

# PROJECT REPORT

Of

## HARD CHROMIUM PLATING

### PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding **Hard Chromium Plating**.

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 AT A GLANCE**

- 1 Name of the Entrepreneur : xxxxxxxx
- 2 Constitution (legal Status) : xxxxxxxx
- 3 Father / Spouse Name : xxxxxxxx
- 4 Unit Address : xxxxxxxxxxxxxxxxxxxxxxxx
- District : xxxxxx  
Pin: xxxxxx State: xxxxxxxx  
Mobile xxxxxx
- 5 Product and By Product : **HARD CHROMIUM PLATING**
- 6 Name of the project / business activity proposed : **HARD CHROMIUM PLATING UNIT**
- 7 Cost of Project : Rs.20.56 Lakhs
- 8 Means of Finance  
Term Loan Rs.13.5 Lakhs  
Own Capital Rs.2.06 Lakhs  
Working capital Rs.5 Lakhs
- 9 Debt Service Coverage Ratio : 2.47
- 10 Pay Back Period : 5 Years
- 11 Project Implementation Period : 5-6 Months
- 12 Break Even Point : 35%
- 13 Employment : 8 Persons
- 14 Power Requirement : 40.00 HP
- 15 Major Raw materials : Hard Chrome salt,Chromic Acid, Other chemicals & consumables
- 16 Estimated Annual Sales Turnover (Max Capacity) : 91.02 Lakhs
- 17 Detailed Cost of Project & Means of Finance

**COST OF PROJECT**

(Rs. In Lakhs)

Particulars	Amount
	Own/Rented
Land	4.00
Building / Shed 1000 Sq ft	9.00
Plant & Machinery	2.00
Furniture & Fixtures	5.56
Working Capital	20.56
<b>Total</b>	<b>20.56</b>

**MEANS OF FINANCE**

Particulars	Amount
Own Contribution	2.06
Working Capital(Finance)	5.00
Term Loan	13.50
<b>Total</b>	<b>20.56</b>

# **HARD CHROMIUM PLATING**

**Introduction:** Hard chromium plating finds extensive application in the engineering industry due to the extreme hardness of the coating, its resistance to heat, wear, corrosion, erosion or friction. The extreme hardness, excellent wear resistance and low co-efficient of friction of chromium deposits are used to advantage on cutting tools, gauges, dies, moulds piston rods, rollers, textile machinery parts, etc. and in many other industrial applications. Hard chromium deposition is somewhat different from that involved in decorative plating and the thickness and hardness of the coating applied is considerably greater.



**Uses & Market Potential:** Hard chromium deposits are generally applied directly to the base metal except in applications like building up badly worn-out or undersized parts and where highly corrosive conditions in service are involved. In such applications, an undercoating is nickel is given and for reclamation work, heavy thickness or nickel is often applied and after machining the article is finished with a thin coating of hard chromium. The nickel layer provides substantial corrosion protection to the base metal, however, the chromium deposits should be at least 13 microns (0.0005 in)

thick for providing requisite wear resistance. Hard chromium deposits are also used for the building up of undersized and worn parts.

The value of production in electroplating industries in the MSE sector in the country is 100 crore per annum contributing 0.12% of total production in the SI sector. It would be rather difficult to accurately estimate the overall market size for hard chromium process in the absence of a data base, however, it can be stated that this industrial process on account of its extensive application in engineering industries has an excellent scope at places of concentration of such industries. Units with modern facilities for hard chromium plating on a job basis can be set up to meet the requirements of industries with stringent quality standards of engineering applications. Hence, there is wide scope for setting up the products of a new unit in this line of manufacture to meet the requirement.

**Raw Material:** Major raw material requirements are as follows:

1. Hard Chrome Salt
2. Chromic Acid
3. Other chemicals & consumables

**Machinery & Equipments:** Major machineries & equipments are as follows:

S No.	Machine	Unit	Price
1.	Oil cooled silicon rectifier with stepless Control, output current rating 1000A, output voltage 12V complete with meter panel etc.	1	250000
2.	Resistant board 500A-12V	2	30000
3.	Hard chromium plating tank 3 mm M.s/3mm L.L7x3x3 ft. with ducts and bowler for fume extraction	1	100000
4.	Etching tank 3mm ms/3 mm L.L 6x3 ft. with Lip duct and bowler arrangement	1	100000

