

LATEX FOAM

1. INTRODUCTION:

Rubber Latex Foam as per IS: 1741 - 1960 finds use in the field of Transport and Tourism industry. It is used in making mattresses, seats of vehicles, seats & Backrests of Sofa & other furniture, etc. As the Natural Rubber producing State, Kerala and Tripura may deem this as a Resource - based industry. However looking to the market size and difference between transport cost of raw materials and finished product, this project can be established in anywhere in the country.

2. PRODUCT & ITS APPLICATION:

Rubber latex Foam based products like Auto-mobile seals & backrest, sofa and other furniture and Mattresses have substantial market in the country. Latex foam Mattress & Pillows is experiencing very large expansion of Market. Latex Foam and Coir mattress are very popular and such mattresses are exported in very large quantities to nearby country like Pakistan, Bangladesh and Sri Lanka. Thus these products have excellent marketing potential.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Graduate in chemistry science, with detailed knowledge of business.

4. INDUSTRY LOOK OUT AND TRENDS

Latex foam rubber derives its physical performance properties from the vulcanization process that creates long molecular chains with strong cross linked bonds. The ability of NR latex foam to recover from deformation opens up a possibility for new applications of latex foam based on products made from this NR latex foam type. For example, this NR latex foam can be employed in orthopedic applications, which usually utilize synthetic memory foam, for which

this memory characteristic will allow the release of surface pressure by contouring to the shape of the body. Latex foam rubber generally has a relatively high density and is soft, thus latex foam rubber can only be used in limited amounts in the production of bonded carpet cushion. • Latex Foam Producers has a high level of grip, some others are designed to offer maximum durability. The ability of Natural Rubber latex foam to recover from deformation opens up a possibility for new applications of latex foam based on products made from this NR latex foam type.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

Rising disposable incomes in developing countries and post-recession economic stability across developed ones are playing a central role in the positive development of the global market for mattresses presently. The affluent global consumer is willing to pay extra on premium mattresses that promise excellent comfort and a sound sleep, helping the global mattress market tread along a transformational development path. With the availability of a wide range of product varieties in terms of sizes, styles, and a range of firmness, the global mattress market is rapidly changing into a dynamic and innovative marketplace. Transparency Market Research states that the market, which held an opportunity of US\$24.70 billion in 2015, will rise at a healthy 6.5% CAGR from 2016 to 2024, and rise to a valuation of US\$43.43 billion by 2024. Queen-sized, Innerspring Mattresses Rule Consumer Choices In terms of product varieties, the segment of innerspring mattresses is the clear leader in the global mattress market, accounting for a share of nearly 80% in 2015. The segment is expected to expand at a healthy 6.1% CAGR over the period between 2016 and 2024 and retain its dominance in the global market. Increasing prevalence of a number of health concerns arising from sleep disorders and uncomfortable sleeping surfaces are propelling the demand for innerspring mattresses across the globe. The rising base of affluent consumers across developing countries is also driving the increased adoption of high-end mattress varieties with innerspring technology. In terms of size of mattress, the segment of queen size mattress held the largest share of 33.1% in the overall market in 2015. The segment of full or double sized

mattresses accounted for a 21.6% share in the market in 2015 and is expected to witness a moderate rise by 2024; the space-friendly and cost-effective nature of queen sized mattresses will work in their favour. However, the segment of twin XL mattresses is expected to expand at the fastest CAGR of 8.2% over the period between 2016 and 2024, enabling the segment's share to rise from 5.1% to 5.8% in the market by 2024. Rising Construction Activities across Emerging Economies to Stimulate Consumption of Mattresses: Asia Pacific is presently the largest contributor to the overall revenues of the global mattress market and holds the most promising growth opportunities as well. The region has witnessed a huge surge in construction activities across the commercial as well as domestic sector, majority owing to the strengthening economies in the past few years. Rising urbanization and a flourishing hospitality industry is leading to the increased demand for high-end mattresses across affluent households and luxury and semi-luxury hotels. Other emerging countries across regions such as Latin America and Middle East and Africa are also expected to fare well on these fronts, leading to sustainable demand for a variety of mattresses in the next few years. North America and Europe are presently the second- and third-largest contributors to the overall revenues of the global mattress market, respectively, and are expected to present lucrative growth opportunities for the market across the forecasting horizon.

6. RAW MATERIAL REQUIREMENTS:

60 NR Latex is the principal raw - material of the unit which is locally available from Rubber Board. It constitutes about 75 percent of all raw materials required by the unit. Chemicals like potassium Oleate soap solution, Sulphur, Vulcafor ZDC/ MBT, nonox B/SP, China Clay. Zinc oxide, etc. are available from Rubber Board, ICI (India) Pvt. Ltd, Crescent House Ballard Estate, Mumbai and Bayer (India) Ltd., Nagin Mahal, Veer Nariman Road, Mumbai. The annual cost of raw materials is estimated at Rs. 66.00 lakhs. The recent price of Rubber is Rs. 13000 per 100 kgs and that for imported rubber is Rs. Rs. 15000 per 100 kgs.

