

**Project Profile- New**

- 1 **NAME OF THE PRODUCT** ; **Cross Arm Assembly**
- 2 **PRODUCT CODE** ASICC 74096 Fabricated Metal Products  
NIC 28112 Manufacture of fabricated structural products of iron or steel
- 3 **QUALITY AND STANDARDS**  
a) IS: 2062, Steel for Gen. Structure Purpose  
b) BSEN 10113-2 (1993) - Weldable fine grain structural steel  
c) B.S. 4360 (1990) - Weldable structural steel  
d) B.S. 4848 Parts IV & V - Hot rolled structural steel sections
- 4 **PRODUCTION CAPACITY** ;  
(Per annum)  
**QUANTITY** ; **912 MT**  
Rs. | **53808000**
- 5 **MONTH AND YEAR OF PUBLICATION:** March, 2011
- 6 **Prepared By** **MSME-Development Institute,**  
22 Godam, Jaipur  
Ph. - 0141-2212098  
Fax-0141-2210553  
E Mail- dcdi-jaipur@dcmsme.nic.in  
web- msmedijaipur.gov.in

## Cross Arm Assembly

**1. Introduction** :- Cross arm assembly is a fabricated item that's finds its application in electricity and telephone lines. It has been used in 33 kV AND 11 kV overhead power lines and used to support electric wires.

**2. Plant capacity Per Annum-**

912	MT per annum
53,808,000	Rs.

**3. Market Potential** :- Investments for transmission system development and related schemes during the XI Plan period is estimated at Rs. 1,400,000 million, with Rs. 750,000 million being required for the central sector and Rs. 650,000 million being required for the state sector. Further, CEA estimates that in the XII Plan the funds requirement for transmission sector would be about Rs. 2,400,000 million, with Rs. 1,400,000 million being required for the central sector and Rs. 1,000,000 million being required for the state sector.

The total fund requirement for sub-transmission and distribution system development for urban and rural areas, during the XI Plan period is estimated at Rs. 2,870,000 million inclusive of APDRP and RGGVY schemes. Further, CEA estimates that for the XII Plan period, the total fund requirement for the Distribution sector would be about Rs. 3,710,000 million.

The power sector is thus poised to remain vibrant and attract significant investments in the foreseeable future as stated earlier, As the Cross arm is vital component in Electrical Distribution system. in keeping view of the above simultaneously its demand will also be there and the project has lot of scope. Further the unit can also manufacture similar type of Fabrication item i.e. Tower etc.

### TECHNICAL SPECIFICATION FOR 11 kV & 33 kV MS CROSS-ARMS

Page 1 of 1

ATTACHMENT – I

TECHNICAL SPECIFICATION FOR CROSS-ARMS  
FOR 33 kV AND 11 kV OVERHEAD POWER LINES

1.0 'V' SHAPE M.S. CROSS ARM WITH CLAMPS

1.1 X-arms shall be made out of 100 x 50 x 6 mm and 75 x 40 x 6 mm M.S.

Channel for 33KV and 75x40X6mm for 11KV.

1.2 The cross arm shall be hot dipped galvanized generally conforming to IS – 2633/72.

1.3 The X-arm should not be welded/ jointed at any place except as specified.

1.4 The clamps for the X-arm shall be of G.I. & shall be hot dipped galvanized generally conforming to IS – 2633/72.

1.5 The clamps shall be designed to fit for the specified rail & PSC poles.

2.0 Shape & Size

**4. Raw materials** :- Cross-arms shall be made out of 100 x 50 x 6 mm and 75 x 40 x 6 mm M.S Channel for 33KV and 75x40X6mm for 11KV

**5. Manufacturing Process & Source of technology :**

a The components that make up a Pin Cross Arm (11kV and 33kV) are as follows :-

- i. Channel Iron Cross Arm  
100mmx50mmx6mm - 1 No.
- ii. Flat Iron Bracing (40mm x 10mm) - 2 Nos.
- iii. Earth Wire attachment (Pin Point) - 1 No.  
(As per drawing)

b) The Components that make up a Tension Cross Arm (11kV and 33kV) are as follows :

- i. Channel Iron Cross Arm  
100mmx50mmx6mm - 2 Nos.
- ii. Flat Iron Bracing (40mm x 10mm) - 4 Nos.
- iii. Earth Wire tension assembly \_ 2Nos.

b The manufacturer shall have all the equipment such as Punching, Cutting, Welding, Bending, Forging etc necessary for the fabrication of the cross arm assemblies at the place of manufacture. The mfg. of Cross Arm involve Cutting of angle, Punching on Power Press , Bending, welding and Finishing on Grinding machine. Drilling holes etc on Drill M/c. If required by the customer, the part has to get Galvansied up to 90 Micron onn Job work basis

**c QUALITY CONTROL & STANDARD-**

The grade of steel used for the fabrication of cross arm assembly shall be 43DD as per BS 4360 or 355N as per BSEN 10113-2. The dimensional tolerance on flat iron and angle iron shall be as stipulated in BS4360 / BSEN10113 and BS 4848 Part 4 respectively. The minimum thickness of the channel iron shall be 6mm. The chemical composition of the steel used shall be as stipulated in BS 4360 / BSEN 10113 (Table 14 and Table 1 respectively)

The steel used for the fabrication of cross arm assembly shall be sound and free from any internal and external defects or surface flaws which might preclude its use for the purpose for which it is intended.

**Mechanical Properties**

The mechanical properties of steel including the minimum Tensile Strength Yield Strength and Elongation shall be as stipulated in BS 4360 / BSEN 10113 (Table 15 and Table 3 respectively).

**Fabrication**

Cross arm assembly shall be fabricated out of following types of steel sections manufactured in accordance with BS 4360: 1990 / BSEN 10113 : 1993 structural steel.

- a) Channel Iron section of 100mmX50mmX 6mm ( for cross arm)
- b) Flat Iron section of 40mmX10mm ( for bracing)
- c) Angle iron section of 60mmx60mmX6mm(for earth wire tension assembly),

the Products will be made as per Customer Requirement. All burrs shall be removed after punching, shearing, forging, welding and bending operations. All components shall be free from sharp edges and rust, .All items shall be clean, smooth and uniform throughout and shall be free from, oil, paint, and be suitable for hot dip galvanizing by the purchaser.

**6. basis Of Project Selection :-** The state electricity dipartments are inviting tenders to supply the cross arms as envisage in the proposed project profile. The profile has been prepared under action plan of Mechanical division to guide prospective entrepreneurs

**7. Presumption:-**

(1) The scheme is based on single shift of 75% efficiency considering 8 working hours/day, 25 days/month and 300 days per annum.

(ii) Labour wages has been taken as per market rate. It is likely to vary depending upon the

location of the project.

(iii) Rate of interest has been taken 12% on an average on fixed and working capital. It is likely to vary due to financial outlay and the location of the unit.

(iv) The operative period of the project is estimated to be about 10 years considering technology obsolescence.

(v) Value of machinery & equipment is estimated on the basis of prevailing cost of the local mkt.

**8 POWER REQUIREMENT : 30 KVA**

**9. IMPLEMENTATION SCHEDULE ;**

S.No.	Activities	Period (in weeks)
1	Preparation of project report and selection of site	2
2	Registration	2
3	Application for Electricity Connection	1
4	Availability of finance	6
5	Procurement of machinery	1
6	Electrification & installation	2
7	Recruitment of staff	1
8	Trial run	1
	<b>Total</b>	<b>16</b>

**10 FINANCIAL ASPECTS :**

**a) Land & Building**

- i) **Land** : The requirement of land for the proposed unit would be around 1000 Sq. Mtr. on rent Rs. 30,000/- per month

Shed & Building Constriction	200000	
<b>TOTAL</b>	<b>200000</b>	

**b PLANT & MACHINERY**

S.No.	Description of machine	Qty.	Price	Amount
1	Power Press 150 MT.	1	700000	700000
2	Power Press 40 MT.	1	250000	250000
3	Arc Welding Set Air Cool 350 Amp.	1	25000	25000
4	Arc Welding Set oil Cool 350 Amp	1	15800	15800
5	Hand Shearing M/c.	1	5600	5600
6	Hand Drill	1	3600	3600

7	Bench Drilling M/c.	1	12500	12500
8	Air Compressor with Spray Gun	1	18,000	18000
9	Hand Grinder 4"	1	6400	6400
10	Spot Welder 10 KVA	1	73000	73000
11	Cleaning Pickling, Phosphating Tank 2.5 X 2 X 2 MTS.	1	300000	300000
12	Hand Fly Press No. 5	1	12000	12000
13	Central Lathe 1800 mm	1	70000	70000
	Total			1491900
	vat, Taxes, Installation & Electrification @ 10%			149190
	<b>TOTAL</b>			<b>1641090</b>
9	Office Equipment, Dies & Tools	LS	50000	50000
	<b>Total Investment In Plant &amp; machinery</b>			<b>1691090</b>
	Pre operation Charges i.e. for Getting Electricity Connection etc.			25000
<b>c</b>	<b>Total Investment In fixed assets</b>			<b>1916090</b>

**d WORKING CAPITAL**

**i Personnel**

<u>S.NO.</u>	<u>DESIGNATION</u>	<u>No.</u>	<u>Salary</u>	<u>Total (Rs.)</u>
1	Workshop in charge	1	12000	12000
2	Supervisor cum clerk	1	6000	6000
3	Skilled Worker	2	6000	12000
4	Semi skilled worker/ Helper	3	4500	13500
5	Peon / Watchman	1	3000	3000
	Total	8		<b>46500</b>
	Additional Perquisites @ 15%			6975
	Total Expenditure in Salary & Wages			<b>53475</b>

**ii Raw Material**

<u>S.No.</u>	<u>Particular (Indigenous)</u>	<u>Qty</u>	<u>Rate</u>	<u>Value (Rs.)</u>
1	Steel Angle (M.T.)	80	37500	3000000
2	Zinc Plating Charges	80	8000	640000
3	others		L.S.	20000
			<b>TOTAL</b>	<b>3660000</b>

**iii Utilities**

				<u>Value (Rs.)</u>
1	Power ( 40 unit per day)	330000		330000
2	Water	LS		562.5
		<b>TOTAL</b>		<b>330562.5</b>

**iv Other Contingent Expenses**

1	Postage and stationary			1500
2	Office Consumable stores			1500

3	Transport charges			5500
4	Telephone charges			2500
5	Publicity Expenses			5000
6	Traveling expenses			1500
7	Rent			30000
8	Miscellaneous expenses			2500
9	Insurance			5000
	<b>TOTAL</b>			<b>55000</b>

v **Total Recurring Expenditure :**

S.No.	Description			Cost
1	Personnel			53475
2	Raw material			3660000
3	Utilities			330562.5
4	Other Contingent Expenses			55000
	<b>TOTAL</b>			<b>4099037.5</b>

vi **Total working capital for 3months :**

**Rs. 1229711  
3**

e **Total Capital Investment :**

i	Fixed Capital			1916090
ii	Working Capital for 3 Months			1229711 3
	Total Capital Investment :			1421320 3
	<b>Total Capital Investment</b>	<b>Say</b>		<b>1.48 Cr</b>
	<b>Finance Detail</b>	<b>% Contribution</b>		
i	Self Contribution	25		3553301
iii	Banks Contribution	75		1065990 2

**11 FINANCIAL ANALYSIS**

1 **Cost of Production (Per year) :**

i	Total recurring cost :			4918845 0
ii	Depreciation of machinery and equipment @ 10%			164109
iii	Interest on total Capital investment @ 12%			1705585
iv	Depreciation of tools and office equipment / furniture @ 15%			7500
v	Depreciation of Building @ 5%			10000
	<b>Total :</b>			<b>5107564 4</b>

2 **Total Sales (Per annum)**

Products	Qty.	Rate	Value (Rs.)
Cross arm asseby	912	59000	5380800 0
Sale of Sale of Scrap (5%)	48	16	768

		<b>TOTAL</b>	<b>:</b>	<b>5380876</b>
			<b>Rs.</b>	<b>8</b>

**3 Net Profit (Per yr.) (Before tax)**

Total turnover per yr. -cost of production per yr.

(in Rs.) = 53808768 -51075644 2733124

**4 Net profit ratio :**

Net profit × 100 =

2733124 x100 = 5%

Turn Over

53808768

**5 Rate of return :**

Net profit × 100 =

2733124 x100 = 19%

Total Investment

14213203

**6 BREAK-EVEN POINT;**

**FIXED COST ;**

1	40% salary & wages			256680
2	Depreciation on machinery & Equipments @ 10%			164109
3	Depreciation of tools and office equipment @ 15%			7500
4	Depreciation of Building @ 5%			10000
5	Interest on capital investment @ 10%			1705585
6	40% of other contingent expenses			240000
7	Insurance + Rent			90000
	<b>TOTAL</b>			<b>2473874</b>
	Net Profit (Per yr.) (Before tax)			2733124

BEP :

Fixed Cost × 100 =

**48%**

Fixed Cost + Profit

## List of plant & machinery suppliers

- 1 M/s. Hindustan machine tools co., bellari Road, Bangalore
- 2 M/s. Vineet engineering works, Capital Building, Krushna Nagar Main Road, Near Gokuldham Main Gate, Rajkot, Gujarat
- 3 **M/s. Yogesh Tolaram Incorporation Plot No - 24, 22, Godam Industrial Area, Road, No - 4, Kartarpura Industrial Area, Jaipur-302006**
- 4 **Ravi Power Press  
G-19, Allied House, Shahzada Bagh,  
Old Rohtak Road, New Delhi -1100035**

## Raw material Suppliers

- 1 From Local market
- 2 Balaji casting, jhotwada, jaipur

## **PROJECT PROFILE**

PRODUCT : PACKAGED DRINKING WATER

PRODUCT CODE : 224103008

QUALITY STANDARD : IS: 14543 - 2004

PRODUCTION CAPACITY : QUANTITY - 45 LAC BOTTLES (1 LITRE)  
33.6 LAC BOTTLES (2 LITRES)

VALUE - Rs.4,37,70,000/-

MONTH & YEAR OF PREPARATION : DECEMBER, 2010

PREPARED BY -

**MSME- DEVELOPMENT INSTITUTE  
MINISTRY OF MICRO, SMALL AND MEDIUM ENTERPRISES  
22 GODOWN INDUSTRIAL ESTATE,  
JAIPUR – 302006 (RAJ.)**  
**Phone: (0141)2212098, 2213099, 2215847**  
**Telefax: (0141)2210553**  
**E-mail: [dcdi-jaipur.dcmsme@gov.in](mailto:dcdi-jaipur.dcmsme@gov.in)**  
**Website: [www.msmedijapiur.gov.in](http://www.msmedijapiur.gov.in)**

**PROJECT PROFILE ON PACKAGED DRINKING WATER (OTHER THAN MINERAL WATER FROM NATURAL RESOURCE)**

**1. INTRODUCTION :**

It is universal truth that water is very essential for sustaining life and survival of mankind including animal and plants. Nature has gifted water to all living things. The water used for potable purpose by mankind should be free from undesirable impurities and contamination. Though the water available on the earth is abundant but fresh water fit for human consumption is hardly 3% of total available water, source of which are river springs, pond, rain water and ground water.

The untreated water available from sources like well, bore well and springs is generally not hygienic and unsafe for human consumption. Thus needs treatment and purification to supply hygienic packed water for drinking purpose. As the name implies, the packaged drinking water is the purified water free from contamination, suspended impurities, unwanted colour, diseases causing micro organism and hygienically packed with convenience of use.

Water born diseases are cause of concern world over and lot of money spent on the treatment of diseases caused by contaminated water and problem has assumed alarming proportions due to increasing contamination of ground water. This has given boost to demand for hygienically packed purified water and this is growing rapidly.

## **2.0 MARKET POTENTIAL**

Fresh water available on the earth is in different sources. Most of river, pond and ground water available for drinking purpose is unfortunately contaminated and unhygienic for human consumption. Level of harmful and toxic chemical is on rise and concentration of pathogenic micro organism has risen beyond safe limit resulting in alarming increase in water born diseases. So it has become imperative to treat the water and pack for safe human consumption.

The demand for purified water becomes more during summer season. However, packaged drinking water remain in demand through out the year due to increasing traveling habits of people. The product has wide demand at public places, places of tourist interests. Demand of packaged drinking water is increasing day by day.

## **3.0 BASIS AND PRESUMPTIONS**

(i) The Project is based on Ozone Sterilization Technology. Provision of ultraviolet disinfectant for removal of microbial impurities and raw ground water having TDS upto 250 gram.

(ii) The production capacity is calculated on 3 shifts basis at 70% efficiency and 300 working days a year.

(iii) The cost of Machinery & Equipment and Raw material as indicated refers to a particular make and prices are approximate and are those prevailing at the time of preparation of this Profile.

(iv) The rate of interest on investment is taken at 15% on an average and BEP in the Profile has been calculated on the full capacity utilization.

### **3.1. IMPLEMENTATION SCHEDULE :**

i) Selection of Site 1 month

ii)	Preparation of DPR	2 weeks
iii)	Filing of EM	1 week
iv)	Procurement of Plant & Machinery	1 month
v)	Construction of Building	3 months
vi)	Power Connection	1 month
vii)	Obtaining BIS licence, Permission from Health Authorities, etc.	2 months
viii)	Appointment of Staff & Labour	1 ½ months
ix)	Trial Run	1 week

#### **4.0 TECHNICAL ASPECTS :**

##### **4.1 PROCESS OUTLINE :**

Raw water is treated with measured quantity of alum for removal of heavy metal and insoluble matters and allowed to settle for about an hour. This water is passed through reverse osmosis plant to remove remaining impurities and excess hardness. This water is then treated with chlorine for disinfection followed by passing through carbon filters to remove undesirable odour, colour and excessive chlorine.

This water is then passed through series of micro filters comprising 5 micron, 1 micron and 0.4 micron filter followed by ultraviolet disinfection system for terminal disinfection. This purified water is tested for quality standard and then packed in suitable PET bottles of various capacities after treating with ozone. These bottles are packed in corrugated boxes. Capacity of bottle may also be shrink wrapped with printed sealing optionally.

##### **4.2 QUALITY CONTROL AND STANDARDS :**

The packaged drinking water is essentially has to be BIS Certified. So before marketing the product the enterprise should obtain BIS Certification Licence. Bureau of Indian Standards has laid down following Indian Standard for the product.

IS : 14543: 1998 - Packaged Drinking Water other than Packaged Natural Mineral Water – Specification.