5.	Anodic cleaning tank 3mm ms/6x2x3 ft	1	30000
6.	Dragout tank 3 mm ms/3mm L.L 6x2x3 ft	1	70000
7.	Immersion heaters 3 KW Lead bonding ms	8	50000
8.	Polishing Machine 3 HP	2	50000
9.	Water swill tank 3mm ms/5mm R.L. 5x2x3 ft	1	70000
10.	Other machines & equipments	Ls	150000
	<b>Total Amount</b>		<b>900000</b>

**Manufacturing Process:** The steel part to be hard chromed are pre-cleaned in a suitable hot alkaline soak cleaner and rinsed well. To obtain a good adhesion of the deposits, anodic etching in simple chromic sulphuric bath for 1-2 minutes is carried out in a separate tank normally. After the etching, the parts are transferred to plating bath. After plating the parts are immersed in drag-out tank rinsed followed by the another water rinsed and hot water rinsed. In case of hardened steel, components are heated to 200° C or above to eliminate hydrogen embitterment.

**Area:**

The industrial setup requires space for Inventory, workshop or manufacturing area, space for power supply utilities and auxiliary like Generator setup. Also some of the area of building is required for office staff facilities, documentation, office furniture, etc. Thus, the approximate total area required for complete industrial setup is 1500 to 2000Sqft.Civil work cost will be Rs 4 Lac. (Approx.)

**Power Requirement:** The power consumption required to run all the machinery could be approximated as 40hp

**Manpower Requirement:** There are requirement of skilled machine operators to run the machine set. Experience quality engineers are required for desired quality control. Some helpers are also required to transfer the material from one work station to other. Office staffs are required to maintain

the documentation. The approximate manpower required is 8 including 1 Supervisor, 1 Plant operator, 1 unskilled worker, 1 Helper and 1 Security guard. 3 Skilled worker including Accountant, Manager and Sales person.

**Bank Term Loan:** Rate of Interest is assumed to be at 11%

**Depreciation:** Depreciation has been calculated as per the Provisions of Income Tax Act, 1961

### **Approvals & Registration Requirement:**

Basic registration required in this project:

- GST Registration
- Udyog Aadhar Registration (Optional)
- Choice of a Brand Name of the product and secure the name with Trademark if require
- NOC from State Pollution Control Board

### **Implementation Schedule:**

S No.	Activity	Time required
1.	Acquisition of premises	1-2 Months
2.	Procurement & installation of Plant & Machinery	1-2 Months
3.	Arrangement of Finance	1.5-2 Months
4.	Requirement of required Manpower	1 Month
5.	Commercial Trial Runs	1 Month
	Total time Required (some activities shall run concurrently)	5-6 Months

## **FINANCIALS**

<b>PROJECTED CASH FLOW STATEMENT</b>					
<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b>SOURCES OF FUND</b>					
Own Contribution	2.06	-			
Reserve & Surplus	3.64	5.63	7.06	9.21	11.36
Depriciation & Exp. W/off	1.95	1.69	1.46	1.27	1.10
Increase In Cash Credit	5.00				
Increase In Term Loan	13.50	-	-	-	-
Increase in Creditors	0.61	0.09	0.06	0.06	0.06
<b>TOTAL :</b>	<b>26.75</b>	<b>7.41</b>	<b>8.59</b>	<b>10.54</b>	<b>12.53</b>
<b>APPLICATION OF FUND</b>					
Increase in Fixed Assets	15.00	-	-	-	-
Increase in Stock	3.70	0.55	0.50	0.52	0.54
Increase in Debtors	2.67	0.53	0.43	0.45	0.47
Repayment of Term Loan	1.50	3.00	3.00	3.00	3.00
Taxation	-	0.56	1.06	1.38	1.70
Drawings	2.00	2.50	3.50	4.50	6.00
<b>TOTAL :</b>	<b>24.87</b>	<b>7.14</b>	<b>8.49</b>	<b>9.85</b>	<b>11.72</b>
Opening Cash & Bank Balance	-	1.88	2.15	2.25	2.94
Add : Surplus	1.88	0.27	0.10	0.69	0.81
Closing Cash & Bank Balance	<b>1.88</b>	<b>2.15</b>	<b>2.25</b>	<b>2.94</b>	<b>3.75</b>

