



A PROJECT PROFILE ON

HAND SANITIZER (Alcohol based)

Name of the product : Alcohol hand sanitizer/ Hand rub

Product code : 34029099

Quality standard : Drugs & Cosmetics license. ISI Specification for hand sanitizer is IS4117:2008

Production capacity/ Am : Hand Sanitizer – 240 kiloliters/ Annum

Year of preparation : June2020

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(I) INTRODUCTION

Hand sanitizer, also called hand antiseptic or hand rub, agent applied to the hands for the purpose of removing disease-causing organisms. Hand hygiene is one of the most important measures to prevent the spread of infectious diseases. Hand sanitizer use is recommended when soap and water are not available for hand washing or when repeated hand washing compromises the natural skin barrier. Although the effectiveness of hand sanitizer is variable, it is employed as a simple means of infection control in a wider areas such as day-care centres, schools, hospitals, health care clinics and super markets. As a result of rising awareness about hand hygiene and its benefits, there has been a constant increase in demand of hand sanitizers. Hand sanitizers typically come in foam, gel, or liquid form. This project profile envisages manufacturing of alcohol based liquid hand sanitizer.

(II) MARKET:

India hand sanitizer market is projected to surpass \$ 43 million by 2025. Growth of hand sanitizer market in India can be attributed to rising awareness about healthy lifestyle & wellness, shifting consumer preference towards convenient hygiene products. Moreover, the strong marketing activities by leading brands, in addition to huge endorsements, are some other drivers of hand sanitizer market in India. Moreover, the COVID-19 outbreak has boosted demand for sanitizers like never before across the diverse end user segments.

The hand sanitizer market is categorized into Gel, Liquid, Foam and Spray. West India dominated the country's hand sanitizer market in 2019, and the region is expected to maintain its dominance during the forecast period. Some of the major players operating in India hand sanitizer market are Reckitt Benckiser (India) Ltd., Hindustan Unilever Ltd., Dabur India Ltd., Himalaya Drug Company Pvt. Ltd., ITC Ltd., and others.

(III) BASIS & PRESUMPTIONS:

1. This project is based on single shift basis and 300 working days in a year.
2. The cost of machinery & equipment/materials indicated refer to a particular make and the prices are approximate to these prevailing in the market at the time of preparation of this profile.
3. Depreciation has been taken as an –
 - a) On Machinery & Equipment @ 10%
 - b) On Office Furniture & Fixture @ 20%
4. Interest on Total Capital Investment has been taken @ 13% per annum.

5. Minimum 40% of the total investment is required as margin money.
6. Payback period of the project will be 1 year after implementation.
7. Break Even Point has been calculated at the full capacity utilization.
8. For smooth functioning of unit it is suggested that unit should have a good stock of quality raw materials.

(IV) IMPLEMENTATION SCHEDULE:

The following steps involves in the implementation of the project.

- a) Selection of site.
- b) Form ownership.
- c) Feasibility report.
- d) Registration with DIC, PFA etc.
- e) Arrangement of finance.
- f) Construction of Factory Shed & Building.
- g) Plant Erection & Electrification.
- h) Recruitment of manpower.
- i) Arrangement of raw materials including packaging materials.
- j) Selection of marketing channel
- k) Miscellaneous work i.e. Power and Water connection, Pollution control board clearance etc.

Normally 6 months is required to implement the project.

(V) TECHNICAL ASPECTS:

a) Types of Hand Sanitizers:

Depending on the active ingredient used, hand sanitizers can be classified into two types: alcohol-based or alcohol-free. Alcohol-based products typically contain between 60 and 95 percent alcohol, usually in the form of ethanol, isopropanol. At those concentrations, alcohol immediately denatures proteins, effectively neutralizing certain types of microorganisms. Alcohol-free products are generally based on disinfectants, such as benzalkonium chloride (BAC), or on antimicrobial agents, such as triclosan. The activity of disinfectants and antimicrobial agents is both immediate and persistent. Many hand sanitizers also contain emollients (e.g., glycerin) that soothe the skin, thickening agents, and fragrance.

b) Raw Material for Sanitizer Production:

