



MODEL PROJECT REPORT



PROJECT REPORT ON DETERGENT POWDER

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Introduction

Synthetic detergents occupy a vital place in the present age particularly when the modern society is constantly looking for quick, effective and economic cleaning agents. Synthetic detergents emerged as a regular industry after Second World War only. The development of this industry is closely linked with Petro-chemical industry which forms the basic for its raw materials. Detergents when dissolved in water acquire better cleaning properties and hence facilitate easy removal of dirt & dust and grease etc.

Apart from their use in clothes washing, detergents also have applications in the following industries.

1. In industry, in laundry and dry cleaning.
2. In textile processing, grain milling, metal plating and foods canning.
3. In dairy foods and beverages processing and in restaurants.
4. In plant maintenance and industrial house-keeping.

Major Application of Detergents

Synthetic detergents are preferred to soaps on account of economy and efficiency. Unlike soaps synthetic detergents remain unaffected by the presence of natural lime and magnesium salts in water and maintain cleaning properties in hard water with practically no wastage. Therefore these are more economical.

Synthetic detergents available in the market are used for washing cloth cotton linen and other fabrics. Liquid detergents are also sold for the purpose of dish washing and cleaning floors industrial use in textiles, and commercial buildings, hospitals, and hotels, similarly railway coaches, road vehicles, aircrafts, milk bottling plants and food preservation equipment are washed with the help of detergents.

Textile industry is one of the largest consumers of synthetic detergents. In the processing stage the cotton, rayon and synthetic fibers are scoured wetted with chemical detergents. They are used as dyeing and finishing operations and also in the printing trade in woolen textile industry. Detergents are used in the scouring operations of raw material, yarn and woven fabrics.

In paper industry detergents are used as wetting agents to facilitate the pulp making operations. Detergents are used in degreasing of rags, in pretreatment in the electroplating and galvanizing process, for wetting of ores, and mineral extraction.

In scouring of leather, detergents are employed to impart softening and penetrating properties to the leathers. In rubber industry, detergents are used as wetting and dispersing agents and as lubricants.

Synthetic detergents are regularly used for cleaning equipment, packing containers employed in the food processing industry, in brewing and wine making industry. In brewing and wine making industry, the process cleaning and sterilization of vats, still and bottles is facilitated by detergents.

Market Potential.

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.

Detergent Powder Making Formula

Different companies have their own customized formula. In addition, you have to craft the formula according to your target market demographic. However, a basic formula with the ingredients in percentage for ready reference is.

Ingredients	Premium grade (Wt, %)	Popular grade (Wt, %)
85% active LAB acid slurry	18	15
Sodium carbonate (soda ash)	35	32
Sodium metasilicate	2	No
Alkaline sodium silicate	No	7

Sodium bicarbonate	10	10
Sodium Sulphate (anhydrous)	20	25
Sodium tripolyphosphate	10	7
Sodium carboxy methyl cellulose	1.5	1
Phthalocyanine blue color or oil-soluble yellow colour	0.1	0.1
Optical whitener	0.3	0.2
Perfume	0.1	0.1

Detergent powder manufacturing Process.

Although there are three ways of manufacturing dry detergent, only two are commonly used today. In the blender process favored by smaller companies, the ingredients are mixed in large vats before being packaged. The second commonly used method of production is called the agglomeration process. Unlike the blender process, it is continuous, which makes it the choice of very large detergent manufacturers. In the third method, dry ingredients are blended in water before being dried with hot air. Although the resulting product is of high quality, the fuel costs and engineering problems associated with venting, reheating, and reusing the air have led to this method being largely replaced by agglomeration.

The blender process

First, ingredients are loaded into one of two machines: a tumbling blender or a ribbon blender. The tumbling blender, shaped like a rectangular box, is turned and shaken from outside by a machine, while the ribbon blender is a cylinder fitted with blades to scrape and mix the ingredients. After the ingredients inside the blender have been mixed, a doorway at the bottom of the bowl is opened. With the blender still agitating the ingredients, the mix is allowed to run out onto a conveyor belt or other channeling device. The belt then moves the detergent to another area of the factory where it can be dropped into boxes or cartons for delivery to wholesalers or distributors.

The agglomeration process

In this method, dry ingredients for a detergent are first fed into a large machine known as a *Shuggi agglomerator* (Shuggi is the manufacturer). Inside the agglomerator, sharp, whirling blades mix the material to a fine consistency; the process resembles food being textured inside a food processor.

After the dry ingredients have been blended, liquid ingredients are sprayed on the dry mix through nozzles fitted into the agglomerator's walls. The blending continues, causing an exothermic (heat-producing) reaction to occur. The resulting mixture is a hot, viscous liquid similar to gelatin that hasn't hardened.

Next, the liquid is allowed to flow out of the agglomerator. As it leaves the machine, it collects on a drying belt where its own heat, exposure to air, and hot air blowers render it friable—easy to crush or crumble. The newly made detergent is then pulverized and pushed through sizing screens that ensure that no large lumps of unmixed product go out to the market. The result of this process is a dry detergent made up of granules of the mixed detergent.