<b>PROJECTED BALANCE SHEET</b>					
<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b>SOURCES OF FUND</b>					
<b>Capital Account</b>					
Opening Balance	-	3.69	6.26	8.76	12.09
Add: Additions	2.06	-	-	-	-
Add: Net Profit	3.64	5.07	6.00	7.83	9.66
Less: Drawings	2.00	2.50	3.50	4.50	6.00
<b>Closing Balance</b>	<b>3.69</b>	<b>6.26</b>	<b>8.76</b>	<b>12.09</b>	<b>15.75</b>
CC Limit	5.00	5.00	5.00	5.00	5.00
Term Loan	12.00	9.00	6.00	3.00	-
Sundry Creditors	0.61	0.71	0.77	0.84	0.90
<b>TOTAL :</b>	<b>21.30</b>	<b>20.97</b>	<b>20.53</b>	<b>20.92</b>	<b>21.65</b>
<b>APPLICATION OF FUND</b>					
<b>Fixed Assets ( Gross)</b>	15.00	15.00	15.00	15.00	15.00
Gross Dep.	1.95	3.64	5.10	6.37	7.46
Net Fixed Assets	13.05	11.36	9.90	8.63	7.54
<b>Current Assets</b>					
Sundry Debtors	2.67	3.20	3.63	4.08	4.55
Stock in Hand	3.70	4.25	4.75	5.27	5.81
Cash and Bank	1.88	2.15	2.25	2.94	3.75
<b>TOTAL :</b>	<b>21.30</b>	<b>20.97</b>	<b>20.53</b>	<b>20.92</b>	<b>21.65</b>

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<b>PROJECTED PROFITABILITY STATEMENT</b>					
<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b>A) SALES</b>					
Gross Sale	53.44	64.06	72.60	81.59	91.02
<b>Total (A)</b>	<b>53.44</b>	<b>64.06</b>	<b>72.60</b>	<b>81.59</b>	<b>91.02</b>
<b>B) COST OF SALES</b>					
Raw Material Consumed	26.23	30.30	33.05	35.80	38.56
Electricity Expenses	2.95	3.25	3.55	3.84	4.14
Repair & Maintenance	4.81	5.12	7.26	8.16	9.10
Labour & Wages	7.43	8.10	9.32	11.18	13.42
Depreciation	1.95	1.69	1.46	1.27	1.10
<b>Cost of Production</b>	<b>43.38</b>	<b>48.46</b>	<b>54.63</b>	<b>60.25</b>	<b>66.31</b>
<b>Add: Opening Stock /WIP</b>	<b>-</b>	<b>2.39</b>	<b>2.73</b>	<b>3.10</b>	<b>3.48</b>
<b>Less: Closing Stock /WIP</b>	<b>2.39</b>	<b>2.73</b>	<b>3.10</b>	<b>3.48</b>	<b>3.88</b>
Cost of Sales (B)	40.99	48.12	54.27	59.87	65.91
<b>C) GROSS PROFIT (A-B)</b>	<b>12.45</b>	<b>15.94</b>	<b>18.32</b>	<b>21.72</b>	<b>25.11</b>
	<b>23.30%</b>	<b>24.89%</b>	<b>25.24%</b>	<b>26.62%</b>	<b>27.59%</b>
D) Bank Interest (Term Loan )	1.46	1.20	0.87	0.54	0.21
ii) Interest On Working Capital	0.55	0.55	0.55	0.55	0.55
E) Salary to Staff	4.66	5.36	6.22	7.34	8.44
F) Selling & Adm Expenses Exp.	2.14	3.20	3.63	4.08	4.55
<b>TOTAL (D+E)</b>	<b>8.81</b>	<b>10.31</b>	<b>11.27</b>	<b>12.50</b>	<b>13.75</b>
H) NET PROFIT	3.64	5.63	7.06	9.21	11.36
	<b>6.8%</b>	<b>8.8%</b>	<b>9.7%</b>	<b>11.3%</b>	<b>12.5%</b>
I) Taxation	-	0.56	1.06	1.38	1.70
<b>J) PROFIT (After Tax)</b>	<b>3.64</b>	<b>5.07</b>	<b>6.00</b>	<b>7.83</b>	<b>9.66</b>

<b>COMPUTATION OF MAKING OF CHROMIUM PLATING</b>			
<b>Item to be Manufactured Chromium Plating</b>			
Manufacturing Capacity per day		50	Sqft.
No. of Working Hour		8	
No of Working Days per month		25	
No. of Working Day per annum		300	
Total Production per Annum		15,000	Sqft.
Total Production per Annum		15,000	Sqft.
Year		Capacity	CHROMIUM
		Utilisation	
I		50%	7,500.00
II		55%	8,250.00
III		60%	9,000.00
IV		65%	9,750.00
V		70%	10,500.00

**COMPUTATION OF RAW MATERIAL**

Item Name	Quantity of Raw Material	Unit	Unit Rate of	Total CostPer Annum (100%)
Hard Chrome Salt	11,000.00	Kg	360	39,60,000.00
Chromic Acid	2,700.00	Kg	180	4,86,000.00
Other Chemicals & Consumables	Lusmum			8,00,000.00
<b>Total</b>				<b>52,46,000.00</b>
Total Raw material in Rs lacs				52.46

