



# MODEL PROJECT REPORT



## PROJECT REPORT ON ALUM

**SWAVALAMBI BHARAT ABHIYAN**

## PROJECT AT A GLANCE

- 1 Name of the Entrepreneur : xxxxxxxxxx
- 2 Constitution (legal Status) : xxxxxxxxxx
- 3 Father / Spouse Name : xxxxxxxxxx
- 4 Unit Address : xxxxxxxxxxxxxxxxxxxxxx
- District : xxxxxxxx
- Pin: xxxxxxxx State: xxxxx
- Mobile xxxxxxxx
- 5 Product and By Product : **ALUM**
- 6 Name of the project / business activity proposed : **ALUM MANUFACTURING UNIT**
- 7 Cost of Project : Rs.23.89 Lakhs
- 8 Means of Finance
- Term Loan Rs.14.76 Lakhs
- Own Capital Rs.2.39 Lakhs
- Working Capital Rs.6.74 Lakhs
- 9 Debt Service Coverage Ratio : 2.87
- 10 Pay Back Period : 5 Years
- 11 Project Implementation Period : 5-6 Months
- 12 Break Even Point : 28%
- 13 Employment : 11 Persons
- 14 Power Requirement : 34.00 HP
- 15 Major Raw materials : Bauxite, Potassium Sulphate, Concentrated Sulphuric Acid,  
Potassium Sulphate, Distilled Water and other materials
- 16 Estimated Annual Sales Turnover (Max Capacity) : 166.55 Lakhs
- 17 Detailed Cost of Project & Means of Finance

### COST OF PROJECT

(Rs. In Lakhs)

Particulars	Amount
Land	Own/Rented
Plant & Machinery	15.40
Furniture & Fixtures	1.00
Working Capital	7.49
<b>Total</b>	<b>23.89</b>

### MEANS OF FINANCE

Particulars	Amount
Own Contribution	2.39
Working Capital(Finance)	6.74
Term Loan	14.76
<b>Total</b>	<b>23.89</b>

# ALUM MANUFACTURING UNIT

## Introduction:

Alums are hydrated double sulphate salt of aluminum with the general formula  $X(Al_2SO_4)_2 \cdot 12 H_2O$ , where “X” can be a monovalent cation such as the Potassium or the Ammonium cation. However, the tripositive ion, aluminum, are also replaced by Chromium and Iron ions. The name “Alum” is also more generally used for salts with the same chemical formula and structure, except for the fact that aluminum is replaced by other tri-positive metal ions such as Chromium (III), example being Chrome Alum which is  $K Cr(SO_4)_2 \cdot 12 H_2O$ . Those containing Iron sulphate are termed as “Ferric Alum” while those that contain Chromium and Aluminum Sulphate are called “Non-Ferric Alum”. By itself, “Alum” generally refers to Potassium Alum with the formula  $K(Al_2SO_4)_2 \cdot 12 H_2O$ . Other alums are named after the monovalent cation that is present in the compound such as the Sodium alum when sodium cation is present, Ammonium alum when ammonium ions are present, etc. The cheapest grade of Alum is called “Alum Cake”. Potash Alum is also known as “Alum Alumen”. Though Alum can be recovered from its naturally occurring minerals like Alunite and Kalinite, but they are not much available in India.



## **Uses & Market Potential:**

The commercial uses of the alum stem from the hydrolysis of the aluminum ions in the alum to form aluminum hydroxide which precipitates out in the medium. In the paper industries, paper is sized by depositing aluminum hydroxide from the alum in the interstices of the Cellulose fiber. In the Clothing industries, it is used as a mordant (binder) to fix the dyes to the cottons and other types of fabrics, rendering the dye insoluble.

The most common alum which is Aluminum Potassium Sulphate. It is also known as Potash Alum, Alum flour, or Alum meal. It finds extensive usage in different industries which is the major driving factor for the growth of the Alum Market. Alums are natural astringents that have the ability to constrict the body tissues and restrict blood flow. Owing to this, it is added to many drugs and thus finds application in the pharmaceutical industry. It also has antiperspirant and antimicrobial properties and thus also used as a deodorant. It is because of this that it is a common ingredient in many Soap formulations. It is a great dye fixative and thus aids in strong fixation of the dyes to a fabric and thus valued in the Dye industries as a mordant. Along with this it also finds usage in the Paper, Fabric, and Chemical industries. Potash alum also finds usage in the water treatment industries due to its antimicrobial properties and also due to its coagulating properties. In agricultural industry, aluminum potassium sulphate is known for enriching the potassium content in the soil when added to the fertilizers. Thus, it can be concluded that Potash Alum finds usage as an ingredient in different industries and thus the global market for Potash Alum is expected to record a steady growth in the forecast period of 2020 – 2030.