##### **4.3 PRODUCTION CAPACITY (ANNUAL) :**

Quantity : 45 lac Bottles (1 litre) & 33.6 lac Bottles (2 litre)  
 Value : Rs.4,37,70,000/-

##### **4.4 MOTIVE POWER :**

The unit would need approx.25,000 kwh electric motive power per month.

##### **4.5 POLLUTION CONTROL :**

Although the enterprise is non-polluting but it is advisable that NOC must be obtained from the competent authority i.e. State Pollution Control Board and proper utilization of waste water generated by RO plant should be ensured.

#### 4.6 ENERGY CONSERVATION :

Suitable measures should be adopted to optimize the use of energy and provision of energy saving devices are advised to conserve energy and to have check on this regular energy auditing must be carried out. Proper ventilation and arrangement of natural light in working shed are advisable.

#### 5.0 FINANCIAL ASPECTS :

##### 5.1 Fixed Capital :

##### 5.1.1 Land & Building

Land	2000 Sq. Meters	7.0 lacs
Total Covered Area for filtration, R.O. unit.	600 Sq.Mtrs.	33.0 lacs
Packing Material Storage, Laboratory, Office & Godown etc.	400 Sq.Mtrs.	
		----- 40 lacs. -----

##### 5.1.2 PLANT & MACHINERY (All indigenous):

		<u>Qty</u>	<u>Total (Rs.)</u>
(i)	Alum treatment tanks	- 3 Nos.	1,50,000
(i)	Chlorination tanks SS	- 2 Nos.	1,00,000
(iii)	Reverse Osmosis Plant Cap. 5000 litre/hr.	- 1 No.	8,50,000
(iv)	Filters (Sand, Carbon and Micro filters)(5, 1 and 0.4 mic mm size)	- 1 Set	75,000
(v)	Ultra Violet disinfectant system	- 1 No.	40,000
(vi)	Electronic doser for alum	- 1 No.	37,500
(vii)	Electronic doser for chlorine	- 1No.	37,500
(viii)	Ozone Generator Capacity	-	3,90,000
(ix)	Raw and purified water collection tanks with motor/ pump and other accessories.	- 4 Nos.	2,00,000
(x)	Automatic bottle rinsing, filling and capping machine	- 2 Nos.	17,75,000

(xi)	Shrink Wrapping machine for bottle labeling	-	2 Nos.	37,000
(xii)	Misc. tools and equipment		L.S.	1,75,000
(xiii)	Laboratory equipments and analytical instruments		L.S.	2,25,000
(xiv)	Electrification and installation charges @ 10% of Plant & Machinery.			4,19,200
(xv)	Cost of Office Equipment and furniture including computer & printer			1,00,000
(xvi)	Deep Bore Tube well as water source			1,75,000
				-----
			<b>Total :</b>	<b>47,86,200</b>
				-----
			<b>Rounded to</b>	<b>47,86,000</b>

### 5.1.3 TOTAL FIXED CAPITAL :

1.	Land & Building	40,00,000
2.	Plant & Machinery	47,86,000
3.	Pre-operative expenses including Delivery Van	12,04,000
	<b>Total</b>	<b><u>99,90,000</u></b>

### 5.2 B. WORKING CAPITAL (Per Month)

#### 5.2.1 STAFF & LABOUR :

			No.	Salary	Amount (Rs.)
(i)	Works Manager	-	1	10,000	10,000
(ii)	Accountant cum Cashier	-	1	4,000	4,000
(iii)	Clerk cum Typist	-	1	3,000	3,000
(iv)	Store cum Purchase Officer	-	1	3,500	3,500
(v)	Sweeper / Cleaner	-	1	2,500	2,500
(vi)	Production Manager	-	1	8,000	8,000
(vii)	Chemist cum Supervisor	-	1	5,000	5,000
(viii)	Lab Assistant	-	1	2,500	2,500
(ix)	Skilled Worker including Maintenance	-	15	3,500	52,500

	Staff				
(x)	Unskilled Workers	-	4	2,500	10,000
(xi)	Watchman/ Peon	-	3	2,500	7,500
			-----		-----
			<b>24</b>		<b>1,08,500</b>
	<b>Add 15% perquisites</b>				<b>16,275</b>
	<b>Total</b>				<b>1,24,775</b>
	<b>Rounded to</b>				<b>1,25,000</b>

### 5.2.2 RAW MATERIAL (Per Month) :

1.	PET Bottles with Cap	
	(i) 1 litre size - 3,78,000 Nos.	9,00,000
	(ii) 2 litre size - 2,82,000 Nos.	9,85,000
2.	Corrugated Boxes, tape, labels, etc.	7,85,000
3.	Misc. Chemicals	30,000
	<b>Total :</b>	<b>27,00,000</b>

### 5.2.3 UTILITIES (Per Month) :

(i)	Electricity	1,37,500
(ii)	Fuel & Others	2,500
	<b>Total:</b>	<b>1,40,000</b>

### 5.2.4 OTHER CONTINGENT EXPENSES (Per Month) :

(i)	Postage & Stationery	750
(ii)	Phone	750
(iii)	Advertisement & Publicity	2,000
(iv)	Consumable Stores & Maintenance	3,000
(v)	Transport Charges / Conveyance Charges	5,000
(vi)	Sales Expenses/ Sales Commission	8,000
(vii)	Insurance & Taxes	1,875
(viii)	Licence & Other fee	2,000
(ix)	Miscellaneous Expenses	1,000
	<b>Total :</b>	<b>24,375</b>

**Rounded 24,500**

**5.2.5 WORKING CAPITAL (Per Month) :**

(i)	Staff & Labour	1,25,000
(ii)	Raw Materials/ Packaging Materials	27,00,000
(iii)	Utilities	1,40,000
(iv)	Recurring Expenses	24,500
	<b>Total :</b>	<b>29,89,500</b>

**6.0 WORKING CAPITAL FOR 3 MONTHS:**

$$29,89,500 \times 3 = \text{Rs.}89,68,500$$

**7.0 TOTAL CAPITAL INVESTMENT :**

(i)	Fixed Capital	99,90,000
(ii)	Working Capital (for 3 months)	89,68,500
		<b>1,89,58,500</b>

**8.0 FINANCIAL ANALYSIS :**

**8.1 COST OF PRODUCTION (Per Annum) :**

(i)	Total Recurring Expenses	3,58,74,000
(ii)	Depreciation on Building @ 5% of Cost	1,65,000
(iii)	Depreciation on Plant & Machinery @ 10% per annum	4,68,000
(iv)	Depreciation on Office Equipment & furniture @ 20%	20,000
(v)	Interest on Total Capital Investment @ 15%	28,43,775
	<b>Total :</b>	<b>3,93,70,775</b>
	<b>Say :</b>	<b>3,93,71,000</b>

**8.2 TURN OVER (Annual) :**

By sale of -		
45 lakh bottles of 1 litre @ 4.5		2,02,50,000
3360000 bottles of 2 litre @ 7.00		2,35,20,000
		-----
		<b>4,37,70,000</b>
		-----

### 8.3 PROFITABILITY :

<b>8.3.1 Total Profit Per Annum</b>	-	<b>43,99,200</b>
<b>8.3.2 Net Profit Ratio</b>	-	<b>10.0%</b>
<b>8.2.3 Rate of Return on Investment</b>	-	<b>23.2%</b>
<b>8.3.4 Break Even Point</b>	-	<b>48.9%</b>

$$\text{B.E.P} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}}$$

#### (A) FIXED COST (FC) :

(i) Depreciation on Plant & Machinery and Building	6,33,300
(ii) Interest on Investment	28,43,775
(iii) 40% of Salary & Wages	6,00,000
(iv) 40% of Other Expenses other than Insurance	1,08,000
(v) Insurance	22,500
	-----
	<b>42,07,275</b>
	-----

#### (B) PROFIT (P) :

$$\frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{42,07,275 \times 100}{86,06,275} = 48.9 \%$$

### 9.0 NAME & ADDRESSES OF MACHINERY & EQUIPMENT SUPPLIERS :

(1) M/s Rays Water Technology,  
 CRT, 111 AM, No.25-B, 1<sup>st</sup> Floor,  
 Laxmipuram, Ganapathy,  
 Coimbatore – 641 006  
 Phone: 0422-2523765

(2) M/s Maseach Associates,

No.13, Manohar Mahal, Moghal Lane, Mahim,  
Mumbai – 400 016.  
Phone: 022-24377702

- (3) M/s Cristal Mineral Water Systech,  
No.107, Thirupathi Complex,  
M.G. Road, Paradise Circle,  
Hyderabad – 500 001.  
Phone: 040-65160390 , FAX: 040-66486905
- (4) M/s Sai Aquafresh,  
X-10, 2<sup>nd</sup> Floor, Mani Market, West Patel Nagar,  
New Delhi – 110 008.  
Phone: 011-25881093 , FAX: 011-25880739
- (5) M/s Neel Hydrotech,  
1992, Udhai Sadan, Madi Wale Colony,  
Sadashiv Path,  
Pune – 411030 (Maharashtra)  
Phone: 020 -24476611, FAX: 020-24476611
- (6) M/s Aquatech Systems,  
S.No.247/2/2D, Plot No.2 & 3, New Ganesh Nagar,  
Chinchwad Pune,  
Pune – 411 001 (maharashtra)  
Phone: 020-27453395, FAX: 020-27453395
- (7) M/s N.B Industries,  
A-23,Meladi Estate, Opp. Meladi Mata Mandir,  
Near Gota, Railway Crossing, Gota Road,  
Ahmedabad – 382 481
- (8) M/s E.C Packaging Pvt. Ltd.,  
14/7, Milestone, Mathura Road,  
Faridabad – 121 003.  
Phone: 0129-4192900/2277698, FAX: 0129-2255602.
- (9) M/s Ozone Technologies,  
C-225, Sector-63,  
Noida – 201 301  
Phone: 0120-4227679, FAX: 0120-4259442
- (10) M/s Numatik Engineers Pvt. Ltd.,  
Shop No.6, Bobby Pathak Avenue,  
Opp. Rotary Garden, Dahisar East,  
Mumbai – 400 068.  
Phone: 022-26480866/28483848
- (11) M/s Ion Exchange India Ltd.,  
Ticcon House Road, Mahalaxmi,  
Mumbai – 400 011.

# PROJECT PROFILE

## Eco- Friendly Shoe Upper Leather

**PRODUCT** : Eco- Friendly Shoe Upper Leather

**PRODUCT CODE** : N.A.

**QUALITY & STANDARD** : BIS Specification / Customer's Specification

**PRODUCTION CAPACITY** : Qty. : 60,000 Pcs. Of Cow Hides (pre annum)

**MONTH & YEAR OF PREPRATION** : February-2011

**Prepared by**

**MSME- Development Institute**  
22 Godown Industrial Estate, Jaipur-302006  
Phone : 0141-2212098, 2213099 Fax: 0141-2210553  
e-mail: [dcdi-jaipur@dcmsme.gov.in](mailto:dcdi-jaipur@dcmsme.gov.in)  
Web-[www.msmedijaipur.gov.in](http://www.msmedijaipur.gov.in)

## **INTRODUCTION :**

Eco-Friendly shoe Upper Leather I generally manufactured from raw-hides and skins by using eco-friendly chemicals and by reducing polluting materials during its manufacturing process. It is used for the manufacturing of Leather Footwear. Footwear made out of eco-friendly upper leather are exported to different countries to fulfill the demand of global market as well as the demand of local market. Apart from footwear this leather is also used for the manufacturing of sports goods items such as sports shoes, traveling kits etc. Which are also exported to different countries Product's made out of eco-friendly leather are evergreen and there is good demand for these items by every category of the people.

## **MARKET POTENTIAL :**

There are number of footwear manufacturing unit in tiny, SSI, Medium and Large Scale Sector throughout the country which consume shoe upper leather for manufacturing quality footwear . The footwear manufactured by eco-friendly shoe leather are popular among the people of countries, all ages and income group. There is a good demand for the footwear and other leathers products from the foreign countries. Leather footwear, leathers sports goods, leather goods and other leather manufacturing industries are the major share of foreign exchange for our country. The eco-friendly shoe upper leather is in great demand both within the country and from abroad.

## **BASIS And PRESUMPTION:**

The Profile is drawn on the basis of the following presumption :

i) Working hours/shift	8 hours
ii) No. of shift/day	1
iii) Working day/year	300
iv) Total no. of working hours	2400
v) Working efficiency	75%
vi) Time period for achieving max. cap. utilisation	3 <sup>rd</sup> year from the date on which production will be started
vii) Labour charges	As per Min. Wage Act of State Govt.
viii) Margin Money	25% of capital investment
xi) Rate of interest on fixed and working capital	12.5%
x) Operative period of the project	10 Years

Value of the machinery and equipment is estimated on the basis of prevailing cost of the market. It proposed to utilize the facility of leather splitting and pressing as leather in hydraulic machine from the market as these facilities are available easily

## **IMPLEMENTATION SCHEDULE :**

<b>S No.</b>	<b>Activity</b>	<b>period</b>
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1.	Registration and other formalities	0-3 Months
2.	Land acquisition and ceiling of quotations	1-3 Months
3.	Construction process	6-12 Months
4.	Machinery for purchasing and Installation and power connection	6-12 Months
5.	Trial production	3 Months

## **TECHNICAL ASPECTS :**

### **Process of Manufacture :**

#### **Raw-Materials:**

Wet salted cow hides lower quality ave.  
Wt. = 15 kg. each

#### **De-salting:**

Remove the salt by mechanical method to reduce the pollution the pollution.

#### **Soaking :**

The hides are soaked in pits containing 1 to 2% lime 100% water.  
Soaked well washed and soaked wt.is noted.

#### **Liming:**

Paddle liming  
Water: 200%  
Clarizyme: 0.5%  
Sodium sulphide: 2%  
On soaked wt.

#### **Lime:**

10%  
Time 18 to 20 hours  
Unhairing, fleshing and fleshed wt.is to be noted

#### **Deliming:**

(Drum process)- 1<sup>st</sup> wash with water.

#### **Water:**

100% Run 30 to 45 minutes.

#### **Ammonium sulphate:**

1 to 1.5% and check pH.  
Drain and wash well

#### **Picking:**

Water 50 to 100%  
Salt 5% Run for 20 minutes

**Add:**

Sulphuric acid = 1% (Dilute with 10% water)

Formic Acid = 25% (on Acid wt.)

Run for 1 hour and get the cross section pH equal to solution of drum.

Left over night .Run for 30 minutes and check pH = 2.8 to3.0

Drain 50% of pickle bath and add.

Chrome powder = 4%

Run for = 1 hr. and add.

Chrome powder = 4%

Run for 1 hr. check penetration, add water 100% and basified with.

Sodium formate

Or

Ammonium bicrab= 0.5%

Sodium bi-carbonate= 1%

Feed in 4 to 6 feed after de-solving in water.

Run for 1 hr. check pH = 3.8 to4

Drain the chrome bath and collect it for chrome recovery.

Preserve the pelt in separate bath with suitable eco-friendly preservative, pile the stock for 1 to 2 days. Then samming and conditioning, splitting shaving operation is done and shaved wet is noted.

Wet back with working the hides with 200% water and pile for over night.

**Rechroming:**

Water = 50%

Basic chrome powder = 40%

Run for 1 hr. add water = 50%

Run for 30 minutes.

**Add:**

Sodi-bi-carb. = 1%

Sodi-formate = .5%

Run for 1hr.,check pH 3-8 ti4 pile O/N

**Neutralisation:**

**Sodi-formate** = 1% Run for 30 minutes to Vernaten EKM 2% 45 minutes check pH-4.8 to5.8 Drain, Wash well

**Dyeing and Fat Liquoring and Retanning:**

Hot water = 10%

Suitable for 30 minutes and

Add:

Suitable fat liquor = 4 to 6 %

Run for 1 hr. and add

Retanning syntan = 3% and run for 30 minutes

Fixed with formic acid = 0.25%

Run for 15 minutes check and drain.

Wash the pelt in hot water and pile for over night.

Next day sammed, setting and drying operation is done. After dying, post tanning operation are done. Then the goods are ready for finishing. The goods are finished as per requirement by using pigments and binder and finally top coat with lacquer is applied to prevent the bleeding of colour. The leather is then assorted, measured and packed dispatch.

## Quality Control and Standards :

As per buyers specification or BIS specification is followed.

### Production Capacity ( per annum)

Quantity	:	60,000 cow hides.
Value	:	Rs. 6,52,50,000
Permanent manpower	:	32 nos.

**Motive Power** **160HP**

## Pollution Control :

As the project is envisaged to be set up in Industrial Estate for tanneries plant, separate pollution control plant is not considered in the project. However, a cost of about Rs.10,000 will be incurred per month for manufacturing of CETP.

## Energy Conservation :

There exists a lot of scope of energy conservation in the tannery, since a lot of energy is spent in the tannery in the form of electricity and fuel. As a measure of energy conservation, the workers should be properly trained to operate the machinery as and when required and maintain them in good in condition and check wastage of energy. The electrical lines should be properly installed and check at regular intervals.