7. MANUFACTURING PROCESS:

Latex is demonized and mixed with stabilizer foaming agent and sensitizer. The mix is foamed by boating air into it in a planetary mixer. Formation of foam is also assisted by blowing air below the surface of latex. After 4 to 6 times the original liquid volume is attained a dispersion of remaining ingredients are added so that more uniform structure is obtained by eliminating larger bubbles. The foam is poured/ injected into moulds and vulcanized by steam at 100 degree C for 35 to 45 minutes. The vulcanizing time depends on thickness of foam. After vulcanization mould is cooled and the foam, released from mould, is squeezed between rollers and thoroughly washed. These are then tested and packed for sales.

Flow sheet: De-Ammonizing of Latex, Mixing & Foaming, Moulding, Washing, Packing, Sales

8. MANPOWER REQUIREMENT:

The enterprise requires 8 employees as detailed below:

Sr. No.	Designation of Employees	Salary Per Person	Monthly Salary ₹	Number of employees required				
				Year-1	Year-2	Year-3	Year-4	Year-5
	Variable Labour: Workers							
1	Machine Operators	12,000	12000.00	1	1	1	1	1
2	Helpers	8,000	24000.00	3	3	3	4	4
	Fixed Staff:							
1	Production supervisor	15,000	15000.00	1	1	1	1	1
2	Accounts/Stores Asst	12,500	12500.00	1	1	1	1	1
3	Office Boy	9,000	9000.00	1	1	1	1	1
	Total		72500.00	7	7	7	8	8

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)	1.00
3	Procurement & installation of Plant & Machinery	1.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required (some activities shall run concurrently)	3.00

10. COST OF PROJECT:

The project shall cost ₹ 59.20 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	5.00
2	Building	10.00
3	Plant & Machinery	22.00
4	Furniture, Electrical Installations	2.00
5	Other Assets including Preliminary / Pre-operative expenses	2.20
6	Working Capital	18.00
	Total	59.20

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets.

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	14.80
2	Bank Finance	44.40
	Total	59.20

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 18.00 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank
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					Finance
1	Inventories	9.00	0.25	2.25	6.75
2	Receivables	4.50	0.25	1.13	3.38
3	Overheads	4.50	100%	4.50	0.00
4	Creditors	-		0.00	0.00
	Total	18.00		7.88	10.13

13. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below: Power Requirement: 25 HP

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value
					(₹ in Lacs)
	Plant & Machinery / equipments				
a)	Main Machinery				
i.	Deamination tank of 400 Ltrs. cap	NOS.	2	70000	1.40
ii.	300 Ltr. Cap. planetary MIXER	Nos	2	420000	8.40
iii.	12 Jar pot Mill with 3 HP Motor	Nos	1	250000	2.50
IV	High speed Mixer with 1 HP Motor	Nos	1	100000	1.00
V	Boiler with 3 HP Motor	Nos	1	550,000	5.50
VI	Steam vulcanizer, Foam squeezing machine, Trays Moulds and Testing equipments	NOS.			4.20
	<i>sub-total Plant & Machinery</i>				22.00
Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value
	Furniture / Electrical installations				
a)	Office furniture	LS	1	100000	0.50
b)	Stores Almirah	LS	1	350,000	0.75
c)	Computer & Printer	L. S.	1	10000	0.75

	<i>sub total</i>				2.00
	Other Assets				
a)	preliminary and preoperative				2.20
	<i>sub-total Other Assets</i>				2.20
	Total				26.20

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	54.00	63.00	72.00	81.00	90.00
3	Raw Materials & Other direct inputs	₹. In Lacs	44.11	51.46	58.82	66.17	73.52
4	Gross Margin	₹. In Lacs	9.89	11.54	13.18	14.83	16.48
5	Overheads except interest	₹. In Lacs	5.90	6.27	7.01	7.23	7.38
6	Interest	₹. In Lacs	4.44	4.44	2.96	2.22	1.78
7	Depreciation	₹. In Lacs	15.40	11.00	7.70	5.50	4.95
8	Net Profit before tax	₹. In Lacs	-15.86	-10.18	-4.49	-0.12	2.37

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 55.56 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	90.00

2	Variable costs	₹. In Lacs	73.52
3	Fixed costs incl. interest	₹. In Lacs	9.16
4	$BEP = FC/(SR-VC) \times 100$	% of capacity	55.56%

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.

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