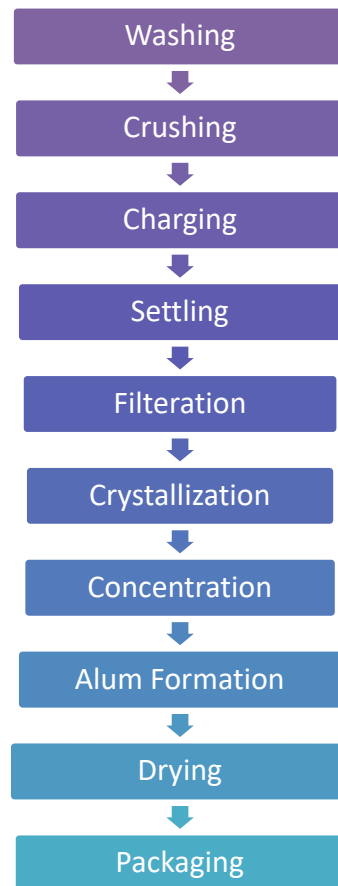
## **Product:**

Alum (Phitkari)

## **Raw Material:**

Raw material that is used are Bauxite, Potassium Sulphate, Concentrated Sulphuric Acid, Potassium Sulphate, Distilled Water, Flaked glue and Black Ash.

## **Manufacturing Process:**



## **Area:**

The industrial setup requires space for Inventory, workshop or manufacturing area, space for power supply utilities and polishing area. Also, some of the area of building is required for office staff facilities, office furniture, etc. Thus, the approximate total area required for complete industrial setup is 1500-2000Sqft.

### **Cost of Machines:**

<b>Machine</b>	<b>Unit</b>	<b>Rate</b>	<b>Price</b>
Jaw Crusher	1	300000	300000
Micro-Pulverizer	1	200000	200000
Reaction Digester	1	400000	400000
Crystallization Tank	1	80000	80000
Boiler	1	120000	120000
Water Softening Plant	1	100000	100000
Acid Pump	1	25000	25000
Jacketed and non-jacketed mixing vessels	1	145000	145000
Bag Filling Machine	1	120000	120000
Other equipment's	-	-	50000
<b>Total Amount</b>			<b>1540000</b>

**Power Requirement-** The estimated Power requirement is taken at 34 HP

**Manpower Requirement-** Following manpower is required:

- Machine operator-2
- Skilled/unskilled worker-3
- Helper-4
- Manager cum Accountant-1
- Sales Personnel-1

## **FINANCIALS**

<b><u>PROJECTED BALANCE SHEET</u></b>					
<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b><u>SOURCES OF FUND</u></b>					
<b><u>Capital Account</u></b>					
Opening Balance	-	2.93	4.90	8.16	12.41
Add: Additions	2.39	-	-	-	-
Add: Net Profit	4.54	6.48	8.25	10.26	12.52
Less: Drawings	4.00	4.50	5.00	6.00	8.00
<b>Closing Balance</b>	2.93	4.90	8.16	12.41	16.94
CC Limit	6.74	6.74	6.74	6.74	6.74
Term Loan	13.12	9.84	6.56	3.28	-
Sundry Creditors	2.78	3.25	3.73	4.22	4.74
<b>TOTAL :</b>	<b>25.57</b>	<b>24.74</b>	<b>25.19</b>	<b>26.66</b>	<b>28.42</b>
<b><u>APPLICATION OF FUND</u></b>					
<b>Fixed Assets ( Gross)</b>	16.40	16.40	16.40	16.40	16.40
Gross Dep.	2.41	4.46	6.21	7.71	8.98
Net Fixed Assets	13.99	11.94	10.19	8.69	7.42
<b>Current Assets</b>					
Sundry Debtors	4.49	5.53	6.41	7.34	8.33
Stock in Hand	5.79	6.73	7.73	8.75	9.80
Cash and Bank	1.31	0.54	0.86	1.88	2.87
<b>TOTAL :</b>	<b>25.57</b>	<b>24.74</b>	<b>25.19</b>	<b>26.66</b>	<b>28.42</b>
	-	-	-	-	-

