

PHENYL MAKING

1. INTRODUCTION:

The unit proposes to manufacture "Phenyl" which is a fluid disinfectant that destroys pathogenic organism. Phenyl is an emulsion of light creosote oil and water with soap. Creosote oil contains carbolic acid, creosol and other homologues of phenol which exert the necessary germicidal powder adequate incorporation of creosote oil. Further addition of phenol or cresylic acid or other anti-septic chemicals is essential to conform to the carbolic coefficient required for the product. Apart from possessing the correct germicidal strength, phenyl should stand without separation for any length, whether exposed or not. When poured into water it should readily disperse without stirring. It should form a thick milky white emulsion when sufficiently diluted. This is how an ordinary buyer would generally judge the quality of this disinfectant. Phenyl apart from its use in household, hotels, and restaurants, kitchens, bathrooms, and drain lines is used in considerable quantities by institutions such as hospitals, nursing homes, dispensaries and municipalities. A license is required from the State Drug Controller to manufacture phenyl. This is presently being manufactured to a limited extent.

2. PRODUCT & ITS APPLICATION:

Phenyl is a strong deodorant and germicide for disinfecting areas covering places like hospital, nursing homes, drains, lavatory, toilets, and cowsheds and is extensively used for sanitation purpose. It is notified as a "Drug" under the Drug Act and as such, prior permission and License from Drug Control Authority is necessary for its production.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Graduate in any discipline, preferably science.

4. INDUSTRY LOOK OUT AND TRENDS

A disinfectant is basically an agent, which destroys pathogenic organism. A good disinfectant should also be a deodorant possessing good keeping qualities. And it would be effective against microorganism of widely varying types. Phenyl type disinfectants fall in the category of black oil disinfectants and are extensively used for sanitation purposes, for drains, floor, stables etc. and are prepared from coal tar distillates containing high boiling tar acids. These are, however, less, affected in contact with organic matter. White Phenyl is an excellent and powerful white sanitizing liquid (white phenyl). It kills almost all types of germs and acts as a sanitizer deodorant, and air purifier. It is a multi-action cleaner with pleasant perfume. It is useful for any public and private places. Black Phenyl is a powerful germ killer used for homes, hospitals hotels, cinema halls public halls, drains poultries, toilets, closets, bathrooms, swimming pools, etc. The black coal tar disinfectants are intimate mixture of coal tar oils and phenols with water and a suitable soap in such a physical state that it is optically clear. Rosin and liquid rosin; fixed oils such as castor palm, kernel, coconut and fish oil or any of their fatty acid or naphthenic acid can be used, usually as mixture in the black fluids. These fluids dilute only with moderately hard water. The white coal tar disinfectants are readily made concentrated emulsion in water and stabilized by some suitable protective colloid such as gelatin and casein which permits the dilution of the concentrated emulsion with any hard or saline water. Black & White fluid disinfectant is manufactured by a number of Industries in India and their demand is still growing rapidly. The product is marked under the trade name phenyl. The raw materials, plant and machineries required for its production are indigenously available. The surface cleanser and disinfectants market has grown in value terms to an estimated Rs 5 bn a year, if multi-purpose detergents are excluded. In volume terms, the market is of the order of around 9000 TPA of which more than 60% is represented by phenyls. The branded MNC-oriented market is placed at over Rs 2750 Mn and is growing at around 20%. Reckitt & Colman (now Reckitt Benckiser) had launched Lysol, the Indian variation of Lysol, a worldwide brand, following Lever Johnson's introduction of its disinfectant cleanser, Domex. There are number of units in India engaged in the manufacture of various type of phenyl but the black phenyl as mentioned under Introduction is only being manufactured by 4-5 units. Phenyl is the most commonly used disinfectant. It finds its use in every household, building, office, hospitals etc. It is manufactured by a number of industrial entrepreneurs in India and their demand is

growing rapidly. A rapid increase in urbanization & development work in rural areas has led to the indenting of demand & supply gap. It may be concluded that phenyl is a commodity for every household & public building and its market potential is bright in future and is a venture to start a new production plant.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

In view of the demand, there is good scope to start one or two small units in all the important towns of the state. The demand for phenyl is rapidly increasing due to the propagation and awareness regarding importance of hygiene. The market segment of this product can be classified as follows:

- (A) Rural & Urban Household
- (B) Government health Sector
- (C) Private health Sector
- (D) Others.

All the above sectors are rapidly increasing in terms of numbers of units in today's time. But there are hardly sufficient numbers of units manufacturing phenyl covering the demand. Hence, there is a scope of about 10 – 12 units to be set up in every region.

6. RAW MATERIAL REQUIREMENTS:

The following are the raw materials generally used in the manufacture of phenyl.

-Rosin, pale yellow to deep brown (black type is not suitable), Caustic soda, Castor oil (ordinary quality), Light cresote oil containing 25 to 30% carbolic acid.