## Financial Aspects :

### A. Fixed Capital :

(i)	Land and Building	Amount (Rs.)
	Land 2000 sq. mtr @300 per sq mtr	= 6,00,000
	Office building, Lab. Store 120sq mtr. @2000/mtr	= 2,40,000
	Factory shed, Boundary wall etc. 1000sq mtr. @1500	= 15,00,000
	<b>Total</b>	<b>= 23,40,000</b>
(ii)	<b>Machinery and Equipments</b>	

S No.	Description	Qty	Rate (Rs)	Value (Rs)	
1.	Wooden paddle with motor starter etc (Complete in all respect) size 8'x7' with 10hp motor 1000 RPM	2 nos.	75,000	1,50,000	
2.	Tanning drum 8'x6' with 10HP motor and starter (Complete in all respect)	2 nos.	1,50,000	3,00,000	
3.	Fleshing machine 1800mm working width with 20HP motor and starter	1 no.	1,50,000	1,50,000	
4.	Experiment drum 3'x3' with 5HP motor and Starter	1 no.	55,000	55,000	
5.	Shaving machine single width 7.5 HP motor and starter	2 nos.	75,000	1,50,000	
6.	Dyeing and fat liquiring drum size:8'x6' with 10HP motor and starter	2 nos.	15,00,000	3,00,000	
7.	Reverseable typesetting machine 1800mm working width 15HP motor and starter	1 no.	1,75,000	1,75,000	
8.	Through feed buffing machine 1800mm working width with 15HP motor and starter	1no.	2,00,000	2,00,000	
9.	Toggle chamber with 10 plate toggle drier unit (Complete unit)	1no.	2,00,000	2,00,000	
10.	Slow comb staking M/c. with 75HP motor	2 nos.	65,000	1,30,000	
11.	Spray chamber with one compressor and two with exhaust(complete in all respect)	1unit.	1,00,000	1,00,000	spray systems
12.	Electronic area measuring machine 1800mm with motor (complete)	1no.	2,00,000	2,00,000	working width
13.	Weighing scale, working tables and other Tools, Lab Equipment and Misc. Item etc.	L.S.	L.S.	50,000	
14.	Cost of pollution control system	1unit.	L.S.	6,00,000	
15.	Cost of tube well, OHD, Water Supply System, Oil fired baby Boiler etc.	L.S.		2,40,000	
16.	Diesel generator set 50KVA with standard accessories	1no.		2,50,000	
17.	Cost of transformer and other electrical accessories and other legal expenses etc	L.S.		3,25,000	
18.	Electrification and Installation charges @ 10% on Rs. 35,50,000			3,25,000	
19.	Cost of furniture and office equipment	L.S.		1,00,000	
		<b>Total</b>		<b>40,00,000</b>	

### Total Fixed Capital

### Amount (Rs.)

Land and Building	23,00,000
Machinery and Equipment	40,00,000

**Total** **63,00,000**

## B. Working Capital (per month)

### (i) Personal and Technical (per month)

S No.	Designation	No	Salary	Amount (Rs)
1.	Manager-cum-tanner	1	15000	15,000
2.	Production Manager-cum-supervisor	1	8000	8,000
3.	Accountant-cum-clerk-cum-cashier	1	6000	6,000
4.	Store Keeper-cum-Typist	1	5000	5,000
5.	Watchmen/Peon/Attendant	2	3000	6,000
6.	Sweeper	1	3000	3,000
7.	Electrician-cum-Boiler man	1	4000	4,000
8.	Machine Operator/ Skilled Worker	7	5000	35,000
9.	Semi-skilled worker	8	4500	36,000
10.	Helper/unskilled	9	3000	27,000
			<b>Total</b>	<b>1,45,000</b>
	Perquisites @ 20% of salaries			29,000
			<b>Total</b>	<b>1,74,000</b>

### (ii) Raw Material (per month)

S No.	Particulars	Qty	Rates (Rs)	Value (Rs)
1.	Wet salted cow hides (Lower Quality) Ave. of wt. 15kg each	5000 pcs	600	30,00,000
2.	Cost of chemicals from soaking to finishing including services charges for splitting and processing and other charges outside etc.	5000 pcs	300	15,00,000
			<b>Total</b>	<b>45,00,000</b>

### (iii) Utilities

S No.	Utilities	Amount (Rs)
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1.	Power	40,000
2.	Fuel (Diesel+ Furnace Oil)	25,000
	<b>Total</b>	<b>65,000</b>

**(iv) Other Contingent Expenses**

S No	Particulars	Amount (Rs)
1.	Stationery	1,000
2.	Transportation charges	1,000
3.	Packaging charges	1,000
4.	Consumable stores	5,000
5.	Repair and maintenance	3,000
6.	Legal expenses and other Misc. itmes	3,000
7.	Sales expenses	2,000
8.	Advertisement	2,000
9.	Insurance	2,000
	<b>Total</b>	<b>20,000</b>

**(v) Total Recurring Expenses (per month) 47,59,000**

**(vi) Total working capital ( for 3 months) 1,42,77,000**

**C. Total Capital Investment**

1.	Fixed capital	Rs.	63,00,000
2.	Working capital for 3 months	Rs.	1,42,77,000
	<b>Total</b>	<b>Rs.</b>	<b>2,05,77,000</b>

**FINANCIAL ANALYSIS**

**1. Cost of Production (per year) Amount (Rs.)**

(i)	Total working capital	5,71,08,000
(ii)	Deprecation on building @ 5%	87,000
(iii)	Deprecation on machinery and equipment @ 10%	3,25,000
(iv)	Deprecation on office equipment @20%	20,000
(v)	Interest on total capital investment @ 12.5%	25,72,125

<b>Total</b>	<b>6,01,12,125</b>
<b>Say</b>	<b>6,01,12,100</b>

**2. Turn over (per year) By sale of finished leather as per:**

S No.	Items	Qty	Rates (Rs)	Amount (Rs)
(i)	Grade-I (2%)	30,000 sq.ft	75/sq.ft	22,50,000
(ii)	Grade-II (20%)	3,00,000 sq.ft	55	1,65,00,000
(iii)	Grade-III (40%)	6,00,000 sq.ft	40	2,40,00,000
(iv)	Grade-IV (38%)	4,50,000 sq.ft	30	1,35,00,000
(v)	Natural split leather 60%	9,00,000 sq.ft	10	90,00,000
			<b>Total</b>	<b>6,52,50,000</b>

**3. Net profit (per year) Rs. 51,37,900**

**4. Net Profit Ratio**

$$= \frac{\text{Net Profit (per year)} \times 100}{\text{Turn-Over (per year)}}$$

$$= 7.8\%$$

**5. Rate of Return**

$$= \frac{\text{Net Profit (per year)} \times 100}{\text{Total Investment}}$$

$$= 25\%$$

**6. Break-even Point**

Fixed Cost	Amount (Rs.)
(i) Depreciation on building	87,000
(ii) Depreciation on machinery	3,25,000
(iii) Depreciation on office equipment	20,000
(iv) Insurance	24,000
(v) Interest on total capital	25,72,100
(vi) 40% of salary	8,35,200
(vii) 40% of other contingencies and utilities	3,98,400
<b>Total</b>	<b>42,61,700</b>

$$\begin{aligned}\text{B.E.P} &= \frac{\text{F.C} \times 100}{\text{F.C} + \text{Net Profit}} \\ &= \frac{42,61,700 \times 100}{(42,61,700+51,37,900)} \\ &= \mathbf{45.34\%}\end{aligned}$$

## **Additional Information**

For Pollution treatment Plant, designing and construction on turn key Basis CLRI, Adyar, Chennai my be contact.

## **Addresses of Machinery and Equipments suppliers**

1. M/s. Bengal Machinery Co.Pvt. Ltd.  
9A, New Tangra Road,  
Kolkata-700046
2. M/s. Shalimar Engg. Works,  
12-B, Pabhuram Sakar Lane,  
Dr. Annie Besant Road,  
Kolkata-700015
3. M/s. Annapurna Engg. Works  
F-10/2, MIDC, Shirol, Kolhapur.
4. M/s. PDTC (NSIC)  
B-24, Guindly Indl. Estate,  
Chennai-9

## **Raw Material Suppliers**

1. Wet Salted raw-hides are available in the local raw-hides market of Kolkata and Panjipara, Dist: North Dinajpur, W.B.

## **Chemical Suppliers**

1. M/s BASF India Ltd.
2. M/s. Bayer(India) Ltd.
3. M/s. Sandoz (P) Ltd.
4. M/s Leather Chemicals and Industries Ltd  
A-I, New Alipur, Kolkata.
5. M/s. Chromtan India (P) Ltd.  
14, Temple Street,  
Kolkata
6. M/s. Golden Chemical(P) Ltd  
Vileparle,  
Mumbai-56
7. M/s. Balmer Laurie and Co.  
10, Spuc Tank Road,Chetpur,  
Chennai.
8. M/s Tamil Nadu Chromates and Chemical Ltd.  
13, Nangam Bakhen High Road,  
Chennai-34
9. M/s Allied Resin Chemical Ltd  
134/1, M.G Road,  
Kolkata

# PROJECT PROFILE

**PRODUCT** : Industrial Hand Gloves

**PRODUCT CODE** : 292007000

**QUALITY & STANDARD** : The following Indian Standard Specifications are available to guide the manufacturer of industrial hand gloves and to maintain quality control.  
Leather gauntlets for workers IS 2573:1963.  
Leather gauntlets for workers in iron and steel industry IS 2574:1963.  
Leather Mitten for workers in iron and steel industry . IS 3575:1963.  
The split chorme leather used must have been processed properly to given the required pliability and stich tear strength for assuming quality of gloves produced. The thread used for stiching must also conform to the prescribed standard.

**PRODUCTION CAPACITY** : Qty. : 75,000 pairs (per annum)

Value : Rs 26,25,000

**MONTH & YEAR OF PREPRATION** : July-2010

## Prepared by

### MSME- Development Institute

22 Godown Industrial Estate, Jaipur-302006

Phone : 0141-2212098, 2213099 Fax: 0141-2210553

e-mail: [dcdi-jaipur@dcmsme.gov.in](mailto:dcdi-jaipur@dcmsme.gov.in)

Web-[www.msmedijaipur.gov.in](http://www.msmedijaipur.gov.in)

## Introduction :

Industrial hand gloves serve as an item protective apparel for workers in factories. Hand gloves are various types and size. Fast moving size are 14", 16", 18" etc. The materials that go in the production of hands gloves vary from cotton fabrics and asbestos to variety of leathers. Leathers, however, since supreme the production of industrial hand gloves. Amongst leather chrome tanned split leather is predominantly in use possibly because of its cheap price and peculiar qualities needed for hand gloves as compared to other kind of leather. Chrome tanned split leather imparts special qualities to withstand roughness of the handling material and given enough flexibility and softness for the hand to move in the gloves easily and swiftly while working in the workshop. Such industrial gloves are widely used in industry, Railway and Defence. Due to rapid industrialization and expansion of railway the use of industrial hand gloves is expected to grow considerably.

### **Market Potential :**

Looking to the internal and external demand it appears that we are not in a position to cope with the demand and such there is a good scope for starting new units for manufacture of industrial hand gloves. Fortunately the raw material is available in the country especially split leather due to increase in production of finished leathers based on hides.

### **Basis And Presumptions :**

1. The production is based on a single shift basis of 8 hours per day and 25 working in a month.
2. Time period for achieving full capacity utilization is 3 years.
3. Labour will be engaged on monthly basis keeping in view the present rate prevailing in the market.
4. Rate of interest for fixed and working capital @ 14% per annum.
5. Margin money, 25%.
6. Land and Building, rented. Built- up area, 100sq. meters.

### **Implementation Schedule :**

It will take one year to complete all the formalities before starting the commercial productions.

### **Technical Aspects :**

### **Process of Manufacture :**

The leather is checked for uniform thickness, holes and flying cuts, if any. It is then marked with the pattern and then cut with the help of scissors or clicking knife into different components. After stitching all the components suitably, the gloves are tuned inside out. The gloves are then ready for packing and dispatch.

**Production Capacity :**

- (a) Industrial hand gloves : 75,000 pairs (per annum)
- (b) Value : Rs 26,25,000

**Pollution Control :**

This industry does not create any kind of pollution and as such there is need to take any preventive measure for pollution control.

**Financial Aspects :**

**D. Fixed Capital :**

- (vii) **Land Building**  
Covered area (100 sq. meters)-rented @ Rs. 5,000 per month

- (ii) **Machinery and Equipments**

S No.	Description	Imp/ Ind	Qty	Rate (Rs)	Value (Rs)
1.	Flat bed single needle industrial Sewing machine power operated ½ HP motor	Ind	5	9,100	45,500
20.	Cylinder bed single needle machine power operated ½ HP motor	Ind	2	13,000	26,000
3.	Cost of tools and fixture				7,000
4.	Cost of office furniture and workshop furniture				35,000
5.	Electrification and installation of machinery @10%				7,150

	<b>Total</b>	<b>1,20,150</b>
<b>(iii) Pre- operative Expense</b>		5,000
<b>Total Fixed Capital (ii + iii)</b>		1,25,650
	<b>Say</b>	<b>1,25,600</b>

#### **E. Working Capital (p.m)**

##### **(i) Staff and Labour**

<b>S No.</b>	<b>Designation</b>	<b>No</b>	<b>Salary</b>	<b>Total (Rs)</b>
1.	Manager	1	10,000	10,000
2.	Supervisor	1	8,000	8,000
3.	Accountant / Storekeeper	1	5,000	5,000
4.	Clerk cum Cashier	1	4,000	4,000
5.	Watchman cum Peon	1	3,000	3,000
6.	Sweper (Part Time)	1	1,000	1,000
7.	Skilled Worker	7	5,000	35,000
8.	Skilled Worker	4	3,000	12,000
			<b>Total</b>	<b>78,000</b>
				Add perquisites @15% on Salary
				11,700
			<b>Total</b>	<b>89,700</b>

s

##### **(ii). Raw Material (p.m)**

<b>S No.</b>	<b>Description</b>	<b>Qty</b>	<b>Rates (Rs)</b>	<b>Amount (Rs)</b>
1.	Chrome tanned split leather (3.5 pairs per kg)	1786 kg	45/kg	80,370
2.	Thread	6250 pair	0.70/pair	4,375
3.	Cartons for Packing	65 Nos.	35/ cartons	2,275

**Total**                      **87,020**  
**Say**                              **87,000**

**(iii) Utilities (p.m)**

<b>S No.</b>	<b>Description</b>	<b>Amount (Rs)</b>
1.	Power	3,000
2.	Water	500
	<b>Total</b>	<b>3,500</b>

**(iv) Other Expenditure (p.m)**

<b>S No.</b>	<b>Description</b>	<b>Amount (Rs)</b>
1.	Rent	5,000
2.	Postage & Stationary	500
3.	Repair & Maintenance	1,000
4.	Transportation Charge	1,000
5.	Telephone	1,000
6.	Advertisement & Publicity	1,000
7.	Insurance	500
8.	Misc Exp	1,000
	<b>Total</b>	<b>11,000</b>

**(v). Total Working capital (p.m)**

<b>S No.</b>	<b>Description</b>	<b>Amount (Rs)</b>
1.	Staff & Labour	89,700
2.	Raw Material	87,000
3.	Utilities	3,500
4.	Other Expenditure	11,000

	<b>Total</b>	<b>1,91,200</b>
(vi). Working Capital for 3 Month		<b>5,73,600</b>

**F. Total Capital Investment**

<b>S No.</b>	<b>Description</b>	<b>Amount (Rs)</b>
1.	Fixed Capital	1,25,000
2.	Working Capital for 3 Month	5,73,600
	<b>Total</b>	<b>6,99,200</b>

**D. Financial Analysis**

**(i) Cost of Production (per year)**

<b>S No.</b>	<b>Description</b>	<b>Amount (Rs)</b>
1.	Total recurring cost	2,29,44,000
2.	Deprecation on machinery @ 10%	7,150
3.	Deprecation on tools @ 25%	1,750
4.	Deprecation on furniture @ 20%	7,000
5.	Interest on Total Capital Investment @ 14%	97,888
	<b>Total</b>	<b>24,08,188</b>
	<b>Say</b>	<b>24,08,200</b>

**(ii) Turnover (per year)**

<b>S No.</b>	<b>Description</b>	<b>Qty</b>	<b>Rates (Rs)</b>	<b>Amount (Rs)</b>
1.	Industrial hand gloves	75000 pairs	35 pairs	26,25,000

**(iii) Net Profit (before taxation) (per year)**

1.	Turnover	26,25,000
	Cost of Production (-)	24,08,200

**Total** **2,16,800**

**(iv) Net Profit Ratio**

$$\frac{\text{Net Profit per year} \times 100}{\text{Turnover per year}}$$

$$\frac{2,16,800 \times 100}{2,62,5000}$$

= **8.25%**

**(v) Return on Total Investment**

$$\frac{\text{Net Profit per year} \times 100}{\text{Total Investment}}$$

=  $\frac{2,16,900 \times 100}{6,99,200}$

= **31%**

**(vi) Break-even Point**

**Fixed Cost (Per Annum)**

<b>S No.</b>	<b>Description</b>	<b>Amount (Rs)</b>
1.	Rent for one year	60,000
2.	Total Depreciation	9,460
3.	Interest on Total Investment	97,888
4.	40% of Salary and Wages	4,30,560
5.	40% of utilities and other	67,200
6.	Insurance	6,000
	<b>Total</b>	<b>6,71,108</b>
	<b>Say</b>	<b>6,71,100</b>

**B.E.P**

=  $\frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Net Profit}}$  =  $\frac{6,71,100 \times 100}{6,71,100 + 2,16,800}$  = **75.6%**

## **Addresses of Machinery and Equipments suppliers**

5. M/s. Singer Sewing Machine Co.  
Nehru Bazar,  
Jaipur
6. M/s. Industrial Sewing Machine Co. Ltd.,  
Kakad Chambers, 5<sup>th</sup> Floor,  
Dr. Annie Besant Road,  
Mumbai
7. M/s. Peelu Sales Coropration,  
Meera Hussani Chouraha,  
Hing Ki Mandi,  
Agra (U.P.)

## **Raw Material Suppliers**

1. M/s. Tata Exports Tannery Division,  
Agra Mumbai Road,  
Dewas (M.P.)
2. M/s. Tannery and Footwear Corporation of India  
Civil Lines,  
Kanpur (U.P)
3. M/s.Gordon Woodroffee Leather Mfg.Co. Ltd,  
Pallavaram,  
Chennai-43
4. M/s. Usha Leather Industries,  
Dharavi,  
Mumbai-17

## PROJECT PROFILE

Product : Butylated Hydroxy Toluene

Product Code : 31352

NIC Code : 24117

Quality Standards : IS : 5334 -1969

Production Capacity : Quantity : 75 MT  
Value: Rs 1,83,75,000/-

Month and year of preparation. : December 2010

Prepared by : MSME Development Institute,  
Govt. of India, Ministry of MSME  
Bais Godam Industrial Estate,  
Jaipur-302006

Phone: 0141 – 2212098,213099,2215847

Fax : 0141 – 2210553

E-mail [dcdi-jaipur@dcmsme.gov.in](mailto:dcdi-jaipur@dcmsme.gov.in)

Website : [www.msmedijaipur.gov.in](http://www.msmedijaipur.gov.in)

## **1. INTRODUCTION:**

Butylated Hydroxy Toluene abbreviated as BHT is chemically 2,6 ditertiary-butyl-p-cresol (DBPC). This chemical is used as anti-oxidant for food, animal feed, petroleum products, synthetic rubbers, plastics, animal & vegetable oils and soaps etc. It can also be used as anti-skinning agent in paints and inks.

The molecular formula of BHT is  $C_{15}H_{24}O$ , its molecular weight is 220.34. It is white in colour and exists in powder form with melting point of  $70^{\circ}C$  and boiling point  $265^{\circ}C$ . Its density is  $1.048 \text{ gm/cm}^3$ . It is insoluble in water, freely soluble in toluene, soluble in methanol, ethanol, isopropanol, methyl-ethyl ketone, acetone, petroleum ether benzene etc.