The principal raw materials required for the production of hand sanitizer are Ethanol or Isopropanol, Glycerol, Hydrogen Peroxide, distilled water and essential oil such as peppermint or Lavender oil or lemon extract. All the enlisted raw materials can be procured locally.

c) Hand sanitizer Production Unit Setup & Machinery:

Selecting a right location for factory operation is an important aspect. Major required utilities are water and electricity. Easy availability of transport facility and labour is important. Create a floor plan indicating specific space for raw material storage, finished products storage, production unit area, administrative work space, store room and space for miscellaneous usage. Generally, you will need to have 2000 sq.ft of nonagricultural land for establishing an improved sanitizer manufacturing unit. Here, you can erect a plant (1000 sq.ft) with a processing capacity of 240kiloliters/annum. Additionally, the land must come with proper elevation.

Hand sanitizer manufacturing plant machinery / equipments consists of the following:

1. Raw material / Alcohol Storage Vessel(Recommended only if you are planning to go for big size mfg plant ex 500 ltrs and above)
2. Transfer Pump to transfer alcohol to manufacturing vessel
3. Manufacturing/ mixing vessel
4. Product storage vessel
5. Transfer Pumps (2 nos – One to transfer sanitizer from mfg vessel to storage vessel and one from storage vessel to filling machine)
6. Filling line consisting of filling machine, capping machine, labeling machine & ink jet printer for batch coding.
7. Working platform, control panels, essential pipes, valves and filters
8. Weighing balance

d) Hand Sanitizer Production Process & Technology

Table 1:- Ethanol based Formulation:

Raw material	10 L capacity	50 L capacity	100 L capacity	400 L capacity	1000 L capacity
Ethanol	8.3 L	41.7 L	83.3 L	333.3 L	833.3 L
Hydrogen Peroxide	0.42 L	2.1 L	4.2 L	16.7 L	41.7 L
Glycerol	0.15 L	0.7 L	1.5 L	5.8 L	14.5 L
Distilled water	1 L	5.1 L	10.3 L	41 L	102.5 L
Essential oil for fragrance	0.08 L	0.4 L	0.8 L	3.2 L	8 L

Table 2:-Isopropanol based Formulation:

Raw material	10 L capacity	50 L capacity	100 L capacity	400 L capacity	1000 L capacity
Isopropanol	8.3 L	41.7 L	83.3 L	300.6 L	833.3 L

Hydrogen Peroxide	0.42 L	2.1 L	4.2 L	16.7 L	41.7 L
Glycerol	0.15 L	0.7 L	1.5 L	5.8 L	14.5 L
Distilled water	1 L	5.1 L	10.3 L	73.7 L	102.5 L
Essential oil for fragrance	0.08 L	0.4 L	0.8 L	3.2 L	8 L

1. Production Technology

The first step in preparing hand sanitizer is to fix the batch size. In this project profile, it is assumed that the production capacity to be installed is about 500 L with **optimal working volume of 400 L** and all the **financial workings** presented in this report are based on **raw materials listed in Table 1**.

1. In a 500 L stainless steel jacketed vessel add 333.3 L of Ethanol. Using the jacket control, temperature of the batch to be maintained at less than 20 °C.
2. Turn on the mechanical Stirrer. To this add 16.7 L hydrogen peroxide.
3. To the above solution add 5.8 L glycerol.
4. Add 41 L of distilled water and continue stirring for 30 mins to ensure uniform mixing by keeping the batch temperature at less than 20 °C throughout the process.
5. Finally add 3.2 L of essential oil (clove, Eucalyptus, peppermint or citrus oil) for fragrance and continue stirring for 30 mins.

Alcohol storage tanks must be minimum 10 times the capacity of the manufacturing vessel so that, at least 10 batches could be catered before refilling the alcohol storage tank. For making sanitizer in gel form, add Carbopol which will thicken the sanitizer into gel form. Permitted colour & perfume may be added as required. The homogenizer will mix the Carbopol into alcohol and water to give uniformity. Then once the sanitizer is ready transfer it to storage vessel and take it for filling.