7. MANUFACTURING PROCESS:

The scope for the manufacture of this disinfectant should be prepared as soft soap. This is first dissolved in water and then the cresote oil is added to form the emulsion. Great care need to be taken while the saponification of the oil with the alkali takes place. The heat should be regulated very carefully and it should be seen that the flame does not come in contact with the surface of the oil. The sudden increase of

temperature may also be accompanied by swelling up of the mass and the subsequent flowing over, which must be prevented.

Process:

1. Weigh, put the materials separately as per quantities given in the formula.
2. Prepare the caustic soda solution. Take required quantities of resin and castor oil in a pan. Then heat the above material till it is dissolved. Add slowly caustic soda solution to the above dissolved mass. Care is to be taken that in no case the mass over flow the pan. To control this, add caustic soda solution little by little. In this way when the major portion of caustic soda solution is mixed, the boiling slowly comes down. Now add the remaining caustic soda solution and continue boiling for about 15 minutes.
3. The heating is to be continued till the reaction is completed which can be determined by adding a few drops to a glass of water when a white solution should result.
4. Now mix the water and boil. Allow the solution to boil a little by extinguishing the first and then transfer it into a steel drum and mix the light creosote oil stirring. Close these of the drum and keep aside to cool for a day when the once the product is ready for use. This product is a good type of fluid, when a little of this is added to a glass of water, it at once produces a thick milky white emulsion with good odour.
5. Processed in the same way as above.

8. MANPOWER REQUIREMENT:

The enterprise requires 6 employees as detailed below:

Sr. No.	Designation of Employees	Monthly Salary ₹	Number of employees required				
			Year-1	Year-2	Year-3	Year-4	Year-5
1	Chemist @ 12000	12,000	1	1	1	1	1
2	Skilled workers @ 8000	16000	2	2	2	2	2
3	Manager @ 15000	15,000	1	1	1	1	1
4	Accounts/Sales Asst @12500	12,500	1	1	1	1	1
5	Office Boy @ 9000	9,000	1	1	1	1	1
	Total	64500	6	6	6	6	6

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 3 months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	1.00
2	Construction (if applicable)	
3	Procurement & installation of Plant & Machinery	2.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required (<i>some activities shall run concurrently</i>)	3.00

10. COST OF PROJECT:

The project shall cost ₹ 3.05 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	-
2	Building	-
3	Plant & Machinery	90000
4	Furniture, Electrical Installations	10000
5	Other Assets including Preliminary / Pre-operative expenses	5000
6	Working Capital	200000
	Total	305000

11. MEANS OF FINANCE

The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	0.85
2	Bank Finance	2.20
	Total	3.05

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 2.00 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	1.00	25	0.25	0.75
2	Receivables	0.50	25	0.15	0.35
3	Overheads	0.50	50	0.25	0.25
4	Creditors	-		-	-
	Total	2.00		0.65	1.35

13. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below:

Sr. No	Description	Quantity	Value Rs.
1	Cast iron pan, capacity 60 gallons	1	50000
2	Mixer, stirrer-electrically operated	1	20000
3	Galvanized buckets, measuring cans, scale, weights, furnace, steel drums and misc. Equipment	L.S	10000
4	Erection & Power wiring		10000
5	Motive Power 3 phase		
	Total		90000

All the machines and equipment are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

- Kamdhenu Agro Machinery
Plot No. 6, Near Power House,
Wathoda Road, Wathoda
Nagpur - 440035

Maharashtra, India

- Future Industries Private Limited
Shed No. 15, Ambica Estate,
Corporation Municipal Plot,
Opposite Sadvichar Hospital,
Naroda, Ahmedabad - 382330,
Gujarat, India
- The Global Pharma Equipments
Star Industrial Estate,
D-32, Naik Pada,
Near Hanuman Mandir,
Opposite Dwarka Industrial Estate,
Vasai East, Vasai - 401208,
Maharashtra, India

14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	9.00	10.50	12.00	13.50	15.00
3	Raw Materials & Other direct inputs	₹. In Lacs	6.75	07.90	09.05	10.16	11.29
4	Gross Margin	₹. In Lacs	02.25	2.60	2.85	3.34	03.71
5	Overheads except interest	₹. In Lacs	0.60	0.65	0.71	0.74	0.76
6	Interest@ 10 % on 2.20 lakhs	₹. In Lacs	0.22	0.22	0.18	0.14	0.10
7	Depreciation	₹. In Lacs	0.25	0.22	0.20	0.18	0.15
8	Net Profit before tax	₹. In Lacs	01.18	01.51	01.76	2.28	2.70

The basis of profitability calculation:

The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study; it can be increased according to the selling strategy.)

Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per litre. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 18.46 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	15.00
2	Variable costs	₹. In Lacs	11.29
3	Fixed costs incl. interest	₹. In Lacs	00.84
4	$BEP = FC/(SR-VC) \times 100 =$	% of capacity	18.46

16. STATUTORY / GOVERNMENT APPROVALS

As per the allocation of business rules under the Constitution, labour is in the concurrent list of subjects. It is dealt with by the MOLE at the Central and Departments of Labour under State Governments in respective States / UTs. The MOLE has enacted workplace safety and health statutes concerning workers in the manufacturing sector, mines, ports and docks and in construction sectors.

