Chlorinated Heavy Normal Paraffin

PRODUCT CODE	:	36401
QUALITY AND STANDARDS	:	There is no laid down specification of BIS for this product. It is produced as per customer's specification.
PRODUCTION CAPACITY	:	1. Chlorinated Heavy Normal Paraffin-1000 MT/Year 2. Hydrochloric Acid-1200 MT/Year
MONTH AND YEAR OF PREPARATION	:	January, 2003
PREPARED BY	:	Small Industries Service Institute Opposite Chhattisgarh Club, Civil Lines, Raipur-492 001 (Chhattisgarh) Phone No. 427719

Introduction

Chlorinated Heavy Normal paraffin is a replacement of chlorinated paraffin wax. The method of manufacturing of both the products is the same and so is the end-use. Apart from above the best part of Chlorinated Heavy Normal Paraffin is that in this product maximum Chlorination which can be achieved is 70% while in chlorinated paraffin wax it is 60%. It is used as secondary plasticiser for Polyvinyl Chloride resins, plasticiser extender in synthetic rubber, Nitrocellulose, polystyrene etc. It is also used for impregnating textile and fabrics of all kinds as a flame retardant. It also finds application in paint industry for manufacturing of fire proof paints. It is widely used in foundry industry.

Market Potential

Chlorinated Heavy Normal Paraffin is mainly used in PVC industry as plasticiser, extreme pressure lubricant, additive in metal working industry and as fire retardant Chlorinated heavy normal Paraffin is a chemically inert plasticiser and in paint formulation where hard resins are used to make film more flexible that eliminates film embitterment. In plastics it is used as a secondary plasticiser because of high fire retarding efficiency, Good heat light stability, high resin compatibility, and lack of odour and low toxicity.

It is also widely used as lubricant in metal working industry to provide both extreme pressure activity and as a boundary lubricant.

It is also used as flame retardant in fabrics and paints industry. Presently 30-35 Small Scale Units in the country manufacture it and the total annual production is around 70,000 MT. The demand of the product is growing continuously at the rate of 6-7% per year.

Basis and Presumptions

1. The unit will work on three-shift basis.
2. The unit will achieve its full production in three year.
3. Twelve persons are required to operate the plant.
4. Workers salaries are considered as per Government norms.
5. Interest rate on capital investment is calculated on 14% basis.
6. Margin Money is 25%.
7. The technology will continue for another 10 years.
8. Depreciation on plant and machinery is considered @ 15%

Implementation Schedule

To implement the project a minimum one year period is required. First three months are required to get various approvals from Government Authorities and in preparation of project report and in placing order for the equipments and in erection of the unit 10 months are required. The remaining two months are required for trials and commissioning of the units.

Technical Aspects

Process of Manufacture

Chlorinated heavy Normal Paraffin is produced by passing chlorine in heavy normal Paraffin at specific temperature. The Hydrogen chloride gas evolved during reaction is absorbed in Hydrochloric acid absorption column to produce 32% Hydrochloric acid. The unabsorbed gas from HCL absorption column is then passed through packed high density Polythene absorption column where milk of lime solution is circulated. All unabsorbed gases are absorbed here. The total time required for 70% chlorination is around 26-28 hours. After achieving desired chlorination compressed air passed through the chlorinated mass to remove trapped HCL and chlorine gas from the product. Finally 1-2 to 1.5% epoxidised soyabean oil is added as stabilizer before packing the product.

Pollution Control

In this industry no liquid effluent is generated, but to take care of floor washing and various washing a small effluent treatment plant consisting of neutralizer and sand filter is required in chlorinated heavy Normal Paraffin industry HCL gas absorption column to produce hydrochloric acid to avoid even small amount of HCL gas comes out from the absorption column to avoid any pollution, packed HDPE absorption column is kept and milk of lime solution is circulated. It takes care of unabsorbed HCL gas and produces calcium chloride, which is after concentration marketed as one of the by-products.

Financial Aspects

A. Fixed Capital

(i) Land and Building		Value (Rs.)
1. Land	350 Sq.m.	1,00,000
2. Factory shed	100 Sq.m.	3,00,000
3. Admn. Block	50 Sq.m.	
	Total	4,00,000

(ii) Plant and Machinery

Sl. No.	Particulars	Qty.	Rate (Rs.)	Amount (Rs.)
1.	M.S. lead Bonded reactor Capacity 4 M.T.	1	3,50,000	3,50,000
2.	HCL gas absorption column 9 ft. standard	1	2,00,000	2,00,000

Sl. No.	Particulars	Qty.	Rate (Rs.)	Amount (Rs.)
3.	HDPE packed absorption Column	1	1,00,000	1,00,000
4.	Milk of Lime storage tank HDPE-3000 Lts.	1	25,000	25,000
5.	Heavy Normal Paraffin storage tank 20 KL	1	1,50,000	1,50,000
6.	Chlorinated HNP aeration tank cap. 6000 lits. MS/FRP	1	1,00,000	1,00,000
7.	M.S H.N-Heating tank with heating element 4KL	1	50,000	50,000
8.	Chlorinated HNP storage tank 20 KL FRP.	1	1,00,000	1,00,000
9.	Hydrochloric acid storage tank-30 KL FRP	1	1,50,000	1,50,000
10.	Rota meter	2	12,500	12,500
11.	Cooling Tower 100 T.R		1,00,000	1,00,000
12.	DG-Set	1	1,00,000	1,00,000
13.	Chlorine Storage yard with chain pulling arrangement	1	1,00,000	1,00,000
14.	S.S concentration vessel cap 7000 ltr.	1	1,00,000	1,00,000
15.	Firebrick lined furnace for dehydrating calcium chloride.	1	50,000	50,000
16.	Pipe Line and value	1	50,000	50,000
17.	Air Compressor with 7.5 H.P Motor		50,000	50,000
18.	Electricity, erection and commissioning		1,00,000	1,00,000
19.	Effluent Treatment Plant		50,000	50,000
		Total		19,50,000