For small quantity preparation, the tanks should be calibrated for the ethanol/isopropyl alcohol volumes and for the final volumes of either 10 or 50 litres and kindly ensure below containers are used,

- 10-litre preparations: glass or plastic bottles with screwthreaded stoppers can be used.
- 50-litre preparations: large plastic (preferably polypropylene, translucent enough to see the liquid level) or stainless steel tanks with an 80 to 100 litre capacity should be used to allow for mixing without overflowing.

NOTE: The solution is mixed by gentle shaking or by using a wooden, plastic or metallic paddle. Electric mixers should not be used unless "EX" protected because of the danger of explosion. After mixing, the solution is immediately divided into smaller containers (e.g. 1000, 500 or 100 ml plastic

bottles). The storage tank / bottles should be kept in quarantine for 72 hours. This allows time for any spores present in the alcohol or the new or re-used bottles to be eliminated by Hydrogen Peroxide.

e) Quality & specification requirements

In general alcohol based hand sanitizers has shelf life of 2years. However if stored under proper storage conditions, shelf life can be extended up to 3 year. For hand sanitizer production, mentioning the shelf life on packets or labels is mandatory.

The quality of Alcohol to be used should be about 91-99 % purity. The ISI specification of hand sanitizer is No. IS-4117:2008. The entrepreneur may approach the appropriate authorities of 'Drugs & Cosmetics' license department or ISI specification for better marketing of the product.

f) Hand sanitizer Production License & Registration

In establishing a hand sanitizer production unit, you will need to obtain several different license and registration from different Government authority.

1. UAM Registration (udyogaadhaar.gov.in)
2. Company Registration with ROC
3. Trade License
4. Factory License
5. Drugs & Cosmetics License
6. BIS Certification
7. Fire License (easybusiness.tn.gov.in)

g) Production Capacity (per annum)

The estimated production capacity per annum is as follows:

Item	Quantity / annum	Value (Rs. Lakhs)
Hand sanitizer	240kiloliters	720 lakhs

h) Power requirement

5 HP motor

i) Pollution Control:

Entrepreneur is advised to contact State Pollution Control Board for detailed guidance directly.

(VI) FINANCIAL ASPECTS

I. Fixed Capital				
A. Land& Building				
Build up Area (Processing Hall, Store, etc)		1000 Sq.Mtrs Rented @ Rs. 15000 P.M		
B. Machinery & Equipment				
Sl.No	Description	Qty	Rate (Rs)	Amount (Rs in lakhs)
1	Alcohol Storage vessel –SS (5000 L)	1 No	1,50,000/-	1.50
2	Transfer pump	3 Nos	25,000/-	0.75
3	Manufacturing vessel-SS	1 Nos	1,00,000/-	1.0
4	Storage vessel-SS (500 L)	1 No	15,000/-	0.15
5	Filling line (filling machine, capping machine, labeling machine & ink jet printer for batch coding)	1 No	6,40,000/-	6.40
6	Batch flow controller/ flow meter	2 Nos	75,000/-	1.50
7	Electronic Weighing Scale	1 Nos	20,000/-	0.20
8	Misc. equipment & Tools such as can sealing machine, box stamping machine	NA	LS	0.50
9	Electrical Accessories: Electric Meter, Starter, Switch, etc	NA	LS	0.70
Total (lakhs)				Rs.12.7
C.	Electrification, Installation, Packaging, Taxes in Lakhs Forwarding charges etc @20 %			Rs.2.54
D.	Office furniture & fixtures in lakhs@10 %			Rs.1.27
E.	Preliminary & pre-operative expenses@10 %			Rs.1.27
Total Fixed Investment (lakhs)				Rs.17.78

II. Working Capital			
A. Personnel			
Designation	No	Salary (Rs)	Total (Rs)
Manager	1	35,000	35,000
Accountant/ Store-keeper	1	25,000	25,000
Process & Analytical Chemist	2	20,000	40,000
Unskilled worker	2	12,000	24,000
Total			1,24,000
Prequisites @10%			12,400
Total			Rs. 1.36 lakhs

