98
Opening Cash & Bank Balance	-	4.61	7.31	11.24	16.87
Add : Surplus	4.61	2.69	3.94	5.62	7.89
Closing Cash & Bank Balance	4.61	7.31	11.24	16.87	24.76

COMPUTATION OF MANUFACTURING OF MAGNESIUM SULPHATE

Items to be Manufactured Magnesium Sulphate MgSO₄

Manufacturing Capacity per day	-	1.50	MT
	-		
No. of Working Hour		8	
No of Working Days per month		25	
No. of Working Day per annum		300	
Total Production per Annum		450.00	MT
Year		Capacity	MT
		Utilisation	
IST YEAR		60%	270
IIND YEAR		70%	315
IIIRD YEAR		80%	360
IVTH YEAR		90%	405
VTH YEAR		100%	450

COMPUTATION OF RAW MATERIAL

Item Name		Quantity of Raw Material MT	Recovery	Unit Rate of /MT	Total Cost Per Annum (100%)
Dead Burnt Magnetic MgO content	100%	90.00	100.00%	6,000.00	540,000.00
Sulphuric Acid 98%	100%	180.00	100.00%	8500.00	1,530,000.00
Total (Rounded off in lacs)					2,070,000.00
Annual Consumption cost	(In Lacs)				20.70

Raw Material Consumed	Capacity Utilisation	Amount (Rs.)
IST YEAR	60%	12.42
IIND YEAR	70%	14.49
IIIRD YEAR	80%	16.56
IVTH YEAR	90%	18.63
VTH YEAR	100%	20.70

COMPUTATION OF CLOSING STOCK & WORKING CAPITAL

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>Finished Goods</u>					
(30Days requirement)	2.70	3.15	3.60	4.05	4.50
<u>Raw Material</u>					
(30 Days requirement)	1.86	2.17	2.48	2.79	3.11
Closing Stock	4.56	5.32	6.08	6.84	7.61

COMPUTATION OF WORKING CAPITAL REQUIREMENT

Particulars			Total
			Amount
Stock in Hand			4.56
Sundry Debtors			1.52
		Total	6.08
Sundry Creditors			0.29
Working Capital Requirement			5.79
Margin			0.58
Working Capital Finance			5.21

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	5	30,000.00
				46,000.00
Add: 10% Fringe Benefit				4,600.00
Total Labour Cost Per Month				50,600.00
Total Labour Cost for the year (In Rs. Lakhs)			8	6.07

BREAK UP OF SALARY

Particulars		Salary	No of	Total
		Per Month	Employees	Salary
-		-	-	-
Accountant		9,000.00	1	9,000.00
Sales		10,000.00	1	10,000.00
Total Salary Per Month				19,000.00
Add: 10% Fringe Benefit				1,900.00
Total Salary for the month				20,900.00
Total Salary for the year (In Rs. Lakhs)			2	2.51

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	9.50	0.50	15.00
	-	5.00	9.50	0.50	15.00
Less : Depreciation	-	0.50	1.43	0.03	1.95
WDV at end of Ist year	-	4.50	8.08	0.48	13.05
Additions During The Year	-	-	-	-	-
	-	4.50	8.08	0.48	13.05
Less : Depreciation	-	0.45	1.21	0.05	1.71
WDV at end of IInd Year	-	4.05	6.86	0.43	11.34
Additions During The Year	-	-	-	-	-
	-	4.05	6.86	0.43	11.34
Less : Depreciation	-	0.41	1.03	0.04	1.48
WDV at end of IIIrd year	-	3.65	5.83	0.38	9.86
Additions During The Year	-	-	-	-	-
	-	3.65	5.83	0.38	9.86
Less : Depreciation	-	0.36	0.88	0.04	1.28
WDV at end of IV year	-	3.28	4.96	0.35	8.59
Additions During The Year	-	-	-	-	-
	-	3.28	4.96	0.35	8.59
Less : Depreciation	-	0.33	0.74	0.03	1.11
WDV at end of Vth year	-	2.95	4.22	0.31	7.48