Further, other Ministries of the Government of India have also enacted certain statutes relating to safety aspects of substances, equipment, operations etc. Some of the statutes applicable in the manufacturing sector are discussed below:

The Static and Mobile Pressure Vessels (Unfired) Rules, 1981

These (SMPV) Rules are notified under the Explosives Act, 1884. These rules regulate storage, handling and transport of compressed gases. These rules stipulate requirements regarding construction and fitments, periodic testing, location, fire protection, lading and unloading facilities, transfer operations etc. in respect of pressure vessels whose water capacity exceeds one thousand litres. These rules are

enforced by the Chief Controller of Explosives under the Ministry of Industry and Commerce, Govt. of India (PESO).

The Manufacture, Storage and Import of Hazardous Chemicals Rules (MSIHC), 1989

These MSIHC Rules are notified under the Environment (Protection) Act, 1986. These rules are aimed at regulating and handling of certain specified hazardous chemicals. The rules stipulate requirements regarding notification of site, identification of major hazards, taking necessary steps to control major accident, notification of major accident, preparation of safety report and on-site emergency plan; prevention and control of major accident, dissemination of information etc. These rules are notified by the Ministry of Environment and Forests (MOEF) but enforced by the Inspectorates of Factories of respective States / UTs in the manufacturing sector.

The Factories Act, 1948 and State Factories Rules

The Factories Act, 1948 is very comprehensive legislation dealing with the matters of safety, health and welfare of workers in factories. The Act places duties on the occupier to ensure safety, health and welfare of workers at work. Some of the salient provisions of the Act include:

- Guarding of machinery
- Hoists and Lifts; Lifting Machines and Appliances
- Revolving Machinery
- Pressure Plant
- Excessive Weight
- Protection of Eyes
- Precautions against dangerous fumes, gases etc.
- Explosive or inflammable dust, gas etc.
- Precautions in case of fire
- Safety of buildings and machinery
- Permissible limits of exposure of chemical and toxic substances
- Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATIONS

Chemical companies often become integrated and undergo other activities outside the chemical industry. Increased competition prompts many companies to reduce supply chain costs by looking outside the chemical sector at suppliers and customers. While most companies within the chemicals sector primarily produce chemicals, some companies also conduct other manufacturing activities. The exact proportion of chemicals sector companies that are integrated with other sector activities is unknown, but many companies actively seek vertical integration. Many manufacturers pursue vertical integration to secure suppliers and customers for their products.

Mergers and acquisitions are a common way for companies to undertake new chemical ventures. By purchasing their chemical suppliers, some manufacturers secure future chemical feedstock for their products or other chemicals that they use in manufacturing. The company making the purchase obtains valuable expertise and equipment. Some mining and petrochemical production is more cost-effective when integrated within a chemical company.

Energy and feedstock costs are often a significant expense for chemical companies. Integrating chemical production with activities that secure supplies of chemical feedstock and energy is relatively common as chemical companies grow. Chemical companies are located near mines, oil fields, ammonia factories and water supplies. This reduces transportation costs and increases the reliability of supplies by reducing the distance between feedstock and the factory.

Some companies, such as Sino-Coking Coal and Coke Chemical Industries Incorporated, own their mines. BHP Billiton operates a broad range of mines and is primarily a mining company. It does, however, also produce petrochemical feedstock for the chemical industry and therefore operates within the chemical industry as well. These companies technically operate within both the chemical and mining industries in their normal business operations.

Integrating a chemical company with other activities provides several direct benefits for the company and is becoming increasingly common. High energy costs necessitate greater control of energy resources and minimal reliance on expensive transportation.

Chemical companies experience volatile profitability due to fluctuations in feedstock and energy expenses. Some companies control this volatility through careful supply chain management and by charging supply surcharges. Actively researching and developing alternative feedstock and energy supplies helps the company reduce costs.

Vertical integration supports these activities by eliminating redundant activities at multiple companies and increasing efficiency. By consolidating activity among multiple, similar operations, chemical companies achieve cost savings that contribute to higher profitability. End products are often very profitable, and some chemical companies purchase their former customers to take advantage of the marked-up prices of products further along in the supply chain.

Integration may become more common for many chemical companies as competition strengthens and traditional feedstock becomes more expensive. Market demand for chemical feedstock increases as emerging market economies grow and result in increased consumer spending around the world.

18. TRAINING CENTERS AND COURSES

There is no such training required to start this business but, basic chemical bachelor's degree is plus point for enterpriser. Promoter may train their employees in such specialized institutions to grow up the business. There are few specialised Institutes provide degree certification in chemical Technology, few most famous and authenticate Institutions are as follows:

1. Department of chemical LD college of engineering
No.120, Circular Road, University Area, Navrangpura,
Opposite Gujarat University, Ahmedabad, Gujarat 380015
2. MIT College of chemical Engineering, Pune
Gate.No.140, Raj Baugh Educational Complex,
Pune Solapur Highway,
Loni Kalbhor, Pune – 412201
Maharashtra, India

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.