B. Raw material including packaging materials (per month)			
Items	Qty	Rate	Amount in lakhs
Alcohol	13332 L	65/ L	8.7

Glycerol	232 L	75/ L	0.17
Hydrogen peroxide	668 L	60/L	0.40
Distilled water	1640 L	15/L	0.25
Fragrance	128 L	2000/kg	2.6
packaging bottles	80000	5/ piece	4.0
Total			Rs.16.12 lakhs
C. Utilities (per month)			
Power, Electricity & water charges			0.15 lakhs
Total			Rs.0.15 lakhs

D. Other contingent expenses (per month)		
Sl No	Description	Amount in Rs
1	Rent	15,000/-
2	Consumable Store, Repair & maintenance, postage, stationery, Insurance, Telephone bill, advertisement, Transport etc	10,000/-
Total		Rs.0.25 lakhs

II. Recurring Expenses (per month)		
A	Personnel	Rs.1.36 lakhs
B	Raw material	Rs.16.12 lakhs
C	Utilities	Rs.0.15 lakhs
D	Other Expenses	Rs.0.25 lakhs
Total		Rs.17.88lakhs
Working capital for 3 months		Rs.53.64 lakhs

III. Total Cost of the Project		
A	Fixed Investment	Rs.17.78 lakhs
B	Working Capital for 3 months	Rs.53.64 lakhs
Total		Rs.71.42 lakhs

IV. Financial Analysis		
A	Cost of production (per annum)	
S.No	Particulars	Amount (Rs in lakhs)
1	Total recurring expenditure	214.56
2	Depreciation on machinery & equipment @10 % p.a	1.79
3	Depreciation on Office Furniture & Fixtures @ 20%	0.25
4	Interest on total capital investment @ 13% p.a.	2.13
Total		Rs.218.7 lakhs

V. Turnover (per annum)			
Item	Qty per annum	Rate (Rs/ MT)	Amount (Rs in lakhs)
Hand sanitizer	240kiloliters	3,00,000/-	720 lakhs/-
LS Marketing Expenses (-)			Rs.5.00 lakhs
Net Sales:			Rs.715 lakhs

C. Net Profit Per Annum (Before Taxes)	Rs. 478.5 Lakhs
D. Net Profit ratio on Sales (Per Annum): Profit/ annum X100 (478.5X100/715=66.92%) Sale per annum	66.9 %
E. Rate of return: Profit/ annum X100(478.5X100/17.78=2691%) Total Capital investment	2691 %
F. Fixed Cost / Annum: (Rent) + (Depreciations & Amortization) + (40 % of salaries & wedges)+ (40 % of utilities & other expenses excluding rent) + Interest on capital investment (1.8 +1.79 +0.25+6.52+1.2+2.13=13.69 lakhs)	13.69 lakhs
G. Breakeven point: Fixed cost per annum X100(13.69X100/(13.69+478.5)=2.78 %) (Fixed cost per annum + Net Profit per annum)	2.78 %

(VII) ADDRESSES OF MACHINERY & EQUIPMENTS SUPPLIERS:

S.No	Name & Address of the Supplier
1	Sri Krishnaa Techno System Ambattur, Chennai Ph: 08043046149
2	Inferno Pactec India Private Limited Chinnavedampatti, Coimbatore Ph: 08048600405
3	Promak Packaging Solutions Chrompet, Chennai Ph: 08048927801
4	Krishna Scientific Suppliers Moulivakkam, Chennai Ph:08048763605
5	Nation Techno Engineering No. 18, Kandeshwarar Nagar, Via- Maha Nagar, Kundrathur, Chennai - 600069, Dist. Chennai, Tamil Nadu Ph: 08048791185
6	Sri Balaji Pharma Engineering,Peenya, Bengaluru, Karnataka Ph: 08048760370

7	Bombay Engineering Works NO 9, Unity industrial estate, Vasai Easi, Mumbai-401208 Ph:08046053188
8	Jai Industries Govinda Agraharam, Hosur, Krishnagiri, Tamil Nadu, Ph: 08045353240

(VIII) ADDRESSES OF RAW MATERIAL SUPPLIERS:

Available in local market