

LIQUID DETERGENT

1. INTRODUCTION:

Synthetic detergents have made rapid strides in India during the last decade. Liquid synthetic detergents are a consumable item and are used for cleaning of silk cloth, woolen clothes, utensils, machinery, and floor and in textile industry etc.

A detergent is a surfactant or a mixture of surfactants with cleaning properties in dilute solutions. These substances are usually alkyl benzene sulfonates, a family of compounds that are similar to soap but are more soluble in hard water, because the polar sulfonate (of detergents) is less likely than the polar carboxylate (of soap) to bind to calcium and other ions found in hard water.

In most household contexts, the term detergent by itself refers specifically to laundry detergent or dish detergent, as opposed to hand soap or other types of cleaning agents. Detergents are commonly available as powders or concentrated solutions. Detergents, like soaps, work because they are amphiphilic: partly hydrophilic (polar) and partly hydrophobic (non-polar). Their dual nature facilitates the mixture of hydrophobic compounds (like oil and grease) with water. Because air is not hydrophilic, detergents are also foaming agents to varying degrees.

2. PRODUCT & ITS APPLICATION:

Detergents are classified into three broad groupings, depending on the electrical charge of the surfactants.

Household cleaning

One of the largest applications of detergents is for household cleaning including dish washing and washing laundry. The formulations are complex, reflecting the diverse demands of the application and the highly competitive consumer market.

Fuel additives

Both carburetors and fuel injector components of Otto engines benefit from detergents in the fuels to prevent fouling. Concentrations are about 300 ppm. Typical detergents are long-chain amines and amides such as poly isobutene amine and poly isobutene amide.

Biological reagent

Reagent grade detergents are employed for the isolation and purification of integral membrane proteins found in biological cells. Solubilization of cell membrane bilayers requires a detergent that can enter the inner membrane mono-layer.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Graduate in chemical discipline.

4. INDUSTRY LOOK OUT AND TRENDS

When detergent is mentioned, the cake, bar or powder usually comes to mind. For small manufacturers, the best advice on making liquid detergents is to purchase an intermediate dodecyl benzene sulphonic acid (DDBSA) better known as acid slurry from primary producers. Liquid detergents which actually preceded powders are used mainly for fine wash and dish washing. It can undoubtedly be said that liquid detergents are an important part of today's cleanser markets of developed countries. In India, liquid detergent is still under development stage, except that is used in large quantities in textile mills for wet processing for textile goods. There are few organized and many unorganized sectors engaged in the manufacturing of liquid detergent. It has got good market

over solid detergent. So it can be concluded that few entrepreneurs may enter in this fields.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

According to India Detergent Market Outlook, 2021, the overall market for detergent is growing with a CAGR of 13.06% from the last five years. Detergents are available in three forms, namely powder detergent, bar detergent and liquid detergent. Powder detergents are widely accepted by Indian consumers and dominate the industry. Even though detergent bars are still used in rural areas, they are fast disappearing from the market because of ineffectiveness.

The detergent industry in India is mostly captured by organized players, but unorganized regional players have a significant hold on the rural areas. HUL, Rohit Surfactants, P&G, Nirma and Jyothy Laboratories are the major players in the organized market. They have popular brands like Ghari, Surf Excel, Active Wheel, Rin, Tide, Nirma, Ariel, Mr. White and Henko in their product portfolio.

On the basis of pricing, the organized detergent market can be further divided into three categories, such as popular (economy), mid-range and premium. The popular category consists of brands like Ghari, Nirma and Wheel; the mid-range category consists of Tide, Rin and Mr. White; and the premium category includes Surf Excel, Henko and Ariel. Hindustan Unilever dominates the high-priced premium and mid-range category, whereas Ghari dominates the low-priced popular category. It is common consumer item and the demand for which is increasing. It is becoming popular both in rural and in urban areas. Therefore, marketing of this product may not be a problem.