A large portion of the demand is met by import. Therefore it is a good import substitute item. Very few units are manufacturing this item in India. With the same set of plant & machinery another analogous chemical Butylated Hydroxy anisol (BHA) can also be manufactured. BHA is also having similar applications particularly as anti-oxidant in food products. In certain cases, BHT and BHA are used in combination when they reinforce one another in their anti-oxidant properties. As such this chemical is having good scope.

## **2. MARKET :**

With rising trend of the growth of various industries using anti-oxidants the demand of anti-oxidants is increased day by day. Presently, a large portion of demand is met by import and thus has a good potential for the manufacture of such import substitutes. Anti-oxidants are mainly used in food, plastics, animal & vegetable oils, soaps, cosmetic products etc. Butylated Hydroxy Toluene Industry has good potential to grow in India.

## **3. BASIS AND PRESUMPTIONS:**

The profile is drawn on the basis of following presumptions-

(i) No. of shifts per day	1
(ii) Working Hours per shift	8
(iii) Working days per annum	300
(iv) Working efficiency	70%
(v) Time period for achieving max. capacity	3 Years
(vi) Margin money	25% of capital investment
(vii) Labour charges	As per the Minimum Wages Act of State Govt.
(viii) Rate of interest on fixed & Working Capital	15%

#### 4. IMPLEMENTATION SCHEDULE

Following steps are involved in the implementation of this project-

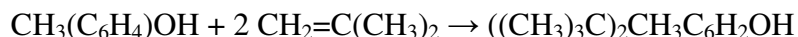
(i)	Preparation of project report	½ month
(ii)	Selection of site	½ month
(iii)	Filing of entrepreneurs memorandum	½ month
(iv)	Obtaining NOC from State Pollution Control Board	½ month)
(v)	Sanction of loan from Bank	1½ month
(vi)	Procurement of machinery & equipment	½ month
(vii)	Erection & commissioning	½ month
(viii)	Recruitment of staff	1 month
(ix)	Trial run	½ month

-----  
**Total 6 Months**

#### 5. TECHNICAL ASPECTS:

##### 5.1 Process of Manufacture:

In the manufacture of Butylated Hydroxy Toluene involves alkylation of p-Cresol with iso-butylene. The reaction is carried out in presence of sulphuric acid as a catalyst. The source of iso-butylene is C<sub>4</sub> - refinery system . The iso-butylene is reacted with p-cresol in presence of sulphuric acid as catalyst. The BHT formed is separated , neutralized, crystallized in crystallizer and then subjected to centrifuge , dried in drying oven and packed.



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

Bureau of Indian Standards has formulated a Standard Specification for Butylated Hydroxy Toluene which prescribes the requirement and method of sampling and test, vide No. IS: 5334-1969. However, technical grade product is manufactured as per customers requirement.

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

Quantity	75 MT
Value	Rs 1,83,75,000/-

##### 5.4. Pollution Control Needs:

Since, the Industry comes under the category of polluting Industries, water released should be properly neutralized and made free from hazardous chemicals before disposal. A small effluent treatment devise has to be installed under the able guidance of State Pollution Control Board.

## 5.5. Energy Conservation.

Proper maintenance of power operated machines and judicious use of them will conserve energy. However, pipelines of boiler shall be properly insulated and priority should be given to install energy efficient machinery and equipment.

## 6. **FINANCIAL ASPECTS**

### 6.1 Fixed Capital

#### 6.1.1 Land and building:

	<u>Area Sq Metre</u>	<u>Rate per Sq Metre</u>	<u>Value Rs.</u>
Land	500	500/-	2,50,000/-
Building	250	2,500/-	6,25,000/-
(Building includes factory shed, laboratory, store, office etc)			
Construction of Tank for effluent treatment			1,00,000/-
Construction of boundary wall,			
Approach road etc.			50,000/-
			<b>Total Rs. 10,25,000/-</b>

#### 6.1.2 Plant and Machinery:

<u>Sl.No.</u>	<u>Name of machinery</u>	<u>Indigenous/ Imported.</u>	<u>Quantity</u>	<u>Price (Rs.)</u>
(i)	SS Kettle, cylindrical, open top, bottom dished, jacketed, along with agitator complete with drive unit -7.5 HP, 3 phase, 1440 RPM electric motor Cap- 400 Litres	Indigenous	1 No.	4,20,000/-
(ii)	Separator	Indigenous	2 Nos.	40,000/-
(iii)	Neutralizer, cap- 600 Lts.	Indigenous	2 Nos.	1,20,000/-
(iv)	SS Crystallizer, cap 600 Lts.	Indigenous	1 No.	2,00,000/-
(v)	Hydro-extractor, 24" S S Basket	Indigenous	1 No.	2,00,000/-
(vi)	Drying oven with 48 S S Trays	Indigenous	1 No.	2,00,000/-
(vii)	Boiler, cap-200 Kg./Hr. at 100 Psi pressure complete with accessories and pump	Indigenous	1 No.	2,50,000/-

(viii)	Gas vaporizer along with burners	Indigenous	1 No.	2,00,000/-
(ix)	Oil heating & circulation System	Indigenous	1 No.	2,00,000/-
(xi)	Weighing Scale, platform type, cap- 200 Kg.	Indigenous	1 No.	20,000/-
(xi)	Testing equipments	Indigenous	1 No.	1,00,000/-
(xii)	Other equipments like conde chimney, Rota meter air blower etc	Indigenous	1 No.	2,00,000/-
(xiii)	Pollution control devices	Indigenous	1 No.	1,50,000/-
(xiv)	Installation and electrification charges @ 10% of plant and machinery	-	-	2,30,000/-
(xv)	Pipelines, valves, fixtures, Fire fighting equipments and miscellaneous equipments	-	LS	70,000/-
(xvi)	Storage Tank for Gas Capacity- 10 MT	Indigenous	1 No.	2,00,000/-
(xvii)	Office equipment, furniture etc.	-	LS	1,00,000/-
			<b>Total</b>	<b>Rs.29,00,000/-</b>

**6.1.3 Pre-operative Expenses:** Rs.25,000/-

**6.1.4 Total fixed capital** **Rs.39,50,000/-**

## **6.2 Working Capital (Per Month)**

### **6.2.1 Personnel (Per Month)**

	<b>Designation</b>	<b>Nos.</b>	<b>Salary</b>	<b>Total Salary</b>
(i)	Manager	1	7,000/-	7,000/-
(ii)	Chemist/ Supervisor	1	6,000/-	6,000/-
(iv)	Skilled Worker	2	5,000/-	10,000/-
(v)	Unskilled Worker	3	4,000/-	12,000/-
(vi)	Clerk cum typist	1	5,000/-	5,000/-
(vii)	Watchman cum peon	1	4,000/-	4,000/-
				-----
				44,000/-
Perquisites @ 15%				6,600/-
				-----
				<b><u>Total Rs. 50,600/-</u></b>

### 6.2.2 Raw Materials (Per Month):

<u>Sl. No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Rate</u>	<u>Value Rs.</u>
(i)	Para-cresol	3,200 Kg.	150/-	4,80,000/-
(ii)	Sulphuric Acid	3,250 Kg.	8/-	26,000/-
(iii)	Solvent & chemicals	7,800 Kg.	50/-	3,90,000/-
(iv)	C <sub>4</sub> – L P Gas	8 MT	32,000/-	2,56,000/-
(v)	Packing Material, 25 Kg bag	LS	-	15,000/-
<b>Total Rs</b>				<b>11,67,000/-</b>

### 6.2.3 Utilities (Per Month):

Electricity, 3000 KW @ 5/-	15,000/-
Water LS	2,500/-
Fuel LS	3,500/-
<b>Total Rs.</b>	<b>21,000/-</b>

### 6.2.4 Other Contingent Expenses (Per Month) :

Postage stationery	500/-
Insurance	4,000/-
Telephone	2,500/-
Repair and maintenance	2,000/-
Consumables	2,200/-
Transportation Charges & sales expenses	2,000/-
Advertisement & Publicity	1,000/-
Miscellaneous Expenses	2,200/-
<b>Total Rs</b>	<b>16,400/-</b>

### 6.2.5 Recurring Expenditur (Per Month):

Staff and Labour	50,600/-
Raw materials	11,67,000/-
Utilities	21,000/-
Other Contingent Expenses.	16,400/-
<b>Total Rs.</b>	<b>12,55,000/-</b>

### 6.2.6 Working Capital on 3 Months basis:

$$1255000 \times 3 = \text{Rs.}37,65,000/-$$

### 6.2.7 TOTAL FIXED CAPITAL INVESTMENT:

(i) Fixed Capital	39,50,000/-
(ii) Working Capital for 3 months	37,65,000/-
<b>Total</b>	<b>Rs. 77,15,000/-</b>

## 7. MACHINERY UTILISATION:

Bottleneck in the process is S S Kettle having minimum capacity of production which will determine the production capacity of the unit.

## 8. FINANCIAL ANALYSIS:

### 8.1 Cost of Production (Per Year)

i)	Total recurring cost.	1,50,60,000/-
ii)	Depreciation on Building @ 5 %	51,250/-
iii)	Depreciation on Plant and Machinery @ 10% of cost of Machinery & equipment	2,30,000/-
iv)	Depreciation on Pipe lines and fixtures, storage tank & misc. equipments @ 25%	67,500/-
vii)	Depreciation on Office equipment @ 20%	20,000/-
v)	Interest on total capital investment @ 15%.	11,57,250/-
		<hr/>
		<b>Total Rs. 1,65,86,000/-</b>

### 8.2 Turn Over (Per Year):

<u>Item</u>	<u>Quantity</u>	<u>Rate(Rs.)</u>	<u>Value (Rs.)</u>
BHT	75 MT	2,45,000/-	1,83,75,000/-

### 8.3 Net Profit (Per Year):

= Turn Over - Cost of Production

= 1,83,75,000 – 1,65,86,000 = **Rs. 17,89,000/-**

#### 8.3.1 Net Profit Ratio:

$$\begin{aligned} &= \frac{\text{Net Profit Per Year} \times 100}{\text{Turn Over Per Year.}} \\ &= \frac{17,89,000 \times 100}{1,83,75,000} = \mathbf{9.74 \%} \end{aligned}$$

#### 8.3.2 Rate of Return:

$$\begin{aligned} &= \frac{\text{Net profit per year} \times 100}{\text{Total capital investment}} \\ &= \frac{17,89,000 \times 100}{77,15,000} = \mathbf{23.19 \%} \end{aligned}$$

## **8.4 Break Even Analysis:**

### **8.4.1 Fixed Cost:**

i)	Insurance	48,000/-
ii)	Depreciation on Building @ 5 %	51,250/-
iii)	Depreciation on Plant and Machinery @ 10% of cost of Machinery & equipment	2,30,000/-
iv)	Depreciation on Pipe lines and fixtures, storage tank & misc. equipments @ 25%	67,500/-
vii)	Depreciation on Office equipment @ 20%	20,000/-
v)	Interest on total capital investment @ 15%.	11,57,250/-
vii)	40% of salary and wages	2,42,880/-
viii)	40% other contingent expenses, excluding insurance	59520/-
		<hr/>
		Total Rs. 18,76,400/-

### **8.4.2 Profit before tax**

**Rs17,89,000/-**

### **8.6.3 B.E.P.**

$$\begin{aligned} &= \frac{\text{Fixed Cost}}{\text{Fixed cost} + \text{Profit}} \times 100 \\ &= \frac{18,76,400}{18,76,400 + 17,89,000} \times 100 \\ &= \frac{18,76,400}{3665400} \times 100 = \underline{\underline{51.19\%}} \end{aligned}$$

## **9. NAMES AND ADDRESSES OF MACHINERY SUPPLIERS**

1. M/s Otoklin Filtrs of India Ltd., 1006, Prasad Chambers, Near-Roxy Cinema Mumbai-400004
2. M/s. Magumps, "Trisandhya", 97, Phalka Road, Dadar, Mumbai-400014
3. M/s Kanra Engineering Co. Pvt. Ltd., Melville House, Dr. Mascarehans Road, Mazagaon, Mumbai-400010
4. M/s Sparc, Vithalwadi Road, Pune-411030
5. M/s Textile Art Machinery, 145, Adarsh Inustrial Estate, Chakala, Andheri (E), Mumbai-400093
6. M/s Varsha Boilers, Pvt. Ltd., 5, New Marine Lines, Mumbai-400020

## **10. NAMES AND ADDRESSES OF RAW MATERIAL SUPPLIERS**

1. M/s. Indian Petrochemicals Corpn. Ltd., P.O. Petrochemicals, Baroda.
2. M/s National Organic Chemical Industries Ltd., Mafatlal Centre, Nariman Point, Mumbai-400021
3. M/s Albright Morarji & Pandi Pvt. Ltd., 3<sup>rd</sup> Floor, 84, Veer Nariman Point, Mumbai

# Butylated hydroxytoluene

From Wikipedia, the free encyclopedia

Jump to:[navigation](#), [search](#)

## Butylated hydroxytoluene

**IUPAC name**[\[hide\]](#)

2,6-bis(1,1-dimethylethyl)-4-methylphenol

**Other names**[\[hide\]](#)

2,6-di-*tert*-butyl-4-methylphenol; 2,6-di-*tert*-butyl-*p*-cresol (DBPC); butylated hydroxytoluene; BHT

### Identifiers

<a href="#">CAS number</a>	<a href="#">128-37-0</a>
<a href="#">ChemSpider</a>	<a href="#">13835296</a>
<a href="#">EC number</a>	<a href="#">204-881-4</a>
<a href="#">RTECS number</a>	GO7875000
<a href="#">SMILES</a>	<a href="#">[show]</a>

[InChI](#) [\[show\]](#)

[InChI key](#) NLZUEZXRPGMBCV-UHFFFAOYAU

### Properties

<a href="#">Molecular formula</a>	C <sub>15</sub> H <sub>24</sub> O
<a href="#">Molar mass</a>	220.35 g/mol
Appearance	White powder
<a href="#">Density</a>	1.048 g/cm <sup>3</sup> , solid
<a href="#">Melting point</a>	70–73 °C
<a href="#">Boiling point</a>	265 °C (538 K)
<a href="#">Solubility in water</a>	1.1 mg/L (20 °C) <sup>[1]</sup>

### Hazards

<a href="#">MSDS</a>	<a href="#">External MSDS</a>
<a href="#">R-phrases</a>	22-36 37 38
<a href="#">S-phrases</a>	26-36
<a href="#">Flash point</a>	127 °C

### Related compounds

Related compounds [Butylated hydroxyanisole](#)

[\(what is this?\)](#) [\(verify\)](#)

Except where noted otherwise, data are given for materials in their [standard state](#) (at 25 °C, 100 kPa)

[Infobox references](#)

**Butylated hydroxytoluene** (BHT), also known as **butylhydroxytoluene**, is a [lipophilic](#) (fat-soluble) [organic compound](#) that is primarily used as an [antioxidant food additive](#) ([E number](#) E321) as well as an antioxidant additive in [cosmetics](#), pharmaceuticals, [jet fuels](#), [rubber](#), [petroleum](#) products, [electrical transformer oil](#),<sup>[2]</sup> and [embalming](#) fluid.

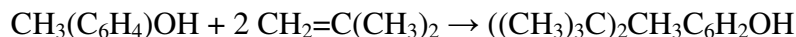
## ***Contents***

[\[hide\]](#)

- [1 Production](#)
- [2 Reactions](#)
- [3 Controversy](#)
- [4 References](#)
- [5 See also](#)
- [6 External links](#)

## ***[edit]*** Production

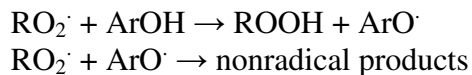
BHT is prepared by the reaction of [p-cresol](#) (4-methylphenol) with [isobutylene](#) (2-methylpropene) catalysed by [sulfuric acid](#):<sup>[3]</sup>



Alternatively, BHT is prepared from [2,6-di-tert-butylphenol](#) by hydroxymethylation or aminomethylation followed by [hydrogenolysis](#). Approximately 4M kg/y are produced.

## ***[edit]*** Reactions

The species behaves as a synthetic analogue of [vitamin E](#), primarily acting as a terminating agent that suppresses [autoxidation](#), a process whereby unsaturated (usually) organic compounds are attacked by atmospheric oxygen. BHT stops this [autocatalytic](#) reaction by converting peroxy radicals to hydroperoxides. It effects this function by donating a hydrogen atom:



where R is alkyl or aryl, and where ArOH is BHT or related phenolic antioxidants. One can see that each BHT consumes two peroxy radicals.<sup>[4]</sup>

## ***[edit]*** Controversy

In the 1970s, [Benjamin Feingold](#), a San Francisco MD who established the [Feingold Diet](#), claimed that BHT could produce hyperactivity in some children. In addition, some controversy surrounds the link of BHT to cancer risk,<sup>[5]</sup> some studies showing the potential to increase and some showing a decrease in risk.<sup>[6][7][8]</sup> Some food industries have voluntarily eliminated this additive from their products, and since the 1970s it has been steadily replaced with the less studied [BHA](#).

BHT is marketed as a health food supplement in capsule form. It has been reported to have anti-viral effects, particularly in use against herpes family viruses and in combination with L-lysine and Vitamin C.<sup>[9][10][11][12][13][14][15]</sup> This latter use has made it into some of the more popular literature.<sup>[16][17]</sup>

Closely related phenol antioxidants exhibit low toxicity. For [2,6-di-tert-butylphenol](#), the [LD50](#) is greater than 9 g/kg.<sup>[31]</sup>

[

## **PROJECT PROFILE**

Product : H.D.P.E. Pipe.

Product Code : 42202

NIC Code : 25209

Quality Standard : IS - 4984 – 1995 HDPE Pipe for water supply  
IS - 14333 – 1996 HDPE Pipe for Sewerage  
IS - 14151 (Part - I) 1999 Polyethylene Pipe for  
Sprinkler Irrigation System  
IS - 14151 (Part - II) 1999 Polyethylene Pipe  
for Sprinkler Irrigation System

Production Capacity ( Per Annum) : Quantity - 216 M.T  
Value - Rs. 2,05,20,000/-

Month & Year of Preparation : January 2011

Prepared by : MSME Development Institute,  
Govt. of India, Ministry of MSME  
Bais Godam Industrial Estate,  
Jaipur-302006

Phone: 0141 – 2212098,213099,2215847

Fax : 0141 – 2210553

E-mail [dcdi-jaipur@dcmsme.gov.in](mailto:dcdi-jaipur@dcmsme.gov.in)

Website : [www.msmedijaipur.gov.in](http://www.msmedijaipur.gov.in)

## **1. INTRODUCTION:**

HDPE pipes are important plastic products which have wide range of applications. These have more tensile strength in comparison to other plastic pipes. These are being used for Sprinkler Irrigation System, potable water supply and sewerage purpose. Their low cost, easily installation and better durability make them ideal for the purpose. They also offer very good resistance to most of the chemicals and have excellent electrical insulation properties. These pipes are also used for circulation of acids in various chemical industries due to their acid resistant quality.