Raw Material Consumed	Capacity Utilisation	Amount (Rs.)	
I	50%	26.23	
II	55%	30.30	5% Increase in Cost
III	60%	33.05	5% Increase in Cost
IV	65%	35.80	5% Increase in Cost
V	70%	38.56	5% Increase in Cost

<u>COMPUTATION OF SALE</u>					
Particulars	I	II	III	IV	V
Op Stock	-	375.00	412.50	450.00	487.50
Production	7,500.00	8,250.00	9,000.00	9,750.00	10,500.00
	7,500.00	8,625.00	9,412.50	10,200.00	10,987.50
Less : Closing Stock(15 Days)	375.00	412.50	450.00	487.50	525.00
Net Sale	7,125.00	8,212.50	8,962.50	9,712.50	10,462.50
Sale Price per Sqft.	750.00	780.00	810.00	840.00	870.00
<b>Sale (in Lacs)</b>	<b>53.44</b>	<b>64.06</b>	<b>72.60</b>	<b>81.59</b>	<b>91.02</b>

<b>COMPUTATION OF CLOSING STOCK &amp; WORKING CAPITAL</b>					
<b>PARTICULARS</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
<b>Finished Goods</b>					
(15 Days requirement)	2.39	2.73	3.10	3.48	3.88
<b>Raw Material</b>					
(15 Days requirement)	1.31	1.51	1.65	1.79	1.93
<b>Closing Stock</b>	<b>3.70</b>	<b>4.25</b>	<b>4.75</b>	<b>5.27</b>	<b>5.81</b>

<b>COMPUTATION OF WORKING CAPITAL REQUIREMENT</b>			
<b>Particulars</b>	<b>Amount</b>	<b>Margin(10%)</b>	<b>Net Amount</b>
Stock in Hand	3.70		
Less:			
Sundry Creditors	0.61		
<b>Paid Stock</b>	<b>3.09</b>	<b>0.31</b>	<b>2.78</b>
Sundry Debtors	2.67	0.27	2.40
<b>Working Capital Requirement</b>			<b>5.19</b>
<b>Margin</b>			0.58
<b>MPBF</b>			<b>5.19</b>
<b>Working Capital Demand</b>			<b>5.00</b>

<b>BREAK UP OF LABOUR</b>				
Particulars		Wages	No of	Total
		Per Month	Employees	Salary
Supervisor		20,000.00	1	20,000.00
Plant Operator		15,000.00	1	15,000.00
Unskilled Worker		10,000.00	1	10,000.00
Helper		8,000.00	1	8,000.00
Security Guard		6,000.00	1	6,000.00
				59,000.00
Add: 5% Fringe Benefit				2,950.00
Total Labour Cost Per Month				61,950.00
Total Labour Cost for the year ( In Rs. Lakhs)			5	7.43

<b>BREAK UP OF SALARY</b>				
Particulars		Salary	No of	Total
		Per Month	Employees	Salary
Manager		15,000.00	1	15,000.00
Accountant cum store keeper		12,000.00	1	12,000.00
Sales		10,000.00	1	10,000.00
Total Salary Per Month				37,000.00
Add: 5% Fringe Benefit				1,850.00
Total Salary for the month				38,850.00
Total Salary for the year ( In Rs. Lakhs)			3	4.66

<b>COMPUTATION OF DEPRECIATION</b>					
Description	Land	Building/shed	Plant & Machinery	Furniture	TOTAL
Rate of Depreciation		10.00%	15.00%	10.00%	
<b>Opening Balance</b>	Leased		-	-	-
Addition	-	4.00	9.00	2.00	15.00
	-	4.00	9.00	2.00	15.00
		-	-	-	
TOTAL		4.00	9.00	2.00	15.00
Less : Depreciation	-	0.40	1.35	0.20	1.95
WDV at end of Ist year	-	3.60	7.65	1.80	13.05
Additions During The Year	-	-	-	-	-
	-	3.60	7.65	1.80	13.05
Less : Depreciation	-	0.36	1.15	0.18	1.69
WDV at end of IInd Year	-	3.24	6.50	1.62	11.36
Additions During The Year	-	-	-	-	-
	-	3.24	6.50	1.62	11.36
Less : Depreciation	-	0.32	0.98	0.16	1.46
WDV at end of IIIrd year	-	2.92	5.53	1.46	9.90
Additions During The Year	-	-	-	-	-
	-	2.92	5.53	1.46	9.90
Less : Depreciation	-	0.29	0.83	0.15	1.27
WDV at end of IV year	-	2.62	4.70	1.31	8.63
Additions During The Year	-	-	-	-	-
	-	2.62	4.70	1.31	8.63
Less : Depreciation	-	0.26	0.70	0.13	1.10
WDV at end of Vth year	-	2.36	3.99	1.18	7.54