<b><u>PROJECTED PROFITABILITY STATEMENT</u></b>					
<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b><u>A) SALES</u></b>					
Gross Sale	89.78	110.54	128.21	146.86	166.55
<b>Total (A)</b>	<b>89.78</b>	<b>110.54</b>	<b>128.21</b>	<b>146.86</b>	<b>166.55</b>
<b><u>B) COST OF SALES</u></b>					
Raw Material Consumed	55.65	64.92	74.52	84.45	94.71
Electricity Expenses	2.66	3.04	3.42	3.80	4.19
Repair & Maintenance	2.69	2.76	3.21	3.67	4.16
Labour & Wages	15.25	18.60	21.95	25.24	28.52
Depreciation	2.41	2.05	1.75	1.49	1.27
<b>Cost of Production</b>	<b>78.66</b>	<b>91.38</b>	<b>104.85</b>	<b>118.66</b>	<b>132.85</b>
<b>Add: Opening Stock /WIP</b>	<b>-</b>	<b>3.93</b>	<b>4.57</b>	<b>5.24</b>	<b>5.93</b>
<b>Less: Closing Stock /WIP</b>	<b>3.93</b>	<b>4.57</b>	<b>5.24</b>	<b>5.93</b>	<b>6.64</b>
Cost of Sales (B)	74.73	90.74	104.17	117.97	132.14
<b>C) GROSS PROFIT (A-B)</b>	<b>15.05</b>	<b>19.80</b>	<b>24.03</b>	<b>28.89</b>	<b>34.41</b>
	<b>16.76%</b>	<b>17.91%</b>	<b>18.75%</b>	<b>19.67%</b>	<b>20.66%</b>
D) Bank Interest i) (Term Loan )	1.60	1.31	0.95	0.59	0.23
ii) Interest On Working Capital	0.74	0.74	0.74	0.74	0.74
E) Salary to Staff	5.92	7.40	8.59	9.62	10.58
F) Selling & Adm Expenses Exp.	2.24	3.32	4.49	5.87	7.49
<b>G) TOTAL (D+E+F)</b>	<b>10.51</b>	<b>12.77</b>	<b>14.76</b>	<b>16.82</b>	<b>19.04</b>
H) NET PROFIT	4.54	7.03	9.27	12.07	15.37
	<b>5.1%</b>	<b>6.4%</b>	<b>7.2%</b>	<b>8.2%</b>	<b>9.2%</b>
I) Taxation	-	0.55	1.02	1.82	2.84
<b>J) PROFIT (After Tax)</b>	<b>4.54</b>	<b>6.48</b>	<b>8.25</b>	<b>10.26</b>	<b>12.52</b>



<b><u>PROJECTED CASH FLOW STATEMENT</u></b>					
<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b><u>SOURCES OF FUND</u></b>					
Own Contribution	2.39	-	-	-	-
Reserve & Surplus	4.54	7.03	9.27	12.07	15.37
Depreciation & Exp. W/off	2.41	2.05	1.75	1.49	1.27
Increase In Cash Credit	6.74	-	-	-	-
Increase In Term Loan	14.76	-	-	-	-
Increase in Creditors	2.78	0.46	0.48	0.50	0.51
<b>TOTAL :</b>	<b>33.62</b>	<b>9.55</b>	<b>11.50</b>	<b>14.06</b>	<b>17.15</b>
<b><u>APPLICATION OF FUND</u></b>					
Increase in Fixed Assets	16.40	-	-	-	-
Increase in Stock	5.79	0.94	0.99	1.02	1.05
Increase in Debtors	4.49	1.04	0.88	0.93	0.98
Repayment of Term Loan	1.64	3.28	3.28	3.28	3.28
Taxation	-	0.55	1.02	1.82	2.84
Drawings	4.00	4.50	5.00	6.00	8.00
<b>TOTAL :</b>	<b>32.32</b>	<b>10.32</b>	<b>11.17</b>	<b>13.05</b>	<b>16.16</b>
Opening Cash & Bank Balance	-	1.31	0.54	0.86	1.88
Add : Surplus	1.31	- 0.77	0.33	1.01	0.99
Closing Cash & Bank Balance	<b>1.31</b>	<b>0.54</b>	<b>0.86</b>	<b>1.88</b>	<b>2.87</b>

**COMPUTATION OF CLOSING STOCK & WORKING CAPITAL**

<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b><u>Finished Goods</u></b>					
(15 Days requirement)	3.93	4.57	5.24	5.93	6.64
<b><u>Raw Material</u></b>					
(10 Days requirement)	1.86	2.16	2.48	2.82	3.16
<b>Closing Stock</b>	<b>5.79</b>	<b>6.73</b>	<b>7.73</b>	<b>8.75</b>	<b>9.80</b>