The slurry method

In this process, ingredients are dissolved in water to create a slurry. With a pump, the slurry is blown through nozzles inside the top of a cone shaped container as hot, dry air is simultaneously forced into the bottom of the cone. As the slurry dries, "beads" of dry detergent fall to the bottom of the cone, where they can be collected for packaging.

Liquid detergent

If the detergent is to be liquid rather than powder, it is simply mixed back in—after all ingredients are blended—with a solution consisting of water and various chemicals known as solubilizers. The solubilizers help the water and detergent blend together more fully and evenly.

Detail of raw material used in manufacturing of detergents.

Major raw materials used in the making of detergent powder are :- Soda ash, Carboxy methyl chloride, sodium perborate, lather forming chemical, colours and perfume. Following is the utility of the given ingredients.

Soda ash (Sodium carborate)

Soda ash depresses acid bleary and makes the washing process alkaline. moreover, soda ash is a low priced salt to break the dirt.

Carboxy methyl chloride (cellulose)

This prevents the dirt from resettling on the surface of the cloth and is particularly useful for cotton clothes.

Sodium perborate

This acts as a high bleach and also retains the colours of the clothes. In addition it also breaks up the dirt particles.

Perfume

Perfumes and aromatic mixture are used in detergent to subside the intense smell of detergent ingredients. Major perfumes used in detergent powders are P Methoxy, P Methyle, Di-Oxide, Musk Ketone etc.

Colour.

Instead of white, coloured detergents are the preferred ones. Majorly, copper phthalocyanine is used for this purpose because it also blocks light and temperature.

Lather producing chemical

This chemical is required to produce lather and also enhances the cleaning capacity of the detergent.

Detergent Making Machines.

Detergent manufacturing machines include systems and equipment that can be used to produce detergents in various forms of powder, liquid and gel.

With advancements in technology, the manufacturing techniques have changed a lot and a variety of sophisticated machines are available to produce effective detergents for different cleaning applications.

Some of the common detergent making machines used in the industry is -

- Detergent Cake Making Plant
- Detergent Mixing Machine
- Rotary Sealing Machine.

Design

Machines for detergent manufacturing are designed keeping the various operations, processes and stages of soap manufacturing in mind. For example, a detergent making machine should support the batch as well as continuous processes of detergent manufacturing. Some of the salient features that should be there in a detergent making machine are -

- Easy to operate and maintain
- Sturdy design
- Durable
- Efficiently supports that different functions of detergent making
- Less power consumption.

Buying Tips - Detergent making Machines

While buying a detergent making machine, it is important that one has to know his requirement, so that one can purchase a right machine for your specific need. Different types of machines are available in industry that designed for manufacturing a particular type of detergent like powder detergent manufacturing machine, liquid detergent machine, etc. Hence it important that one buys a machine as per one's need. Generally one should prefer a machine with a sturdy and robust structure as durability is the most important factor.

Detergent Powder Manufacturing License & Registration

- First of all, determination of form of business. And accordingly, register the business.
- Apply for the Trade License from the Municipal Authority.
- Additionally, apply for MSME Udyog Aadhaar online registration.
- Apply for the 'Consent to Establish' from the Pollution Control Board.
- Obtain the GST registration.
- Apply for BIS certification.
- Choice of a brand name of the product and secure the name with Trademark

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
2	Construction (if applicable)	
3	Procurement & installation of Plant & Machinery	1
4	Arrangement of Finance	1
5	Recruitment of required manpower	1
	Total time required <i>(some activities shall run concurrently)</i>	3

Quality Control & Standards

In order to manufacture good quality detergent, it is utmost urgent to purchase good quality of raw material from only the established and renowned suppliers. Before putting the raw material into operation all those has got to be tested for their chemical properties at the gate testing facilities and after the finished product. Quality means the producer has to satisfy the desire and urge of uses. Keeping in view the demand of people from quality point of view it is necessary to adopt better technique of manufacturing and good quality of raw material. To manufacture a detergent of good quality, specific BIS standard can be followed

Pollution Control

There might be some pollution in the manufacturing of detergent powder. However, the producer is advised to adopt and follow the prescribed norms by the pollution control board. Before switching over to manufacturing, NOC from the concerned State Authority is very much required in this case. To minimize the pollution some control measures and monitors can be installed.

Energy Conservation

To conserve the energy required thickness of vessels should be taken. Only necessary machinery and equipment and jig jags should be purchased. Proper space is given to proper flow for manufacturing raw material and finished products. Control is maintained over consumption of electricity light and fuel so that extravagance expenditure can be checked.

Project Financials

Basis & Presumptions:

The basis for calculation of production capacity has been taken of single shift basis, working of 25 days per Month on 75% efficiency.

The maximum capacity utilization on single shift basis for 300 days a year.

Interest rate for Fixed and Working capital of the project has been taken at an average rate of 12 %

Land and Building is owned and Cost of Plant and Machinery has been taken as per prices Prevailing in the market.

The wages for skilled workers are taken as per prevailing rates in this type of industry.

The essential production machinery and test equipment required for the project have been indicated.