## **2. MARKET :**

The demand of HDPE Pipes are likely to increase due to their wide use in various sectors in India. Apart from its regular uses, such as for irrigation system, water supply, sewerage, it is being used by Department of Telecommunication for conduit for optical fiber cables. Looking to its increased demand, it appears to be good scope for setting up new small scale industries. Hence the product has good market potential.

## **3. BASIS AND PRESUMPTIONS:**

The profile is drawn on the basis of following presumptions-

(i) No. of shifts per day	1
(ii) Working Hours per shift	8
(iii) Working days per annum	300
(iv) Working efficiency	70%
(v) Time period for achieving max. capacity	3 Years
(vi) Margin money	25% of capital investment
(vii) Labour charges	As per prevailing market rate & the Minimum Wages Act of State Govt.
(viii) Rate of interest on fixed & Working Capital	15%

## **4. IMPLEMENTATION SCHEDULE**

Following steps are involved in the implementation of this project-

(i) Preparation of project report	½ month
(ii) Selection of site	½ month
(iii) Filing of entrepreneurs memorandum	½ month
(iv) Obtaining NOC from State Pollution Control Board	½ month)
(v) Sanction of loan from Bank	1½ month
(vi) Procurement of machinery & equipment	½ month
(vii) Erection & commissioning	½ month
(viii) Recruitment of work force	1 month
(ix) Trial run	½ month

-----  
**Total 6 Months**

## 5. TECHNICAL ASPECTS:

**5.1 Process of Manufacture:** HDPE pipes are made from High Density Polyethylene granules of extrusion grade. HDPE pipe is extruded by single screw type 65 mm extruder through a circular slit. This circular slit governs the size of the pipes to be extruded. Different dies are used for manufacturing of different sizes of pipes. The extruded line of pipe is passed through motorised cutting device for cutting the pipes. The extruded line of pipe is passed through motorised cutting device for cutting the pipes into required sizes.

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

Bureau of Indian Standards has formulated a Standard Specification for HDPE pipes for various purposes as mentioned below-

IS - 4984 – 1995 HDPE Pipe for water supply

IS - 14333 – 1996 HDPE Pipe for Sewerage

IS - 14151 (Part - I) 1999 Polyethylene Pipe for Sprinkler Irrigation System

IS - 14151 (Part - II) 1999 Polyethylene Pipe for Sprinkler Irrigation System

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

Quantity	216 MT
Value	Rs 2,05,20,000/-

### **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. However, pipelines of boiler shall be properly insulated and priority should be given to install energy efficient machinery and equipment.

## **6. FINANCIAL ASPECTS**

### **6.1 Fixed Capital**

#### **6.1.1 Land and building:**

Total area	-	1000 Sq. Meter	
Covered area	-	700 Sq. Meters, consisting of working shed, Godown, office & laboratory etc.	Rented Rs.6000/- per Month

The rental value may vary from place to place.

### 6.2.2 Plant & Machinery :

<u>Sl.No.</u>	<u>Name of machinery</u>	<u>Indigenous/ Imported.</u>	<u>Quantity</u>	<u>Price (Rs.)</u>
(i)	Extruder, 65 mm., complete with vacuum sizing tank, Hawl-off, traveling saw, tripping chute and compressor coiler etc	Indigenous	1 No.	17,00,000/-
(ii)	Mixer	Indigenous	1 Nos.	35,000/-
(iii)	Scrap Grinder	Indigenous	1 Nos.	35,000/-
(iv)	Chilling Plant	Indigenous	1 No.	50,000/-
(v)	Testing equipments	Indigenous	-	2,00,000/-
(vi)	Installation & electrification @ 10% of cost of machinery	-	-	2,02,000/-
(vii)	Dies Mandrel Sets Size 20, 40,63,75, 90 and 110 mm	Indigenous	-	1,70,000/-
(viii)	Fixtures & Miscellaneous equipments	Indigenous	LS	25,000/-
(ix)	Office equipment, furniture etc.	-	<u>LS</u>	<u>50,000/-</u>

Total Rs.24, 67,000/-

6.1.3 Pre-operative Expenses:

Rs.33,000/-

6.1.4 Total fixed capital (6.1.2 + 6.1.3)

**Rs.25,00,000/-**

### 6.2 Working Capital (Per Month)

#### 6.2.1 Personnel (Per Month)

	<u>Designation</u>	<u>Nos.</u>	<u>Salary</u>	<u>Total Salary</u>
(i)	Supervisor	1	6,000/-	6,000/-
(ii)	Skilled Worker	2	4,500/-	9,000/-
(iii)	Unskilled Worker	2	4,000/-	8,000/-
(iv)	Clerk cum typist	1	4,500/-	4,500/-
(v)	Watchman cum peon	1	4,000/-	4,000/-

31,500/-

Perquisites @ 15%

4,725/-

Total Rs. 36,225/-

**6.2.2 Raw Materials (Per Month):**

<u>Sl. No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Rate</u>	<u>Value Rs.</u>
(i)	HDPE Granules	17.1 MT	78,000/-	13,33,800/-
(ii)	Master Batch	0.9 MT	82,000/-	<u>73,800/-</u>
				<b>Total Rs. 14,07,600/-</b>

**6.2.3 Utilities (Per Month):**

Electricity, 4500 KW @ 5/-	22,500/-
Water LS	<u>2,500/-</u>
<b>Total Rs.25,000/-</b>	

**6.2.4 Other Contingent Expenses (Per Month) :**

Rent	6,000/-
Insurance	3,500/-
Postage stationery	500/-
Telephone	1,500/-
Repair and maintenance	1,000/-
Transportation Charges & sales expenses	2,000/-
Advertisement & Publicity	1,500/-
Miscellaneous Expenses	1,175/-

-----  
**Total Rs 17,175/-**

**6.2.5 Recurring Expenditur (Per Month):**

Staff and Labour	36,225/-
Raw materials	14,07,600/-
Utilities	25,000/-
Other Contingent Expenses.	<u>17,175/-</u>

**Total Rs. 14,86,000/-**

**6.2.6 Working Capital on 3 Months basis:**

14,86,000 X 3 = **Rs. 44,58,000/-**

**6.2.7 TOTAL CAPITAL INVESTMENT:**

(i) Fixed Capital	25,00,000/-
(ii) Working Capital for 3 months	44,58,000/-,
<hr/>	
<b>Total</b>	<b>Rs. 69,58,000/-</b>

## 7. MACHINERY UTILISATION:

The bottleneck equipment is the extruder which determines the entire output. of the unit.

## 8. FINANCIAL ANALYSIS:

### 8.1 Cost of Production (Per Year)

i)	Recurring expenditure	1,78,32,000/-
ii)	Depreciation on Plant and Machinery @ 10% of cost of Machinery & equipment	2,02,000/-
iii)	Depreciation on Dies, mandrels, fixtures and other misc. equipments @ 25%	48,750/-
iv)	Depreciation on Office equipment @ 20%	10,000/-
v)	Interest on total capital investment @ 15%.	10,43,700/-
		<hr/>
		<b>Total Rs. 1,91,36,450/-</b>

### 8.2 Turn Over (Per Year):

<u>Item</u>	<u>Quantity</u>	<u>Rate(Rs.)</u>	<u>Value (Rs.)</u>
HDPE Pipes	216 MT	95,000/- per MT	2,05,20,000/-

### 8.3 Net Profit (Per Year):

$$\begin{aligned} &= \text{Turn Over} - \text{Cost of Production} \\ &= 2,05,20,000.00 (-) 1,91,36,450.00 \\ &= \text{Rs. 13,83,550/-} \end{aligned}$$

#### 8.3.1 Net Profit Ratio:

$$\begin{aligned} &= \frac{\text{Net Profit Per Year} \times 100}{\text{Turn Over Per Year.}} \\ &= \frac{13,83,550 \times 100}{2,05,20,000} = 6.74 \% \end{aligned}$$

#### 8.3.2 Rate of Return:

$$\begin{aligned} &= \frac{\text{Net profit per year} \times 100}{\text{Total capital investment}} \\ &= \frac{13,83,550 \times 100}{69,58,000} = 19.88 \% \end{aligned}$$

### 8.4 Break Even Analysis :

#### 8.4.1 Fixed Cost:

i)	Rent	72,000/-
ii)	Insurance	42,000/-
iii)	Depreciation on Plant and Machinery @ 10% of cost of Machinery & equipment	2,02,000/-
iv)	Depreciation on Dies, mandrels, fixtures and other misc. equipments @ 25%	48,750/-
v)	Depreciation on Office equipment @ 20%	10,000/-
vi)	Interest on total capital investment @ 15%.	10,43,700/-
vii)	40 % of salaries	1,73,880/-
viii)	40 % of other contingent expenses (excluding rent & insurance)	36,840/-

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Total Rs. 16,29,170/-

#### 8.4.2 Profit before tax

**Rs. 13,83,550/-**

$$\begin{aligned} 8.6.3 \text{ B.E.P.} &= \frac{\text{Fixed Cost} \times 100}{\text{Fixed cost} + \text{Profit}} \\ &= \frac{16,29,170 \times 100}{16,29,170 + 13,83,550} \\ &= \frac{16,29,170 \times 100}{30,12,720} = \underline{\underline{54.08 \%}} \end{aligned}$$

## 9. NAMES AND ADDRESSES OF MACHINERY SUPPLIERS

1. M/s Hindustan Plastic And Machine Corporation, 5, Category II, D. S. I. D. C. Industrial Area Nangloi, New Delhi, Delhi - 110 001
2. M/s. **Sai Machine Tools Private Limited**  
Plot No. 23, Sector-A, Sanwer Road, Industrial Area, Indore, Madhya Pradesh - 452 015, India
3. M/s **R R Plast Extrusions Private Limited**  
B-3, Nand Jyot Industrial Estate, Safed Pool, Sakinaka, Andheri East, Mumbai, Maharashtra - 400 072, India
4. M/s **Suresh Engineering Works**  
13,14-B, Kalyan Vishranti Grah. South Tukoganj, Indore, Madhya Pradesh - 452 001, India
5. M/s **Yadav Engineering Works**  
CN, 150, Mangol Pur Khurd, Talab Road, New Delhi, Delhi - 110 0837.
6. M/s **Windsor Machines Limited**

Shah Industrial Estate, C Building, 1st Floor, Saki Vihar Road, Andheri East, Mumbai, Maharashtra - 400 072, India

7. M/s **Kollite Industries**  
334, Sudershan Park, Behind E.S.I Qtrs Ring Road, New Delhi,
8. M/s **Shakti Plastic Engineering Works**  
G 16, Shayona City III R.C. Technical Road, Ghatlodiya, Ahmedabad, Gujarat - 380 061
9. M/s. **Rajoo Engineers Limited**, Survey No.210, Plot No.1,  
Industrial Area, Veraval (Shaper) Rajkot-360002 (Gujrat)
10. M/s. **Brimco Plastic Machinery Corporation (P) Ltd.**,  
Plot No.55, Govt. Kandvi Indl. Estate, Kandivali (E), Mumbai-400067
11. M/s. **A.P. Industries**, 9, Sudershanpura Industrial Area,  
22 Godown, Jaipur-302 006
12. M/s. **Saini Industrial Corporation**, Kamani Road, Jhotwara, Jaipur-302012
13. M/s. Anil Engineering Works, C-14, Mukesh Colony,  
Sudarshanpura Industrial Area, Jaipur-302006.

## 10.NAMES AND ADDRESSES OF RAW MATERIAL SUPPLIERS

1. M/s. **Shreya's India (P) Ltd.**, 3/1, Industrial Area, Jhotwara,  
Jaipur-302012
1. M/s. **Indian Petro Chemicals Ltd.**, Vadodara (Gujrat)
2. M/s. **NOCIL.**, Sandoz House, Dr. Anie Besant Road, Worli, Mumbai-400018
3. M/s. **Bihani Udyog** (Local) Dealer & IPCL & PIL),  
S-2, Usha Plaza III Floor, Opposite All India Radio, M.I. Road, Jaipur.302001.
4. M/s. **K.G. Petro Chem. Ltd.**, C-171, Road No. 9 J,  
Vishwakarma Industrial Area, Jaipur-302013.

## SETTING UP CONCAST FOR MANUFACTURING OF BILLETS

Product : BILLETS

NIC Product Code ( 2004 ) : 27141

Product Code ( ASICC-2000) : 71246

Quality and Standards :

<a href="#">IS 2830</a>	1992	Carbon steel cast billet ingots, billets, blooms and slabs for re-rolling into steel for general structural purposes
<a href="#">IS 2831</a>	2001	Carbon Steel Cast Billet Ingots, Billets, Blooms and Slabs For Re-rolling into Low Tensile Structural Steel - Specification

Plant Capacity per annum : 22275 MT

Value : Rs. 65,15,43,750/-

Month & Year of preparation : March 2011

- : Prepared By : -

**Micro Small and Medium Enterprises Development Institute, Government of India**

Ministry of Micro Small and Medium Enterprises

Bais Godam, Jaipur – 302 006 (Raj.)

**Ph. 0141-2212098, 2213099, Fax. 2210553**

**e mail- [dcdi-jaipur@dcmsme.gov.in](mailto:dcdi-jaipur@dcmsme.gov.in)**

**web- [dcmsme.gov.in](http://dcmsme.gov.in)**

## INTRODUCTION

The Project profile envisages to set up Con-cast plant for manufacturing of M.S Billet which is the main raw material of Iron & Steel finished products, e.g. T.M.T Bars, angles, channels and sections etc. used in construction activities.

Con-cast plant can be simply defined as a mill that carries con-cast process in which the molten steel is poured into ladle mould to perform the gradual solidification of metal into desired forms and shapes. Swiftly, the molten metal is solidified and is drawn down the caster. This gradually gets transformed into a solid steel billet, bloom or slab.

### Basis of Project Selection :

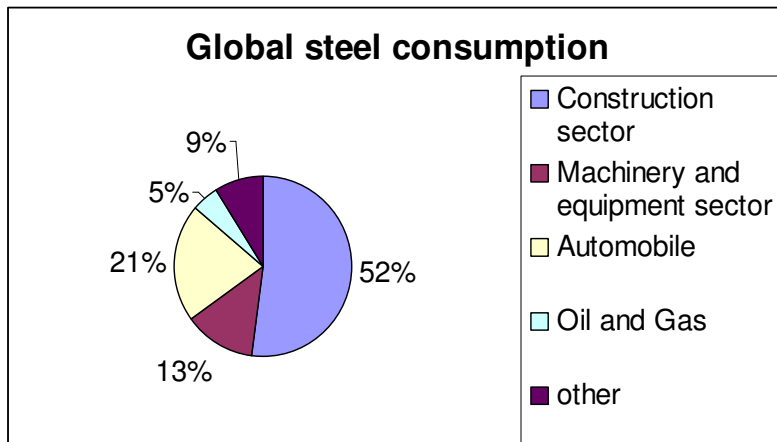
Continuous casting gives out tremendous savings in terms of time, energy, labor and capital. The process involves casting steel straight away into the semi-finished shapes. Then there are some steps set eliminated which are involved there in the traditional way of casting. The steps like ingot teeming transfer; stripping, soaking pits and primary rolling are complete taken off. The process of continuous casting also peeps up the yield as well as the product quality. Also the products obtained by following this manufacturing process are more homogeneous. Units from rolling mill & Induction Furnace Cluster Jaipur are transferring to this concast process technology and one new unit M/s. Maruti Products Pvt. Ltd., setup Concast plant at Bagru, Jaipur.

### Plant Capacity per annum

Wt. in MT	Rate in Rs.	Amount in Rs.
22275	29250	65,15,43,750/-

## MARKET & DEMAND ASPECTS

The Profile is for establishing unit for manufacturing of M.S Billets which is raw material for Re Rolling Mills used for the manufacturing of Iron & steel rod, angle, flats. A rough assessment on global steel consumption indicates that around 52 per cent of finished steel is consumed by Construction sector. Approximately 13 per cent of steel goes to Machinery and equipment sector, 21 per cent to Automobile, 5 per cent to Oil and Gas. In India the share of automobile in steel consumption is much less, although it is growing at a faster pace.



All these segments need to grow in strength to sustain the current momentum in steel consumption. The two basic requirements for this to happen are the enhanced purchasing power of the consumers whose numbers are continuously rising, now that the trend of urbanization is upbeat. The second one pertains to investment in infrastructure.

There are approximately 2600 Re-Rolling Mills throughout India, producing TOR steel/ TMT Bar , the flats, special squares window section, thinner size HR strips, thinner gaze HR strips, hexagons, wire rods, angles, channels, H-Beams, I-Beams, tele-channels etc. are the products of this sector.

Further in Jaipur Re-rolling Mill and induction cluster, there are around 10 TMT Bar manufacturing units whose annual demand for Billet / ingot is around 1500 MT. per day i.e. 4,50,000 MT per annum. As the project envisage to produce 22,275 MT per annum. Hence there is a scope of setting up 5 such plants to cater the demand of Jaipur Re-rolling Mill and induction cluster

## IMPLEMENTATION SCHEDULE

The major activities and the time required for completion of each activity and their implementation are illustrated below:

Sl. No.	Activity	Months	Weeks
1	Selection of Site	-	2
2	Preparation of Project Report	1	-
3	Provisional Registration	-	2
4	Financial Arrangements	3	-
5	Procurement of Machinery- in concurrence with other activities	3	-
6	Procurement of Essential Raw Materials	1	-
7	Installation, Electrification and commissioning of Machinery	2	-
8	Trial and Commercial Production	1	-
<b>Total</b>		<b>12</b>	

**VI. Quality Control:-** The Bureau of Indian Standard has laid down following Indian Standard Specifications may be followed for quality control

<a href="#">IS 2830</a>	1992	Carbon steel cast billet ingots, billets, blooms and slabs for re-rolling into steel for general structural purposes
<a href="#">IS 2831</a>	2001	Carbon Steel Cast Billet Ingots, Billets, Blooms and Slabs For Re-rolling into Low Tensile Structural Steel - Specification

## VII. Pollution Control

Setting up of concast unit require

Clearance from State pollution control department.