6. RAW MATERIAL REQUIREMENTS:

I. Raw Material (p.m.)

S. No	Description	Quantity	Value Rs.
1	Acid slurry	300 kg.	30,000
2	Caustic Soda	55 kg	4,000
3	Urea	120 kg	1,200

4	Perfume	1 kg.	1,000
5	Ph. strips	--	200
6	Testing agents	--	1,000
7	Packing materials	--	20,000
Total			57,400

II. Utilities per month

Sr. No.	Description	Value in Rs.
1	Power	1000
2	Water	300
Total		1300

7. MANUFACTURING PROCESS:

The process of manufacture consists of neutralization of acid slurry. Measured quantity of acid slurry is taken in SS kettle and diluted with known quantity of water with continuous stirring. A solution of caustic soda is prepared by dissolving measured quantity of caustic soda in measured quantity of water. The acid slurry is neutralized by a slow addition of caustic soda solution till it is neutralized. The pH of the solution is maintained and acid slurry is taken in plastic containers. Then known quantity of urea is added and kept for settling. Small quantity of perfume is added to liquid detergent before packing.

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	Machine Operators	12,000	1	1	1	1	1
2	Helpers	8,000	1	1	1	1	1
3	Production supervisor	15,000	1	1	1	1	1
4	Accounts/Sales Asset	12,500	2	2	3	3	3
5	Office Boy	9,000	1	1	1	1	2
Total			6	6	7	7	7

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	1.00
4	Arrangement of Finance	1.00
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 ₹ 21 Lakhs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land 500 sq. Feet	5.00
2	Building 300 sq. feet	5.00
3	Plant & Machinery	3.00
4	Furniture, Electrical Installations	1.00
5	Other Assets including Preliminary / Pre-operative expenses	1.00
6	Working Capital	6.00
	Total	21.00

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's	6.00

	contribution	
2	Bank Finance	15.00
	Total	21.00

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 6.00 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	2.00	25	0.50	1.50
2	Receivables	3.00	25	1.50	1.50
3	Overheads	1.00	100	1.00	0.00
4	Creditors	-		-	-
	Total	6.00		3.00	3.00

13. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below:

Sr. No.	Particulars	UO M	Qty	Rate (₹)	Value (₹ in Lacs)
	Plant & Machinery / equipments				
a)	Main Machinery				
i.	Vessel with stirrer	Nos	1.00	50,000	0.50
ii.	Mixing Vessel	Nos	1.00	30000	0.30
iii.	Storage vessel	Nos.	2.00	20000	0.20
b)	Ancillary machinery				
i.	Weighing Balance	Nos	1.00	10000	0.10
ii.	Packing machine	LS	1.00	20000	0.20
	<i>sub-total Plant & Machinery</i>				
	Furniture / Electrical installations				
a)	Office furniture	LS	1.00		1.00
b)	Stores /showcase	LS	1.00		0.70
c)	Computer & Printer	Nos	1.00	1,00,000	2.00
	<i>sub total</i>				5.00
	Other Assets				
a)	Rent Deposits				

	<i>sub-total Other Assets</i>				
	Total				5.00

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:

Sales: 100 liters per day and 30 kiloliters per annum @ Rs. 90 per liter

Turnover: Rs. 27.00 lakhs @ 100 % capacity.

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	16.20	18.90	21.60	24.30	27.00
3	Raw Materials & Other direct inputs	₹. In Lacs	7.50	8.75	10.00	11.25	12.50
4	Gross Margin	₹. In Lacs	8.70	10.15	11.60	13.05	14.50
5	Overheads except interest	₹. In Lacs	8.00	8.00	9.00	10.00	11.00
6	Interest	₹. In Lacs	0.15	0.15	0.12	0.10	0.08
7	Depreciation	₹. In Lacs	1.5	1.5	1.5	1.5	1.5
8	Net Profit before tax	₹. In Lacs	-0.95	0.50	0.98	1.45	1.92

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 76.41 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	27.00
2	Variable costs	₹. In Lacs	12.50
3	Fixed costs incl. interest	₹. In Lacs	11.08
4	BEP = $FC/(SR-VC) \times 100 =$	% of capacity	76.41

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, loading 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.

Source:- Udyami Mitra/Sidbi