(iii) Fixed Capital Investment		(Rs.)
1.	Land and Building	4,00,000
2.	Plant and machinery	19,50,000
	Total	23,50,000

(iv) Raw Material (per month)

Sl. No.	Particulars	Qty.	Rate (Rs.)	Amount (Rs.)
1.	Heavy Normal Paraffin	38 M.T	23,000	8,74,000
2.	Chlorine	133 M.T	7,000	9,31,000
3.	Lime	2 M.T.	4,000	8,000
4.	Stabilizer	1.2 M.T.	80,000	96,000
		Total		19,09,000

(v) Utilities (per month)		(Rs.)
1.	Electricity	50,000
2.	Water	2,000
	Total	52,000

(vi) Staff and Labour (per month)

Sl. No.	Particulars	No.	Rate (Rs.)	Amount (Rs.)
1.	Manager	1	10,000	10,000
2.	Chemist	1	6,000	6,000
3.	Skilled workers	4	3,000	12,000
4.	Unskilled workes	4	2,000	8,000
5.	Clerk-cum-Accountant	1	4,000	4,000
6.	Sales officer	1	5,000	5,000
7.	Watchman	2	2,000	4,000
		Total		49,000
	Perks @ 15%			7,350
		Total		56,350

(vii) Other Contingent Expenses (per month)		(Rs.)
1.	Postage and Stationery	3,000
2.	Transport	10,000
3.	Telephone	5,000
4.	Maintenance	10,000
5.	Insurance	5,000
6.	Miscellaneous expenses Including packing	12,000
	Total	45,000

B. Working Capital (per month)

1.	Raw material	Rs. 19,09,000
2.	Utility	Rs. 52,000
3.	Staff and labour	Rs. 56,350
4.	Other expenses	Rs. 45,000
	Total	Rs. 20,62,350

Working Capital for 3 Months
20,63,000 × 3 = Rs. 61,89,000

C. Total Capital Investment

1.	Fixed capital	Rs. 23,50,000
2.	Working capital	Rs. 61,89,000
	Total	Rs. 85,39,000

(1) Cost of Production		(Rs.)
1.	Total recurring cost	2,47,56,000
2.	Depreciation on plant and machinery @15%	2,92,5000
3.	Depreciation on building @ 5%	15,000
4.	Interest on total capital investment @14%	11,95,460
	Total	2,88,91,460
	or Say	2,89,00,000

(2) Total Sales		(Rs.)
1.	Chlorinated heavy normal paraffin 1000MT @ Rs. 31,000MT	3,10,00,000
2.	Hydrochloric Acid 1200 MT @ Rs.1000 MT	12,00,000
	Total	3,22,00,000

(3) Profit (per annum)		(Rs.)
1.	Total sales	3,22,00,000
2.	Cost of production	2,89,00,000
	Total	33,00,000

(4) Profit on Sale

$$= \frac{33,00,000 \times 100}{3,22,00,011100}$$

$$= 10.25\%$$

(5) Profit on Total Capital Investment

$$= \frac{33,00,000 \times 100}{85,39,000} = 38.64\%$$

(6) Break-even Point		(Rs.)
1.	Depreciation on machinery and equipment	2,92,500
2.	Interest on total capital investment	11,95,460
3.	40% of the salary and wages	2,70,480
4.	40% of other expenditure	2,16,000
	Fixed Cost	19,74,440
	Or say	19,74,000

B.E.P. $= \frac{\text{Fixed cost} \times 100}{\text{Fixed cost + profit}}$

$$= \frac{19,74,000 \times 100}{19,74,000 + 33,00,000}$$

$$= \frac{19,74,000 \times 100}{52,74,000}$$

$$= 37.43\%$$

Addresses of Raw Material Suppliers

1. M/s. Indian Petrochemicals Ltd.
   Nandesari, Vadodara,
   Gujarat.
2. M/s. Ruchi Finance Ltd.
   Reliance Distributor,
   505, Dalmal House,
   Nariman Point,
   Mumbai-400021.
3. M/s. Hukamchand Jute Mill
   Amlai, Distt. Shahadol,
   M.P.
4. M/s. Grasim
   Gram Nagala Nagda,
   Distt. Ujjain,
   M.P.
5. M/s. Shri Ram Food and Fertilizer Inds.
   (C.M.D Division),
   Shivaji Marg,
   Post Box No. 6219,
   New Delhi.

Addresses of Plant and Machinery Suppliers

1. M/s. Techno Chem. Engineers
   69, Industrial Area Ratlam,
   M. P.
2. M/s. Chem Metal Engineering
   Iraniwadi
   4th Road,
   Opp. Sardar Compound,
   Beside Dr. Bhadesh Shah,
   Kandivli (W),
   Mumbai.
3. M/s. Garg Lab Glass Industries
   19, Anand Bhawan,
   2nd Floor, 27,
   Babu Genu Road,
   Princess Street,
   Mumbai-400002.
4. M/s. Keystone Air System
   B/4, Shastri Stadium,
   Babunagar,
   Ahmedabad.