## VIII. Energy Conservation

The Technology envisage in the project profile is recommended by UNDP (GEF) steel project and it is most energy efficient proven technology for manufacturing Billets.

## Raw Material

Pencil ingots/Billets are being manufactured by Induction Melting Furnace route locally, are generally using scrap / DRI (Direct Reduce Iron - Coal based) on a nearly 50:50 basis, As far as Chemical composition is concerned, even if Mild Steels scrap is of assorted type and the opening carbon content varies from low to high, it can be easily controlled/adjusted within the limits by using Sponge iron. As there is no tramp element in Sponge Iron. It manufactures good quality structural steel. Ship-breaking steel scrap is the first choice of the units, which is not available in sufficient quantity at present and Metallic Scrap in unshredded, compressed and loose form would be imported through Chennai, Cochin, Ennore, JNPT, Kandla Port, Mormugao, Mumbai, New Mangalore, Paradip, Tuticorin, Vishakhapatnam, ICD Tughlakabad, Pipava, Mundra and Kolkata ports only. These imports must be accompanied by pre-shipment inspection certificate issued by one of the 23 agencies including DNV, Bureau Veritas, BSI Inspectorate and SGS. Shredded Steel Melting Scrap.

## MANUFACTURING PROCESS & SOURCE OF TECHNOLOGY

### I) Scrap Yard

Incoming scrap is analyzed for chemical composition during unloading of truck. The unloaded scrap is then segregated for unwanted material like Cast Iron, non-metallic, non-ferrous, etc.

The selected scrap is then weighed and then transferred to Induction Furnace for melting.

## **II) Induction Furnace**

Selected scrap and Sponge Iron (In-house production) is melted in Induction Furnace. Slag is removed at regular intervals and a sample is taken 2-3 times during melting for Spectrometer Analysis.

Once we achieve the required Carbon level then de-oxidation is carried out and alloy additions done as required.

The liquid metal is then tapped into Ladle with purging arrangement.

## **III) Continuous Casting Machine**

Liquid metal from Ladle is brought to CCM for casting into required size of Billets. The CCM is fully PLC controlled for controlling all Casting parameters.

The sizes available in CCM are:

100 x 100 mm<sup>2</sup>

110 x 110 mm<sup>2</sup>

130 x 130 mm<sup>2</sup>

160 x 160 mm<sup>2</sup>

200 x 200 mm<sup>2</sup>

## **IV) Billet Yard**

After inspection and surface grinding, wherever required the billets are sent to either market or to Rolling mills in the required lengths.

### **Presumption:-**

(1) as per the nature of process , the plant has to run 12 Hr. per day The scheme is based on it with 75% efficiency and 330 days per annum

(ii) Labour wages has been taken as per market rate. It is likely to vary depending upon the location of the project.

(iii) Rate of interest has been taken **12%** on an average on fixed and working capital. It is likely to vary due to financial outlay and the location of the unit.

(iv) The operative period of the project is estimated to be about 8 years considering technology obsolescence

(v) Value of machinery & equipment is estimated on the basis of quotation Received & prevailing cost of the local mkt.

(vi) As the measure part of the working capital is Raw material – steel Scrap and as per the prevailing practices the plant run on the basis of orders received, the working capital requirement has been calculated for 1.5 months only.

## **Financial Aspects:-**

### **1. Land and building –**

Land and site development

S.NO.	DESCRIPTION	AREA	AMOUNT (Laks)
1	Land 10,000 Sq. Mts.@ Rs. 1162.5 /Sq. Mtr.	10000 Sq.mtr.	116.25
2	Stamp Duty & Registration Exp.		3.50
3	Land Development		10.00
		TOTAL	129.75

## **DETAIL OF BUILDING & CIVIL WORKS**

S.No.	PARTICULARS				Area	Rate	AMOUNT
		L	W	h	sqm	Sqm/Rs	(RS)
1	Main Shed	95	23	20	2185	6000	131.10
2	Main Shed	95	20	15	1900	6000	114.00
3	Lean to Shed	30	10	7	300	3500	10.50
4	Office Block				600	7000	42.00
5	Stores , Panel Room, Laboratory, etc				350	4000	14.00
6	Labour Quarter				1000	3500	35.00
7	Raw Water Tank & Soft Water Tank ( Total 400000 Ltr water Capacity)						30.00
8	Overhead Water Tank Capacity ( Total 150000 Ltr water Capacity)						25.00
9	Boundary Wall				8800	350	30.80
10	Internal Roads, Drainage, etc						10.00

Total Cost	442.40
or	442.40

<b><u>DETAILS OF PLANT &amp; MACHINERY</u></b>					
S.No.	DESCRIPTION OF MACHINERY	Qty	Rate Rs	Amount Rs	Amount Rs
1	<b><u>INDUCTION FURNACE</u></b>				
	A. Induction furnace of 6000KW having capacity 15 MT	1	17500000	17500000	
	b. Excise Duty		10.30%	1802500	
	c. Central Sales Tax		2%	386050	
	d. Freight and Cartage, Insurance, and Other Handling Charges		2.50%	437500	20126050
2	<b><u>CASTING SETUP</u></b>				
	a. Continuous Casting Machine 6/11 mtr radius	1	23000000	23000000	
	Erection, Freight and Cartage, Insurance, and Other Handling Charges	2.50%		575000	
	Central Excise Duty	10.30%	23575000	2428225	
	VAT	2%		520065	26523290
	b. <b>Slag Box</b> (Weight 2.6 Mt per Box manufactured by Cast Iron) (2Box X 2.5MT @ 33000/- per MT	2	300000	600000	
	c. <b>Ladle</b> (bottom pouring type)	3		2000000	
	d. Ladle Slide Gate System	2	1000000	2000000	
	e. Ladle pre heater and furnace pre heater			700000	
	f. Furnace Oil Tank steel Fabricated	2	40000	80000	
	g. Air Compressor	3		500000	
	i. Ingot moulds			300000	
				6180000	

	Excise Duty	10.30%		636540	
	CST	2%		136331	
	Freight, Cartages & other handling expenses			40000	6992871
	including crane charges, Machining Charges .				
3	<b><u>MATERIAL HANDLING EQUIPMENTS</u></b>				
	<b>A. OVERHEAD E.O.T. CRANES</b>	1	8150000	8150000	
	40/15 Ton capacity class IV Heavy Duty, cabin operated				
	Lift height 15 Mtrs. Suitable for steel plant operation				
	Excise Duty		10.30%	882645	
	CST		2%	180652.9	9213298
	<b>B. Lifting Magnet</b>	1	900000	900000	
	Super Lift electro magnet size 72" Dia inclu. , Control Panel & rectifier Transformer Unit Cable Reeling Drum				
			97470	997470	
	CST		2%	19949.4	1017419
	<b>C. Cooling Tower</b>	3	500000	1500000.00	
	FRP Counter Flow Bottle shape 192" Dia Height 200" fitted with 12.5 HP Motor 3600LPM				
	packing Charges		1.50%	22500	
	Central Excise Duty		10.30%	156817.50	
	CST		2%	33586.35	17.13
	<b>Pipelines (for Concast &amp; Induction Furnace )</b>				
	Pipe lines fittings, valves, elbows, tees, strainers etc,	L.S.		2000000	20.00
	<b>D. Water Softening Plant</b>	1	145000	145000	
	ppm 350 Model S-6025/D make Ion Exchange				
	Packing Charges		2.00%	2900	
	Central Excise Duty		10.30%	15234	
	CST		2%	3263	1.66
	<b>E. Water Pumps</b>		1725000	1725000	17.25

<b>F. R O System , Capacity 5.0M3/hrs</b>	1	1290000	1290000	
Model CDS-1,				
Packing Charges		2.00%	25800	
CST		2%	26316	
TPT			25000	13.67
<b>Transformer 1500 KVA</b>				<b>50</b>
<b>Tools &amp; Other equipments</b>		<b>L.S.</b>		<b>20</b>
Welding Machine	6	31000	186000	
Hand Grinders	5	10000	50000	
Drill Machine	4	15000	60000	2.96
<b>Office Equipment</b>				
a. Furniture		LS	500000	
b. Computer & IT Equipments		LS	100000	6.00
<b>Physical &amp; Chemical Laboratory</b>			2500000	<b>25.00</b>
<b>Weighing Bridge</b>				
Weighing Capacity 100MT			860000	
VAT		4%	34400	8.94
<b>Hydraulic Bailing Pressing Machine(60 H.P)**</b>	1	2950000	2950000	
Central Excise duty		10.30%	303850	
CST/ RST		2%	65077	33.19
<b>D. G. Set 250 KVA</b>	1	700000	700000	
Excise Duty		10.30%	72100	
				7.72
<b>D. G. Set 500 KVA</b>	1	1800000	1800000	
Excise Duty		10.30%	185400	
				19.85
<b>Slag Crushing Machine**</b>	1	1200000	1200000	
Central Excise duty		10.30%	123600	
CST/ RST		2%	26472	13.50
<b>Sheet bending Machine</b>	1	500000	500000	
Central Excise duty		10.30%	51500	
CST/ RST		4%	22060	5.74
<b>Total</b>				<b>899.3393</b>

	Erection & Electrification Charges @ 10 %				89.93393
					989.2732
	Misc expenses and statutory payments				10.00
			Total		999.2732
			Say in lakhs		1000

**Total Investment in Fixed assets- 1572.15 Lakhs**

### Working Capital Requirement-

<b>RAW MATERIAL REQUIREMENT( For Installed Capacity)</b>					
Raw Material requirement for One Ton Finished Product		1000.00	Kg		
PARTICULARS	%	Burning Loss %	QTY Kg	Rate	Amount Rs
Selected Scrap	25%	4	260	21.50	5598.96
Mill Heavy	5%	2	51	22.50	1147.96
Bundles	30%	6	319	19.50	6223.40
Sponge Iron	35%	12	398	19.50	7755.68
Turning & Boring	5%	5	53	19.00	1000.00
					21726.00
<b>Total Cost For installed capacity</b>			<b>Rs lacs</b>		<b>6452.62</b>
Production	Percentage				Cost Rs in lacs
<b>III</b>	<b>75%</b>				<b>4839.47</b>
<b>Consumable stores</b>	Cost Per MT				
Furnace Oil Ramming Mass					
Clay & Refractoriness	30.00				
Installed Capacity	29700.00				
Total Cost on Installed Capacity	8.91				
Production	Percentage				Cost Rs in lacs
<b>Capacity</b>	<b>75%</b>				<b>6.68</b>
<b>Total Requirement for 75 % cap.</b>					<b>4846.15</b>
<b>Total Raw material Requirement per month</b>	<b>=4846.15/12</b>				<b>403.85 Lacs</b>

<b>SALARY AND WAGES PER MONTH</b>				
S. NO	PARTICULARS	NOS	RS PER MONTH	AMOUNT RS
<b>SALARY</b>				
1	Accountant	1	10000	10000
2	Cashier	1	7500	7500
3	clerk	2	6000	12000
4	peon	1	4250	4250
5	security Staff	3	4000	12000
	Total	8		45750
<b>WAGES</b>				
1	Foreman	1	30000	30000
2	Electrician	1	8000	8000
3	Chemists	1	8000	8000
4	Crane Driver	3	6000	18000
5	Skilled Labour	8	5500	44000
6	Semi skilled	12	4500	54000
7	Unskilled Workers	20	4000	80000
	Total	46		242000
	TOTAL SALARY AND WAGES	54		287750
	Add Fringe benefits	15%		43162.5
				<b>330912.5</b>
	<b>TOTAL WAGES AND SALARY</b>			<b>3,31,000/-</b>

<b>UTILITIES REQUIREMENT</b>	
Proposed Load	Load K.W
Total Load	7000
Cost of Power	

No. of hours Day	12
Load Factor	0.7
No. of working day	330
Total Unit	19404000
cost per unit	5.25
<b>Total utility cost per month</b>	
<b>645.9750 lakh</b>	

v	<b>Other Contingent Expenses</b>	
1	Repair & maint. @ 2%	165000
2	Office Consumable stores	15000
3	Transport charges	15000
4	Telephone charges	2000
5	Traveling expenses	15000
6	Miscellaneous expenses	20000
7	Insurance	41250
	<b>TOTAL</b>	<b>273250</b>
v	<b>Total Recurring Expenditure :</b>	
<b>S.No.</b>	<b>Description</b>	<b>Cost</b>
1	Personnel	330912.5
2	Raw material	40384583.33
3	Utilities	6459750
4	Other Contingent Expenses	273250
	<b>TOTAL</b>	<b>47448495.83</b>

vi	<b>Total working capital for 1.5 months :</b>	<b>Rs.</b>	<b>71172744</b>
e	<b>Total Capital Investment :</b>		
i	Fixed Capital		157215000
ii	Working Capital for 1.5 Months		71095757
	Total Capital Investment :		228310757
	<b>Total Capital Investment</b>	<b>Say</b>	<b>Rs.22.83Crore</b>

<b>FINANCIAL ANALYSIS</b>		
1	<b>Cost of Production (Per year) :</b>	

i	Total recurring cost :	569381950
ii	Depreciation of machinery and equipment @ 10%	9614000
iii	Interest on total Capital investment @ 12%	27406530
iv	Depreciation of tools and office equipment @ 15%	429000
	<b>Total :</b>	<b>606831480</b>

<b>2</b>	<b>Total Sales (Per annum)</b>			
	<b>Products</b>	<b>Qty. in Nos.</b>	<b>Rate</b>	<b>Value (Rs.)</b>
	Sale of Billets	22275	29250	651543750
		<b>TOTAL</b>	<b>: Rs.</b>	<b>651543750</b>
<b>3</b>	<b>Net Profit (Per yr.) (Before tax)</b>			
	Total turnover per yr.) -cost of production per yr.)			
	=	<b>651543750</b>	<b>-606831480</b>	<b>44712270</b>
<b>4</b>	<b>Net profit ratio :</b>			
	$\frac{\text{Net profit} \times 100}{\text{Turn Over}} =$	$\frac{44712270}{651543750}$	$\times 100 =$	<b>7%</b>
<b>5</b>	<b>Rate of return :</b>			
	$\frac{\text{Net profit} \times 100}{\text{Total Investment}} =$	$\frac{44712270}{228387744}$	$\times 100 =$	<b>20%</b>
<b>6</b>	<b><u>BREAK-EVEN POINT;</u></b>			
	<b><u>FIXED COST ;</u></b>			
1	40% salary & wages	1588380		
2	Depreciation on machinery & Equipments @ 10%	9614000		
3	Depreciation of tools and office equipment @ 15%	429000		
4	Interest on capital investment @ 12%	27406530		
5	40% of other contingent expenses	1113600		
6	Insurance & Rent	495000		

	<b>TOTAL</b>	<b>40646510</b>		
	Net Profit (Per yr.) (Before tax)	44712270		
	<b>BEP :</b>			
	Fixed Cost × 100 =		<b><u>48%</u></b>	
	Fixed Cost + Profit			

## **The Source of technology guidance**

### **A. Project Management Cell (PMC), UNDP / GEF Project – Steel**

Jawahar Dhatu Bhavan, 39, Tughlakabad Institutional Area,  
Mehrauli - Badarpur Road, New Delhi - 110062  
Ph.: 0091-11-29960593, 29960599, Fax:0091-11-29959994

### **B. National Institute of Secondary Steel Technology**

Post Box No. 92, GT Road,  
Mandi Gobindgarh-147 301 (Punjab)  
Dist.: Fathegarh Sahib.  
Tel : 01765-**258080, 259532**,  
FAX : 01765-258079.  
e-mail : [nisst@dataone.in](mailto:nisst@dataone.in), [info@nisst.org](mailto:info@nisst.org), website: [www.nisst.org](http://www.nisst.org)

## LIST OF SUPPLIERS FOR PLANT AND MACHINERIES

Con-cast			
1	M/s CONCAST (INDIA) LIMITED,  CONCAST HOUSE, 1/5 Marol Co-op Industrial Estate, Andheri (E), Mumbai - 400 059	Contact person :  Mr. M.M.Deshpande <a href="mailto:concasti@bom4.vsnl.net.in">concasti@bom4.vsnl.net.in</a>	Telephone Email :+91 22 2850 1789, Fax : +91 22 2851 5145
Induction Furnace Manufacturer			
2	Electrotherm (India ) Ltd.  72,Palodia Via:Thaltej ,Ahmedabad- 382115,Gujarat (India)	Saurabh Bhardwaj,  Sr.Application Engineer  9785012863  saurabh.bhardwaj  <a href="mailto:@electrotherm.com">@electrotherm.com</a>  <a href="http://www.electrotherm.com">www.electrotherm.com</a>  mkt@electrotherm.com	91- 2717234553,  660550  Fax-91-2717- 234616  011-41427323  011- 25920224,450 34922
3	Megatherm Electronics Pvt. Ltd. Plot-L1, Block GP, Sector V, Electronics Complex Salt Lake City,  Kolkata - 700 091, India.	Mr. Vikas Varsheya (Director) +91-9831188818 <a href="http://www.megatherm-india.com">http://www.megatherm-india.com</a>	Phone :  +91 33 2357 7352 / 7745 / 7854 / 6093  Fax : 0- 33 2357 7757
4	M/s. Pillar (India) Vidyut Agni Marketing and Engineering Services	Block- A-23, 2nd Avenue, Annanagar, Chennai-600102	

<b>Metallographic And Chemical Laboratory Consumables</b>			
5	M/s. Metallurgical Services (p) Ltd.	5, Lalithapuram Street, Rayapetah, Chennai-600014	
6	M/s Metal Power Analytical (I) Pvt. Ltd.	8/9, Mehul Premises, Kanti Nagar, Andheri East, Mumbai-400059	
<b>Foundry Equipments</b>			
7	M/s Balaji Equipment Co.	23-A 6th Cross, BR puram, VK Road, Thanner Pandal, Peelamedu, Coimbatore-4	
8	M/s. Greaves Foscco Ltd.	Mumbai Pune Road, Pune-411019	
<b>Material Handling Equipments</b>			
9	Zeemag Industries in Bhandup West	70-5th Flr Bhandup Indl Est Pannalal Cmpd, Lbs Road, Bhandup West, Mumbai – 400078	Mr Rajeev T D 📞 +(91)-(22)-30943922, 30980030, 25961315 📞+(91)-9833056627
10	Elite Steels Pvt. Ltd.	Plot No. 13, Sector 25 Faridabad - 121 004 Haryana, India	Phones: (91 129) 2233170, 2232555 Fax: (91 129) 2236962 Email ID: <a href="mailto:info@elitecranes.com">info@elitecranes.com</a> <a href="mailto:espla@ndf.vsnl.net.in">espla@ndf.vsnl.net.in</a> <a href="http://t.in">t.in</a> Website: <a href="http://www.elitecranes.com">www.elitecranes.com</a>