REPAYMENT SCHEDULE OF TERM LOAN						11.0%	
Year	Particulars	Amount	Addition	Total	Interest	Repayment	CI Balance
<b>I</b>	Opening Balance						
	Ist Quarter	-	13.50	13.50	0.37	-	13.50
	IInd Quarter	13.50	-	13.50	0.37	-	13.50
	IIIrd Quarter	13.50	-	13.50	0.37	0.75	12.75
	Ivth Quarter	12.75	-	12.75	0.35	0.75	12.00
					1.46	1.50	
<b>II</b>	Opening Balance						
	Ist Quarter	12.00	-	12.00	0.33	0.75	11.25
	IInd Quarter	11.25	-	11.25	0.31	0.75	10.50
	IIIrd Quarter	10.50	-	10.50	0.29	0.75	9.75
	Ivth Quarter	9.75	-	9.75	0.27	0.75	9.00
					1.20	3.00	
<b>III</b>	Opening Balance						
	Ist Quarter	9.00	-	9.00	0.25	0.75	8.25
	IInd Quarter	8.25	-	8.25	0.23	0.75	7.50
	IIIrd Quarter	7.50	-	7.50	0.21	0.75	6.75
	Ivth Quarter	6.75	-	6.75	0.19	0.75	6.00
					0.87	3.00	
<b>IV</b>	Opening Balance						
	Ist Quarter	6.00	-	6.00	0.17	0.75	5.25
	IInd Quarter	5.25	-	5.25	0.14	0.75	4.50
	IIIrd Quarter	4.50	-	4.50	0.12	0.75	3.75
	Ivth Quarter	3.75	-	3.75	0.10	0.75	3.00
					0.54	3.00	
<b>V</b>	Opening Balance						
	Ist Quarter	3.00	-	3.00	0.08	0.75	2.25
	IInd Quarter	2.25	-	2.25	0.06	0.75	1.50
	IIIrd Quarter	1.50	-	1.50	0.04	0.75	0.75
	Ivth Quarter	0.75	-	0.75	0.02	0.75	-
					0.21	3.00	

Door to Door Period            60 Months  
Moratorium Period                6 Months  
Repayment Period                 54 Months

CALCULATION OF D.S.C.R

PARTICULARS	I	II	III	IV	V
<b><u>CASH ACCRUALS</u></b>	5.59	6.75	7.46	9.10	10.76
Interest on Term Loan	1.46	1.20	0.87	0.54	0.21
Total	7.05	7.95	8.33	9.63	10.96
<b><u>REPAYMENT</u></b>					
Repayment of Term Loan	1.50	3.00	3.00	3.00	3.00
Interest on Term Loan	1.46	1.20	0.87	0.54	0.21
Total	2.96	4.20	3.87	3.54	3.21
<b>DEBT SERVICE COVERAGE RATIO</b>	<b>2.38</b>	<b>1.89</b>	<b>2.15</b>	<b>2.72</b>	<b>3.42</b>
<b>AVERAGE D.S.C.R.</b>			<b>2.47</b>		



<b>COMPUTATION OF ELECTRICITY</b>				
<b>(A) POWER CONNECTION</b>				
Total Working Hour per day		Hours	8	
Electric Load Required		HP	40	
Load Factor			0.7460	
Electricity Charges		per unit	7.50	
Total Working Days			300	
<b>Electricity Charges</b>				5,37,120.00
<b>Add : Minimim Charges (@ 10%)</b>				
<b>(B) DG set</b>				
No. of Working Days			300	days
No of Working Hours			0.3	Hour per day
Total no of Hour			90	
Diesel Consumption per Hour			8	
Total Consumption of Diesel			720	
Cost of Diesel			65.00	Rs. /Ltr
Total cost of Diesel			0.47	
Add : Lube Cost @15%			0.07	
<b>Total</b>			<b>0.54</b>	
<b>Total cost of Power &amp; Fuel at 100%</b>				5.91
<b>Year</b>		<b>Capacity</b>		<b>Amount (in Lacs)</b>
I		50%		2.95
II		55%		3.25
III		60%		3.55
IV		65%		3.84
V		70%		4.14

## **DISCLAIMER**

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