**COMPUTATION OF WORKING CAPITAL REQUIREMENT**

<b>Particulars</b>	<b>Amount</b>	<b>Margin(10%)</b>	<b>Net</b>
			<b>Amount</b>
Stock in Hand	5.79		
Less:			
Sundry Creditors	2.78		
<b>Paid Stock</b>	<b>3.01</b>	<b>0.30</b>	<b>2.71</b>
Sundry Debtors	4.49	0.45	4.04
<b>Working Capital Requirement</b>			<b>6.74</b>
<b>Margin</b>			0.75
<b>MPBF</b>			<b>6.74</b>
<b>Working Capital Demand</b>			<b>6.74</b>

REPAYMENT SCHEDULE OF TERM LOAN						11.0%	
Year	Particulars	Amount	Addition	Total	Interest	Repayment	CI Balance
<b>I</b>	Opening Balance						
	Ist Quarter	-	14.76	14.76	0.41	-	14.76
	Iind Quarter	14.76	-	14.76	0.41	-	14.76
	IIIrd Quarter	14.76	-	14.76	0.41	0.82	13.94
	Ivth Quarter	13.94	-	13.94	0.38	0.82	13.12
					1.60	1.64	
<b>II</b>	Opening Balance						
	Ist Quarter	13.12	-	13.12	0.36	0.82	12.30
	Iind Quarter	12.30	-	12.30	0.34	0.82	11.48
	IIIrd Quarter	11.48	-	11.48	0.32	0.82	10.66
	Ivth Quarter	10.66		10.66	0.29	0.82	9.84
					1.31	3.28	
<b>III</b>	Opening Balance						
	Ist Quarter	9.84	-	9.84	0.27	0.82	9.02
	Iind Quarter	9.02	-	9.02	0.25	0.82	8.20
	IIIrd Quarter	8.20	-	8.20	0.23	0.82	7.38
	Ivth Quarter	7.38		7.38	0.20	0.82	6.56
					0.95	3.28	
<b>IV</b>	Opening Balance						
	Ist Quarter	6.56	-	6.56	0.18	0.82	5.74
	Iind Quarter	5.74	-	5.74	0.16	0.82	4.92
	IIIrd Quarter	4.92	-	4.92	0.14	0.82	4.10
	Ivth Quarter	4.10		4.10	0.11	0.82	3.28
					0.59	3.28	
<b>V</b>	Opening Balance						
	Ist Quarter	3.28	-	3.28	0.09	0.82	2.46
	Iind Quarter	2.46	-	2.46	0.07	0.82	1.64
	IIIrd Quarter	1.64	-	1.64	0.05	0.82	0.82
	Ivth Quarter	0.82		0.82	0.02	0.82	- 0.00
					0.23	3.28	
<div> Door to Door Period 60 Months </div> <div> Moratorium Period 6 Months </div> <div> Repayment Period 54 Months </div>							

**CALCULATION OF D.S.C.R**

<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b><u>CASH ACCRUALS</u></b>	6.95	8.53	10.00	11.75	13.79
Interest on Term Loan	1.60	1.31	0.95	0.59	0.23
Total	8.55	9.84	10.95	12.34	14.02
<b><u>REPAYMENT</u></b>					
Repayment of Term Loan	1.64	3.28	3.28	3.28	3.28
Interest on Term Loan	1.60	1.31	0.95	0.59	0.23
Total	3.24	4.59	4.23	3.87	3.51
<b>DEBT SERVICE COVERAGE RATIO</b>	<b>2.64</b>	<b>2.14</b>	<b>2.59</b>	<b>3.19</b>	<b>4.00</b>
<b>AVERAGE D.S.C.R.</b>			<b>2.87</b>		

**Assumptions:**

1. Production Capacity of Alum Manufacturing unit is taken at 10000 KG per day. First year, Capacity has been taken @ 35%.
2. Working shift of 10 hours per day has been considered.
3. Raw Material stock and Finished goods closing stock has been taken for 10 & 15 days respectively.
4. Credit period to Sundry Debtors has been given for 15 days.
5. Credit period by the Sundry Creditors has been provided for 15 days.
6. Depreciation and Income tax has been taken as per the Income tax Act,1961.
7. Interest on working Capital Loan and Term loan has been taken at 11%.
8. Salary and wages rates are taken as per the Current Market Scenario.
9. Power Consumption has been taken at 34 HP.
10. Selling Prices & Raw material costing has been increased by 3% & 2% respectively in the subsequent years.