<b>Address of Raw material Suppliers</b>		
<b>Sponge Iron</b>		
11	<b>Monnet Ispat &amp; Energy Ltd.</b>	Monnet Marg, Mandir Hasaud, Raipur – 492 101, Chatisgarh,India <b>Tel:</b> +91 – 771 – 2471 334 – 339 <b>Fax :</b> +91 – 771-2471 250 <b>e-mail :</b> <a href="mailto:monnetraipur@monnetgroup.com">monnetraipur@monnetgroup.com</a> ,

12	Welspun Steel Ltd. "	Welspun House, 7th floor Kamala Mills Compound Senapati Bapat Marg Lower Parel Mumbai - 400013, INDIA 91-66136000, 91-24908020
<b>Scrap</b>		
13	<b>EAGLE INTERNATIONAL</b>	<b>Shop No: 210 Shobhraj Complex,</b>  <b>Wagha wadi Road</b>  <b>Bhavnagar .(Gujrat)-</b> <b>364002</b>  <b>Mobile: +91 9898986434</b>  <b>+91 9328585960</b>  <b>E-mail: <a href="mailto:contact2jani@gmail.com">contact2jani@gmail.com</a></b>  <b><a href="mailto:contact4hms@yahoo.com">contact4hms@yahoo.com</a></b>  <b><a href="mailto:contact4scrap@in.com">contact4scrap@in.com</a></b>
14	<b>Local Market</b>	

## **SACCHARINE (SODIUM SACCHARINE)**

Product Code : 31962001

Quality Standard : The following BIS standards may be Referred :  
IS:6385-1978 Saccharine (Food grade)  
IS:5709-1978 Ca Saccharine (“  
IS:6385-1978 Na Saccharine (“

Production : Per annum

Capacity : Quantity : 30 MT  
Value : Rs10500000

Month & Year of Preparation : February 2011

Prepared by : MSME –DI, Min. of MSME, Govt. of India.  
22 Godam, Jaipur

**Introduction:-**

Saccharine is a concentrate sweetening agent. It is five times sweeter than sucrose and 550 times than sugar in dilute solution. It is almost insoluble in water and hence it is sold as its sodium salt i. e. sodium salt of saccharine which is highly soluble. It is very sweet in diluted form but bitter in concentrated solutions. It is used in place of sugar, for many purposes e.g. sweetening preserves, soft drink etc. It is also used in tea, milk coffee and other edibles. As it cannot enter body metabolism, it is used by diabetics and obese persons.

### **Market Potential :-**

Saccharine is used mainly in food and soft drink industries. It is used as sodium salt in pharmaceutical industry. The demand of saccharine is increasing every year as a substitute of sugar/sucrose with the growth of pharmaceutical and soft drink industry.

### **Basis And Presumptions:-**

1. Production capacity in the project profile is calculated on single shift basis and utilizing 75% of the total capacity of machinery and 300 working days in year.
2. The rate of interest in the project profile has been calculated @ 15% per annum on total capital investment, however this figure is likely to vary depending on the financial outlay of the project as well as location of unit.
3. The cost of machinery, equipments and raw material as indicated are approximate to those prevailing at the time of the preparation of profile Similarly the rent etc. indicated in the profile relates to a particular place and should be updated depending upon the place of implementation.
4. The provisions made in other respects viz. personnel, utilities, overheads, etc are drawn on the basis of standard operation, average outputs and the cost are indicated against each are approximate and may vary according to the services, production programme, etc.
5. The cost of installation and electrification is taken at the rate of 10% of the cost of machinery.
6. Average margin money taken @ 30% of the total capital investment.

7. Pay back period-7 years from the second year of operation.
8. Saccharine can be manufactured either from the basic stage i.e. from toluene with chloro sulphonic acid or from intermediate stage i.e. by using orthotoluene sulphonamide (O.T.S.) The project profile is worked out from Intermediate stage i.e. with O.T.S. as starting material.

### Implementation Schedule:-

Preparation of Project profile	2 months
Provisional registration with District Industries Centre	2 months
Calling of quotations	1 months
Approach to commercial banks for term loan and working capital	
Installation and commissioning	3 months

Keeping in view the overlapping of some of the activities, the total time of around 8 to 10 months may be needed to commence the production.

### Technical Aspects :-

#### 1. Manufacturing Process:-

Saccharine can be manufactured either by taking toluene as starting raw-material or taking intermediate product orthotoluene sulphonimide.

Toluene is reacted with chlorosulphonic acid at 0 C to yield ortho toluene euphony chloride which is reacted with ammonia to yield ortho-toune sulphonimide (O.T.S.) O.T.S. is further oxidized with Dichromate to yield O- Sulphony1 benzoic Acid which on heating at around 60<sup>0</sup> C gives O-Sulpho bernzoic amide ( Sachharine).

Saccharine is generally manufactured by the oxidation of OTS. With Potassium dichromate in acidmedia i.e. sulphuric acid O.T.S. is oxidized in a wooden vat with continuous stirring. The reaction being exothermic,. Temperature is maintained below 10<sup>0</sup> C At the end of the reaction temperature is raised to around 50-60<sup>0</sup>C. It is then neutralized to 7 P.H. for precipitation of unreacted O.T.S. and chromate It is now filtered through cast iron

filter press. Mother carbon for decolourisation and, again filtered. The filtrate is then treated with Hydrochloric acid at low temperature. Saccharine is precipitated, centrifuged, washed, dried and pulverized. Saccharine is almost insoluble in water, therefore. It is sold as its sodium salt which is very soluble. Therefore saccharine is reacted with caustic soda to yield sodium salt of saccharine.

## 2. Quality Specification:-

Bureau of Indian Standard has fixed standards for the product.

IS: 6385:1978	Saccharine (Food grade) Reaffirmed 1986 FAD-8 Size A 5 P9 Gr.3
IS: 5709:1978	Calcium Saccharine (Food grade) Reaffirmed 1986 FAD.8 Size P8 grade 2.
IS:5345 :1978	Sodium Saccharine (Food grade) Reaffirmed 1976 FAD.8 Size A5 grade 4.

## 3. Production Capacity (PA)

Product	--	Saccharine
Quantity	--	30 MT
Value	--	Rs. 10,500,000

## 4. Motive Power Required : 40 KWH.

## 5. Pollution Control

There is small quantity of effluent which is acidic in nature and has to be neutralized with the alkaline solution obtained during the process. Thus neutralizing tanks are required for this purpose before the effluent is discharged to the drain. Exhaust fan is needed to keep the factory shed neat and clean. The provision of Rs. 18,750/ has been considered as cost of these equipments.

## 6. Energy Conservation:-

Though there is not much requirement of power however, precaution must be taken while selection electric, motors which should be as per relevant standards.

## Financial Aspects

### (1) Fixed Capital Land And Building

Land 500u sq. fr.

Built – up area 1800 sq. feet on rental basis

Rs. 10000 (P.M)

### 2. (Machinery and Equipment)

S. No.	Description	Imported/indigenous	Qty	Price (Rs.)
1.	M.S Reaction vessel with 2 H.P. Motor and stirrer Cap. 500 lts.	Indigenous	1	45000.00
2.	Wodden reaction vessel Indigenous with 3 H.P motor, stirrer and cooling coil capacity – 1000 Ltr.	Indigenous	1	50000.00
3.	C.I. Filter press 24"x24"	do	1	40000.00
4.	Wooden Vait 4x3	do	1	20000.00
5.	Centrifugal Pumps	do	2	28000.00
6.	Centrifugal with 24 " S.S. Basket	do	1	38000.00
7.	Dryer with 48 trays.	do	1	65000.00
8.	Plastic storage Drum and other equipments.	do	-	13000.00
9.	Laboratory testing equipments	do	-	20000.00
10.	Office furniture	do	-	12500.00
11.	Installation charges of the Machinery and equipments.	-	-	28000.00
12.	Pollution control equipments.	-	-	18750.00
<b>Total fixed capital</b>				<b>37,82,50.00</b>

### Working Capital ( p.m.)

#### (1) Personnel Administrative

Designation	No.	Salary	Total(Rs.)
-------------	-----	--------	------------

Manager	1	5000.00	5000.00
Accountant cum clerk	1	2500.00	2500.00
Watchman	2	2000.00	4000.00
Technical			
Chemical Engineer	1	5000.00	5000.00
Shift Supervise	3	3000.00	9000.00
Laboratory Chemist	1	3000.00	3000.00
Semi-skilled worker	2	2500.00	5000.00
Unskilled worker	6	2000.00	12000.00
		Requisitires@15	45500.00 6825.00
			52325.00
		<b>Say</b>	<b>52400.00</b>

## 2. Raw Material- P.M

Particulars	Imported/ Indigenous	Qty.	Rate (Rs.)	Valur (Rs.)
Othrotoluene Sulphonamide	Indigenous	4.0 M.T	90000.00	3,60,000.00
Pottassium dichromate or sodium dichromate	Do	5.0 MT	50000.00	2,50,000.00
Hydrochloric Acid	Do	7.5 MT	3000.00	22,500.00
Caustic Soda	Do	1.25 MT	17000.00	21,250.00
Sodium Bisulphite	Do	250kg.	17.00	4,250.00
Activated carbon	Do	50kg.	34.00	1,700.00
Packing material	Do	L.S.	-	10,000.00
			Total.Rs.	6,69,700.00
			Say.	6,69,700.00

## 3. Utility (PM)

Power Water/ Ice

Rs. 7000

## 4. Other Contingent Expenses (P.M.)

Rent	10000.00
Postage/Stationery	1000.00
Packing transportation	1500.00
Consumable Store	500.00
Insurance	1000.00
Other contingent expenses	1000.00
<b>Total</b>	<b>15000.00</b>

#### 5. Total Recurring Expenditure (P.M.)

Salary & wages	52400.00
Raw Material	911500.00
Utility	7000.00
Other contingent expenses	15000.00
<b>Total</b>	<b>744100.00</b>

#### 6. Working Capital ( 3 Months)

$$\text{Rs. } 744100 \times 3 = 2232300.00$$

Total Capital investment

Fixed capital : 378250.00

Working capital for ( 3 months) 2232300.00

Total : 2610550.00

Say : 2610600.00

#### FINANCIAL ANALYSIS :-

#### Cost of Production- (P. A)

Total recurring expenditure	8929200.00
-----------------------------	------------

Depreciation on machinery & equipment@ 10%	28600.00
Depreciation in Lab. Equipments @ 25%	5000.00
Depreciation on office furniture @ 20%	2500.00
Interest on total capital investment @ 15%	391590.00
<b>Total</b>	<b>9356890.00</b>
<b>Say</b>	<b>9356900.00</b>

## 2. Turnover (P.A.)

Item	Quantity	Rate(Rs.)	Value (Rs.)
Saccharine	30 M.T	3,50,000	10500000.00

3. Net Profit (P.A)                      Rs. 9356900                      = Rs. 1143100

4. Net Profit Ratio                      12.21%

5. Rate of Return :-                      43.78%

Break Event Point	Fixed Cost
(a) Depreciation on machinery and equipments	28600.00
(b) Depreciation on Lab. Equipments	5000.00
(c) Depreciation on Furniture	2500.00
(d) Rent of building	12000.00
(e) Interest on capital investment	391590.00
(f) 40% of the salary and wages.	251520.00
(g) 40% other expenditure (excluding Rent)	24000.00
<b>Total</b>	<b>823210.00</b>

**BREAK EVENT POINT= 1143100 X 100    = 1143100**

$$\begin{aligned} & 1143100 + 823210 && 1966310 \\ & = 58.13\% \end{aligned}$$

#### Addresses of Machinery and Equipment Suppliers :-

1. M/s Mitachem Pulveriser Industrices. 3 – Max Indl. Extate, Opposite Gujarat Bottling CO. Rakhial Ahmedabad- 380023
2. M/s Yotana Machine Tools CI-10, G.I.D.C. Estate, Odhav Ahmedabad.
3. M/s Favourite Engg. Co. Dudheswar Road. Ahmedabad – 380004.
4. M/s Bharat Vijay Mills Ltd. ( Sinter Plant divison Kalol Distt. Mchesna ( Gujarat)
5. M/s Rand and co. A- 95/2 Wazirpure Industrial Area Dehli- 52.

#### Address of Raw Material Suppliers

1. M/s Cetochemical Pvt. Lt. A- 128/129. M.I.D.C. Ind. Estate Dombivali ) Maharashtra)
2. M/s Divine Chemicals, 301, Commerce House 140 Meadows St. Fort. Bombay 400001
3. M/s Stan Chem Pvt Ltd. 225/228 Atlas Mills Compuound Reay Road Bombay- 400010
4. M/s Golden Chemicals Pvt. Ltd. Chromium House, Sv Road Dhisar, Bombay – 380023/
5. M/s Shankar Chemicals Works Rakhil Road, Agmedabaed- 380023.
6. M/s Adarsh Textile Industries Pvt. Ltd. Agra Road, Bhawndi – 421302 Distt. Thana.
7. Omega Laboratories Cemicals Gaatan Villa, coop. H8g Society Opp. Ghantale Mandir, Naupada, Thana – 4006002.

## PROJECT PROFILE

PRODUCT	:	Sodium Sulphate	
PRODUCT CODE	:	31342	
NIC CODE	:	24117	
QUALITY STANDARDS	:	IS : 255 – 1982 Sodium Sulphate (Anhydrous) (Technical Grade (Second Revision) Reaffirmed 1999. IS : 256 – 1972 Sodium Sulphate Decahydrate (Glauber Salt) 1 <sup>st</sup> Revision, Reaffirmed 1999	
PRODUCTION CAPACITY		<b>Quantity</b>	<b>Value Rs.</b>
Sodium Sulphate	-	420 M.T	37,80,000/-
Hydrochloric Acid (By product)	-	567 M.T	<u>19,84,500/-</u>
		Total	Rs.57,64,500/-

MONTH & YEAR OF PREPARATION : March 2011

PREPARED BY  
CHEMICAL DIVISION  
MSME Development Institute,  
Govt. of India, Ministry of MSME  
Bais Godam Industrial Estate,  
Jaipur-302006  
Phone: 0141 – 2212098,213099,2215847  
Fax : 0141 – 2210553  
E-mail : [dcdi-jaipur@dcmsme.gov.in](mailto:dcdi-jaipur@dcmsme.gov.in)  
Website : [www.msmedijaipur.gov.in](http://www.msmedijaipur.gov.in)

## 1. INTRODUCTION:

Sodium sulphate is the sodium salt of sulphuric acid. When anhydrous, it is a white crystalline solid, the decahydrate  $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$  has been known as Glauber's salt. Sodium sulphate is mainly used for the manufacture of detergents and in the Kraft process of paper pulping. About two-thirds of the world's production is from mirabilite, the natural mineral form of the decahydrate, and the remainder from by-products of chemical processes such as hydrochloric acid production. Sodium sulfate is chemically very stable, being unreactive toward most oxidising or reducing agents at normal temperatures. Sodium sulfate is a neutral salt, which forms aqueous solutions with pH of 7. The neutrality of such solutions reflects the fact that  $\text{Na}_2\text{SO}_4$  is derived, formally speaking, from the strong acid sulfuric acid and a strong base sodium hydroxide.

Its specific gravity is 1.464 and melting point is  $888^\circ\text{C}$ . It loses the water of hydration at  $100^\circ\text{C}$ . It is neutral, non-toxic and highly soluble in water, insoluble in alcohol and non combustible. Anhydrous sodium sulphate is odourless, bitter saline taste, soluble in water and glycerol.

## 2. MARKET POTENTIAL:

Sodium Sulphate is used as raw material in the manufacture of Kraft paper, paper board and glass. It is also used as filler in synthetic detergents, Sodium salts, Ceramic glazes, Processing textile fibres, dyes, tanning, pharmaceuticals, freezing mixtures laboratory reagent and food additive, sodium sulphate

decahydrate is used in solar heat storage and air conditioning. With growing demand of above items the product has good market.

### 3. BASIS AND PRESUMPTIONS:

The profile is drawn on the basis of following presumptions-

(i) No. of shifts per day	1
(ii) Working Hours per shift	8
(iii) Working days per annum	300
(iv) Working efficiency	70%
(v) Time period for achieving max. capacity	3 Years
(vi) Margin money	25% of capital investment
(vii) Labour charges	According to the Minimum Wages Act of State Govt.
(viii) Rate of interest on fixed & Working Capital	15%

1

### 4. IMPLEMENTATION SCHEDULE:

Following steps are involved in the implementation of this project-

(i) Preparation of project report	½ month
(ii) Selection of site	½ month
(iii) Filing of entrepreneurs memorandum	½ month
(iv) Obtaining NOC from State Pollution Control Board	½ month)
(v) Sanction of loan from Bank	1½ month
(vi) Procurement of machinery & equipment	½ month
(vii) Erection & commissioning	½ month
(viii) Recruitment of staff	1 month
(ix) Trial run	½ month

-----  
Total 6 Months

### 5. TECHNICAL ASPECTS:

#### 5.1 PROCESS OUTLINES:

Sodium Chloride (Common Salt) and concentrated Sulphuric Acid are heated in a furnace at high temperature and thereby Sodium Sulphate in the form of niter cake is formed. Hydrochloric Acid gas

formed during the process is absorbed in water in fibre glass re-inforced plastics absorption tank. The nitre cake formed is dissolved in water as saturated solution. Decahydrate sodium sulphate is crystallised by evaporating the water.

## 5.2 QUALITY SPECIFICATIONS:

Bureau of Indian Standards as formulated Indian Standard Specifications as follows-

IS : 255 – 1982 (Second Revision) Reaffirmed 1999	Sodium Sulphate Anhydrous (Technical Grade)
IS: 256 – 1972 (1 <sup>st</sup> Revision) Reaffirmed 1999	Sodium Sulphate Decahydrate (Glauber Salt)

## 5.3 PRODUCTION CAPACITY (PER ANNUM):

	Quantity	Value Rs.
Sodium Sulphate	- 420 M.T	37,80,000/-
Hydrochloric Acid (By product)	- 567 M.T	<u>19,84,500/-</u>
	Total	Rs.57,64,500/-

## 5.4 POLLUTION CONTROL NEEDS:

The unit comes under the category of polluting Industries and thus a small effluent treatment device has to be installed under the able guidance of State Pollution Control Board.