REPAYMENT SCHEDULE OF TERM LOAN

11.5%

Year	Particulars	Amount	Addition	Total	Interest	Repayment	CI Balance
IST YEAR	Opening Balance						
	Ist Quarter	-	14.15	14.15	-	-	14.15
	Iind Quarter	14.15	-	14.15	0.41	-	14.15
	IIIrd Quarter	14.15	-	14.15	0.41	-	14.15
	Ivth Quarter	14.15	-	14.15	0.41	-	14.15
					1.22	-	
IIND YEAR	Opening Balance						
	Ist Quarter	14.15	-	14.15	0.41	0.88	13.26
	Iind Quarter	13.26	-	13.26	0.38	0.88	12.38
	IIIrd Quarter	12.38	-	12.38	0.36	0.88	11.50
	Ivth Quarter	11.50		11.50	0.33	0.88	10.61
					1.47	3.54	
IIIRD YEAR	Opening Balance						
	Ist Quarter	10.61	-	10.61	0.31	0.88	9.73
	Iind Quarter	9.73	-	9.73	0.28	0.88	8.84
	IIIrd Quarter	8.84	-	8.84	0.25	0.88	7.96
	Ivth Quarter	7.96		7.96	0.23	0.88	7.07
					1.07	3.54	
IVTH YEAR	Opening Balance						
	Ist Quarter	7.07	-	7.07	0.20	0.88	6.19
	Iind Quarter	6.19	-	6.19	0.18	0.88	5.31
	IIIrd Quarter	5.31	-	5.31	0.15	0.88	4.42
	Ivth Quarter	4.42		4.42	0.13	0.88	3.54
					0.66	3.54	
VTH YEAR	Opening Balance						
	Ist Quarter	3.54	-	3.54	0.10	0.88	2.65
	Iind Quarter	2.65	-	2.65	0.08	0.88	1.77
	IIIrd Quarter	1.77	-	1.77	0.05	0.55	1.22
	Ivth Quarter	1.22		1.22	0.04	0.55	0.67
					0.26	2.87	

CALCULATION OF D.S.C.R

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>CASH ACCRUALS</u>	6.03	7.58	8.70	10.41	12.04
Interest on Term Loan	1.22	1.47	1.07	0.66	0.26
Total	7.25	9.05	9.77	11.07	12.30
<u>REPAYMENT</u>					
Instalment of Term Loan	3.54	3.54	3.54	2.87	2.87
Interest on Term Loan	1.22	1.47	1.07	0.66	0.26
Total	4.76	5.01	4.60	3.53	3.13
DEBT SERVICE COVERAGE RAT	1.53	1.81	2.12	3.14	3.93
AVERAGE D.S.C.R.			2.50		

COMPUTATION OF SALE

Particulars	IST YEAR	IIND YEAR	IIRD YEAR	IVTH YEAR	VTH YEAR
Op Stock	-	27.00	31.50	36.00	40.50
Production	270.00	315.00	360.00	405.00	450.00
	270.00	342.00	391.50	441.00	490.50
Less : Closing Stock	27.00	31.50	36.00	40.50	45.00
Net Sale	243.00	310.50	355.50	400.50	445.50
Sale Price per MT	12,500.00	12,500.00	12,500.00	12,500.00	12,500.00
Sale (in Lacs)	30.38	38.81	44.44	50.06	55.69

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	30.38	38.81	44.44	50.06	55.69
Less : Op. WIP Goods	-	2.70	3.15	3.60	4.05
Add : Cl. WIP Goods	2.70	3.15	3.60	4.05	4.50
Total Sales	33.08	39.26	44.89	50.51	56.14
Variable & Semi Variable Exp.					
Raw Material & Tax	12.42	14.49	16.56	18.63	20.70
Electricity Exp/Coal Consumption at 85%	1.46	1.70	1.95	2.19	2.43
Manufacturing Expenses 80%	1.22	1.86	2.13	2.40	2.67
Wages & Salary at 60%	5.15	5.66	6.23	6.85	7.54
Selling & administrative Expenses 80%	0.49	0.62	0.71	0.80	0.89
Intt. On Working Capital Loan	0.52	0.52	0.52	0.52	0.52
Total Variable & Semi Variable Exp	21.25	24.86	28.10	31.40	34.76
Contribution	11.82	14.40	16.79	19.11	21.38
Fixed & Semi Fixed Expenses					
Manufacturing Expenses 20%	0.30	0.47	0.53	0.60	0.67
Electricity Exp/Coal Consumption at 15%	0.26	0.30	0.34	0.39	0.43
Wages & Salary at 40%	3.43	3.78	4.15	4.57	5.02
Interest on Term Loan	1.22	1.47	1.07	0.66	0.26
Depreciation	1.95	1.71	1.48	1.28	1.11
Selling & administrative Expenses 20%	0.12	0.16	0.18	0.20	0.22
Total Fixed Expenses	7.29	7.88	7.75	7.69	7.72
Capacity Utilization	60%	70%	80%	90%	100%
OPERATING PROFIT	4.54	6.52	9.03	11.42	13.66
BREAK EVEN POINT	37%	38%	37%	36%	36%
BREAK EVEN SALES	20.38	21.49	20.73	20.34	20.26

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