The unit can achieve its full capacity utilization during the 2nd year of operation.

Financial Assistance required from Bank/ Financial Institutions :

Term Loan :	476,000.00
Working Capital :	950,000.00

Cost of Project.

Sl. NO.	PARTICULARS		AMOUNT
1	Land & Building		420000.00
2	Plant and Machinery		147500.00
3	Furniture & Fixture		62500.00
4	Computer		50000.00
4	Preoperative expenses		15000.00
5	Margin for Working Capital		327700.00
	Total		1022700.00

Means of Finance.

S.NO.	PARTICULARS		AMOUNT
1	Own Contribution		546700.00
2	Term Loan		476000.00
	Total		1022700.00

Fixed Capital

(i)	Land and building		Amount(In Lakhs)	
i)	Land	200 Sq mtr.		Nil
ii)	Working Shed	140 Sq. mtr@Rs3000 sq.mtr		420,000.00
	Total			420,000.00
(ii)	Machinery and Equipment			
S.no	Description	Qty. nos.	Price/unit	Amount (In Rs.)
1	Mixer/Blender (hand operated)100 kg capacity properly lined inner side	1	65,000.00	65,000.00
2	Trays/Pan made of stainless steel	5	2,200.00	11,000.00
3	Grinding Machine	1	32,500.00	32,500.00
4	Weighing Machine	1	12,000.00	12,000.00
5	Weighing balance for packing	1	15,000.00	15,000.00
6	Miscellaneous like Gloves, Bag seaving machine			12,000.00
	Total			147500.00
7	Furniture and Fixture/ Office Equipment			62500.00
8	Computers			50000.00
	Total Fixed Capital			680000.00

Total Capital Investment

			Rs.
1	Total Fixed Capital		680000.00
2	Working Capital for 3 Months		1277700.00
	Total		1957700.00

Total working capital

					Rs.
1	Salary and Wages		(i)		92,000.00
2	Raw Material		(ii)		281,400.00
3	Utilities		(iii)		41,000.00
4	Other Contingent Expenses		(iv)		11,500.00
	Total(Per Month)				425,900.00
	Working Capital for 3 months				1,277,700.00

Staff and labour

S.No.	Designation	No.	Salary(Rs.)		Total(In. Rs.)
1	Production Manager	1	20,000.00		20,000.00
2	Skilled Worker	2	15,000.00		30,000.00
3	Un Skilled Worker	2	12,000.00		24,000.00
4	Clerk/Typist	1	10,000.00		10,000.00
5	Peon/Watchman	1	8,000.00		8,000.00
	Total(Per Month)	7			92,000.00

Raw Materials

S.No.	Particulrs	Rate(Rs)/Kg	Quantity		Total(In. Rs.)
1	Soda Ash	21.00	6500 Kg		136,500.00
2	Acid Slurry	74.00	625 Kg		46,250.00
3	T.S.P	45.00	1000 Kg		45,000.00
4	Sodium Silicate	10.00	1315 Kg		13,150.00
5	Sodium Sulfate	8.00	2250 Kg		18,000.00
6	Urea	26.00	500 Kg		13,000.00

7	Ethanolamine	50.00	125 Kg	6,250.00
8	Trialkylamine	50.00	65 Kg	3,250.00
9	Sodium perporate	120.00	125 Kg	15,000.00
	Total(Per Month)			281,400.00

Utilities

		(Units)	Rate		Amount
1	Power	5500 K w h	7		38,500.00
2	Water				2,500.00
	Total(Per Month)				41,000.00

Other contingent expenses

S.No.	Particulars				Amount(In.Rs)
1	Repair and Maintenance				1500.00
2	Postage and Stationery				1000.00
3	Telephone Charges				1000.00
4	Transporatation and Freight				2000.00
5	Sales Expenses				5000.00
6	Other Maufacturing Expenses				1000.00
	Total(Per Month)				11500.00

Financial Analysis

Cost of Production

S.No.	Particulars	In. Rs.
1	Total Recurring Expenditure	5110800.00
2	Depreciation on Plant and Machinery @ 15%	22125.00
4	Depreciation of Furniture/Fixture & Office Equipment @ 10 %	6250.00
5	Depreciation of Computers @ 60 %	30000.00
6	Finance Cost	171120.00
	Total Cost Of Production	5340295.00

Turnover (per annum)

S.No.	Particulars	Qty(nos.)	Rate (in Rs)	In. Rs.
1	Detergent Powder	150000Kgs/Annum	40.00	6,000,000.00
TOTAL TURNOVER				6000000.00

Profit

Rs 659705/=

Percentage Profit on Sales

11%

Ratios

i) Rate of Return on Total Capital Investment

= Net Operating Profit/ Invested Capital

= 34%

ii) Return on Assets

=Sales/Average total Assets

=0.97

iii) Return on Equity

= Sales/ Stockholder's Equity

= 1.21

iv) Debt to Equity Ratio

= Total Term Liabilities/Total Shareholder's Equity

= 0.9

iv) Interest Coverage Ratio

= Earning before Interest & Tax/ Interest Expense

= 4.86.