## 5.5 ENERGY CONSERVATION:

Proper maintenance of machinery and judicious use of them will conserve energy. Proper maintenance of power operated machines and judicious use of them will conserve energy. However, pipelines of boiler shall be properly insulated and priority should be given to install energy efficient machinery and equipment.

## 5.6 MOTIVE POWER REQUIREMENT : 32 KVA

### 6. FINANCIAL ASPECTS:

#### 6.1 FIXED CAPITAL:

##### 6.1.1 LAND & BUILDING:

Land 500 Sq. Meter Rented @ Rs.10,000/- p.m.  
Factory Shed area 300 Sq. Meter  
(Consisting of workshop shed, godown office etc.)  
The rental value may vary from place to place.

##### 6.1.2 MACHINERY & EQUIPMENT:

Sl No.	Name of Machinery	Indigenous/ imported	Qty.	Cost.(Rs.)
i)	Furnace	Indigenous	1	2,00,000/-
ii)	Filter	-do-	1	30,000/-
iii)	Solution tank	-do-	1	50,000/-
iv)	Crystallizer	-do-	1	1,00,000/-
v)	Steam Boiler	-do-	1	2,00,000/-
vi)	Centrifuge	-do-	1	80,000/-
viii)	Testing equipments	-do-	LS	40,000/-
ix)	Installation & erection @ 10% of cost of machinery	-do-		70,000/-
x)	Fixtures, Tools & Misc. equipment		LS	30,000/-
ix)	Office furniture & equipment		LS	50,000/-
		Total		<hr/> Rs.8,50,000/-

**6.1.3 PRE-OPERATIVE EXPENSES** : 50,000/-

Total fixed capital Rs.9,00,000/-

## **6.2 WORKING CAPITAL (PER MONTH):**

### **6.2.1 PERSONNEL (PER MONTH):**

<u>Designation</u>	<u>No.</u>	<u>Salary(Rs.)</u>	<u>Total (Rs.)</u>
Manager cum Chemist	1	6,000/-	6,000/-
Skilled Worker	2	5,000/-	10,000/-
Unskilled Worker	3	3,500/-	10,500/-
Accountant Cum Clerk	1	4,000/-	4,000/-
Watchman	2	3,500/-	7,000/-
		Total	<u>37,500/-</u>
Perquisites @ 15%			<u>5625/-</u>
		Total	<u>Rs.43,125/-</u>

### **6.2.2 RAW MATERIALS (PER MONTH):**

<b>Item</b>	<b>Quantity</b>	<b>Rate (Rs.)</b>	<b>Value</b>
Common Salt	26.10 M.T	2000/- per MT	52,200/-
Sulphuric Acid	24 M.T	8,500/- per MT	2,04,000/-
		Total	<u>2,56,200/-</u>

### **6.2.3 UTILITIES (PER MONTH):**

Electricity, 4500 KVA @ Rs. 5/-		22,500/-
Coal	LS	30,000/-
Water	LS	2,000/-
		Total <u>Rs.54,500/-</u>

### **6.2.4 OTHER CONTINGENT EXPENSES (PER MONTH):**

1. Rent	10,000/-
2. Insurance	1,000/-
2. Telephone, Postage and stationery	5,675/-
3. Transport Charges	5,500/-
4. Advertisement & Publicity	3,000/-
5. Miscellaneous Expenses	1,000/-
	Total <u>26,175/-</u>

**6.2.5****RECURRING EXPENDITURE (PER MONTH):**

Personnel	43,125/-
Raw material	2,56,200/-
Utilities	54,500/-
Other contingent expenses	26,175/-
<b>Total:</b>	<b><u>3,80,000/-</u></b>

**6.2.6** Working Capital on three months basis :  $3,80,000 \times 3 = \text{Rs.}11,40,000/-$

**6.3 TOTAL CAPITAL INVESTMENT:**

Fixed Capital	9,00,000/-
Working Capital	<u>11,40,000/-</u>
<b>Total</b>	<b><u>20,40,000/-</u></b>

**7. MACHINERY UTILISATION:**

Furnace is the bottleneck equipment in the process which will determine capacity of the unit.

**8. FINANCIAL ANALYSIS :****8.1 COST OF PRODUCTION (PER ANNUM):**

Total recurring cost	45,60,000/-
Depreciation on machinery & equipment @ 10% of cost	70,000/-
Depreciation on fixtures, tools & misc. equipment @ 25%	7,500/-
Depreciation on office furniture & equipment @ 20%	10,000/-
Interest on capital investment @ 15 %	3,06,000/-
<b>Total</b>	<b>Rs <u>49,53,500/-</u></b>

**8.2 TURNOVER (PER ANNUM):**

Item	Quantity	Rate (Rs.)	Value (Rs.)
Sodium Sulphate	420 MT	9,000/- Per MT	37,80,000/-
Hydrochloric Acid	567 MT	3,500/- Per MT	<u>19,84,500/-</u>
		<b>Total</b>	<b>Rs.57,64,500/-</b>

**8.3 NET PROFIT BEFORE TAX (PER ANNUM):**

$$\begin{aligned}
 &= \text{Turn over} - \text{Cost of production} \\
 &= 57,64,500 - 49,53,500 = \text{Rs.}8,11,000/-
 \end{aligned}$$

**8.4 NET PROFIT RATIO:**

$$\frac{\text{Net Profit per year} \times 100}{\text{Turnover per year}} = \frac{811000}{5764500} \times 100 = 14.07\%$$

**8.5 RATE OF RETURN:**

$$= \frac{\text{Net Profit per year} \times 100}{\text{Total Investment}}$$

$$= \frac{811000 \times 100}{2040000} = 39.76 \%$$

**9. BREAK ANALYSES:****9.1 FIXED COST:**

Rent	1,20,000/-
Depreciation on machinery & equipment @ 10% of cost	70,000/-
Depreciation on fixtures, tools & misc. equipment @ 25%	7,500/-
Depreciation on office furniture & equipment @ 20%	10,000/-
Interest on capital investment @ 15 %	3,06,000/-
40% salary & wages	2,07,000/-
40% of other contingent expenses (excluding rent & insurance)	72,840/-
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Total	Rs.7,93340/-
<b>9.2 PROFIT</b>	RS. 8,11,000/-

$$\text{B.E.P.} = \frac{\text{Fixed Cost}}{\text{Fixed Cost} + \text{Profit}} \times 100$$

$$= \frac{793340 \times 100}{793340 + 811000}$$

$$= \frac{793340 \times 100}{1604340} = 49.45\%$$

**10. ADDRESSES OF SUPPLIERS OF PLANT & MACHINERY:**

- 10.1 M/s. T.S. Enterprises, E-416, Road No.14,  
Vishwakarma Industrial Area, Jaipur-302013
- 10.2 M/s. Yojana Machine Tools, GIDC Estate, Odhav Road, Ahmedabad-382415
- 10.3 M/s. Chemtex Engineering Enterprises,  
Plot No.277-278, GIDC Estate, Odhav, Ahmedabad-382415

**11. ADDRESSES OF SUPPLIERS OF RAW MATERIAL SUPPLIERS:**

- 11.1 M/s. Sambhar Salts Ltd., Pradhan Marg, Malviyanagar, Jaipur-30217
- 11.2 M/s. Hindustan Zinc Ltd, Udaipur (Rajasthan)
- 11.3 M/s. Shrirang Chemicals, 124-125,GIDC Industrial. Estate, Ahmedabad-382415

## Project Profile- New

1 NAME OF THE PRODUCT ; **Soft Jaws for CNC lathe**

2 PRODUCT CODE NIC Code 357102002 **LATHE CHUCKS & JAW CHUCKS**

75002 Lathe chucks

3 **QUALITY AND STANDARDS** as per Customer Requirement

4 **PRODUCTION CAPACITY** ;  
(Per annum)  
QUANTITY ;

Rs. | 1800 Sets  
2790000

5 **MONTH AND YEAR OF PUBLICATION:** March, 2011

6 **Prepared By**

**MSME-Development Institute,**  
22 Godam, Jaipur  
Ph. - 0141-2212098  
Fax-0141-2210553  
E Mail- dcdi-jaipur@dcmsme.nic.in  
web- msmedijaipur.gov.in

## **Soft Jaws for CNC Lathe**

1. **Introduction:** - Soft Jaws are used to clamp pre-machined component for further machining to desired accuracy especially on CNC Lathe. These are made of mild steel or En24, En36, & En8 to ensure its long work performance. Soft jaws simplifying the task of jaw placement on three jaw chuck. Most of three jaw chuck used on turning centers have a series of fine serrations on master jaws and top tooling that must be properly aligned when top tooling is mounted to the chuck. These soft jaws are clamped on master jaws through serrations and clamping bolts to turn the desired dia of jobs without damaging the outer dia of the jobs being made of soft material. These jaws are intermittently turned to the desired dia of the job to be clamped and to maintained the accuracy (runout etc.) At present the above items are widely used in Bearing turning Industries, etc., the demand is increasing.

2. **Market Potential** :- Most of the engineering industries (e.g. Bearing Component manufacturers, automotive parts manufacturers, etc.) have installed & using CNC Turning centers of various sizes to increase the production & competitiveness . These industries require several sets of soft jaws for different jobs for each machine. As there are still so many micro & small scale unit are using conventional lathe and they are now shifting to CNC turning centre, the demand of CNC turning centre and concurrently the demand of Soft Jaws are increasing rapidly. Further the soft jaws has to be replaced after a period of time depending on type of jobs turned. Hence soft jaws are also required for replacement market.

**Supply** :- At present the industries in Rajasthan are purchasing soft jaws from the supplier of CNC turning center. The manufacturers of these machines are importing/ purchasing from their manufacturers situated at Maharashtra, Gujrat, Punjab, Haryana States. Though the demand supply gap is around 5000 sets of soft jaws per annum which will go up to 10000 in the next three years. Hence from the demand supply gap a unit can capture 15% of the market supply which will increase with growing demand.

### **3. BASIS AND PRESUMPTIONS;**

- (1) The scheme is based on single shift of 75% efficiency considering 8 working hours/day, 25 days/month and 300 days per annum.
- (ii) Labour wages has been taken as per market rate. It is likely to vary depending upon the location of the project.
- (iii) Rate of interest has been taken 12% on an average on fixed and working capital. It is likely to vary due to financial outlay and the location of the unit.
- (iv) The operative period of the project is estimated to be about 10 years considering technology obsolescence.
- (v) Value of machinery & equipment is estimated on the basis of prevailing cost of the

local mkt.

#### 4. IMPLEMENTATION SCHEDULE :

S.No.	Activities	Period (in weeks)
1	Preparation of project report and selection of site	2
2	Registration	2
3	Application for Electricity Connection	1
4	Availability of finance	6
5	Procurement of machinery	1
6	Electrification & installation	2
7	Recruitment of staff	1
8	Trial run	1
	<b>Total</b>	<b>16</b>

#### 5. TECHNICAL ASPECTS:

i) **MANUFACTURING PROCESS :**

The steel blocks are cut to the required size (including machining margin) of soft jaws by gas cutter. Then machined on Vertical Milling Machines and serrations are cut on Horizontal milling machine using gang milling cutters. Holes are drilled and counter bored on drilling machine to the desired size and specifications of the customer's master jaws. The Jaws are then fine ground, blackened, oiled and packed for marketing.

ii) **QUALITY CONTROL & STANDARD**

The Products will be made as per Customer Requirement. Care to be taken to maintain the accuracy and equal weight of each soft jaw. Set of three jaws which are identical in weight is considered as one set and each item be marked with some code number/ set number to avoid the chance of mixing. Variation in weight of jaws causes the vibrations tool breakage and reducing the life of machine

iii) **PRODUCTION CAPACITY (Annually) :** 1800 Set

iv) **POWER REQUIREMENT :** 15 HP

v) **POLLUTION CONTROL REQUIREMENT :**  
There is no pollution control requirement for the item.

vi) **ENERGY CONSERVATION :**

The following steps may be taken for the conservation of energy :

- 1 Machinery and equipments, parts are revolving and reciprocating should be properly

lubricated from time to time with suitable lubricant.

- 2 Lay out of unit should be in such a way that there is no back tracking of material. All the electrical switches may be kept off when not in
- 3 use.
- 4 Proper ventilation system should be kept during construction of building for maximum utilization of solar energy and day light may be used by keeping all other lights off.
- 5 Fluorescent tube with electronic chokes should be used for energy saving. Further, recently development compact fluorescent tubes called (CFT) of 10W, 15W Philips/Glaux make may be used for energy saving and decoration. These self ballast fluorescent lamps are high efficiency replacements of ordinary bulbs.

## 6 FINANCIAL ASPECTS :

### a) LAND AND BUILDING:

- i) **Land** : The requirement of land for the proposed unit would be around 4000 Sq. Ft.

The land & Building will be on rent.	5000	
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### b) **PLANT & MACHINERY**

<u>S.No.</u>	<u>Description of machine</u>	<u>Qty.</u>	<u>Price</u>	<u>Amount</u>
1	Milling Machine (Vertical)	1	250,000	250,000
2	Milling Machine (Horizontal)	1	250,000	250,000
3	Surface grinder	1	200,000	200,000
6	Bench Drilling M/c.	1	50,000	50,000
7	Gas Cutter	1	6,000	6,000
8	Hand Grinder 4"	1	5,400	5,400
	Total			761,400
	Installation & Electrification @ 10%			76,140
	<b>TOTAL</b>			<b>837,540</b>
12	Office Equipment, Dies & Tools	LS	30,000	30,000
	<b>Total Investment In Plant &amp; machinery</b>			<b>867,540</b>
	Charges required for Getting Electricity Connection			25,000
<b>c</b>	<b>Total Investment In fixed assets</b>			<b>892,540</b>

### d) WORKING CAPITAL

#### i) Personnel

<u>S.NO.</u>	<u>DESIGNATION</u>	<u>No.</u>	<u>Salary</u>	<u>Total (Rs.)</u>
1	Manager	Self	15000	15000
2	Sales Supervisor	1	5000	5000
3	Supervisor cum clerk	1	6000	6000
4	Skilled Worker	1	8000	8000
5	Semi skilled worker	2	4500	9000

6	Helper	1	4000	4000
	Total			<b>47000</b>
	Additional Perquisites @ 15%			7050
	Total Expenditure in Salary & Wages			<b>54050</b>

ii **Raw Material**

S.No.	Particular (Indigenous)	Qty	Rate	Value (Rs.)
1	MS Plates kg	1250	48	60000
2	Blackning & Oiling Charges	1250	0.5	625
			<b>TOTAL</b>	<b>60625</b>

iii	<b><u>Utilities</u></b>			Value (Rs.)
1	Power ( 90 unit per day)	16875		16875
2	Oxy-Aceteline Gas			5000
3	Water	LS		250
		<b>TOTAL</b>		<b>22125</b>

iv **Other Contingent Expenses**

1	Postage and stationary			1500
2	Office Consumable stores			500
3	Transport charges			6000
4	Telephone charges			2000
5	Traveling expenses			500
6	Advertisement			3000
7	Miscellaneous expenses			500
8	Insurance			1500
	<b>TOTAL</b>			<b>15500</b>

v **Total Recurring Expenditure :**

S.No.	Description			Cost
1	Personnel			54050
2	Raw material			60625
3	Utilities			22125
4	Other Contingent Expenses			15500
5	Rent			5000
	<b>TOTAL</b>			<b>157300</b>

vi **Total working capital for 3 months :** **Rs. 471900**

e **Total Capital Investment :**

i	Fixed Capital			892540
ii	Working Capital for 3 Months			471900
iii	Total Capital Investment :			1364440
	<b>Total Capital Investment</b>	<b>Say</b>		

## 7 FINANCIAL ANALYSIS

### 1 Cost of Production (Per year) :

i	Total recurring cost :			1887600
ii	Depreciation of machinery and equipment @		10%	83754
iii	Interest on total Capital investment @		12.00%	163733
iv	Depreciation of tools and office equipment @		25%	7500
<b>Total :</b>				<b>2135087</b>

### 2 Total Sales (Per annum)

	Products	Qty. in Set	Rate per set	Value (Rs.)
	Sale of Soft Jaws	1800	1550	2790000
		<b>TOTAL</b>	<b>: Rs.</b>	<b>2790000</b>

### 3 Net Profit (Per yr.) (Before tax)

Total turnover per yr.) -cost of production per yr.) = **2790000 -2135087 654913**

### 4 Net profit ratio :

$\frac{\text{Net profit} \times 100}{\text{Turn Over}} = \frac{654913 \times 100}{2790000} = \mathbf{23\%}$

### 5 Rate of return :

$\frac{\text{Net profit} \times 100}{\text{Total Investment}} = \frac{654913 \times 100}{1364440} = \mathbf{48\%}$

### 6 BREAK-EVEN POINT; FIXED COST ;

1	40% salary & wages		40%	259440
2	Depreciation on machinery & Equipments		10%	83754

3	Depreciation of tools and office equipment @ 15%		15%	7500
4	Interest on capital investment @ 10%		10%	163733
5	40% of other contingent expenses		40%	67200
6	Insurance & Rent			78000
	<b>TOTAL</b>			<b>659627</b>

Net Profit (Per yr.) (Before tax) 654913

BEP :

$\frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Profit}} = \underline{\underline{50\%}}$

Fixed Cost + Profit

## A Supplier of Machine tools

- 1 M/s. Hindustan machine tools co., bellari Road, Bangalore
- 2 M/s. Vineet engineering works, Capital Building, Krushna Nagar Main Road, Near Gokuldharm Main Gate, Rajkot, Gujarat
- 3 M/s. Yogesh Tolaram Incorporation Plot No - 24, 22, Godam Industrial Area, Road, No - 4, Kartarpura Industrial Area, Jaipur-302006
- 4 M/s. Laxmi Machinery, 47, Mandir madho bihari, Sansar Chandra Road, Jaipur
- 5 New Barma Machine industries , 98, east mohan Nagar, Amritsar.
- 6 M/s. Quality Machine Tools, No.25 J.C. Road, Near VSL Bldg., Bangalore-2
- 7 M/s. K.G. Khosla & Co., Mathuri Road, Badarpur, Delhi.

## B Raw Material

- 1 Local Market.
- 2 Aditya Steel Corporation 18,19,20 Arihant Tower, Malhotra Nagar Road  
No 1, Vishwakarma la., Jaipur - 302013

