

# **RUBBER PARTS FOR ENGINEERING INDUSTRIES**

## **1. INTRODUCTION:**

Rubber is a versatile product with multiple usages. It is grown in various countries worldwide and plays a crucial role in the Indian economy too. India is one of the leading rubber producers in the world. The use of rubber is widespread, ranging from household to industrial products, entering the production stream at the intermediate stage or as final products.

Tyre and tubes are the largest consumers of rubber. The remaining 44% is taken up by the general rubber goods sector, which includes all products, except tyres and tubes. Synthetic rubber is mainly used for the production of auto tyres and tubes, cycle tyres and tubes and footwear. Other applications for the synthetic variety are camel back, belts and hoses. The market segmentation includes Auto tyres and tubes 56%, Bicycle tyres and tubes 9%, Footwear 18%, Latex goods 8%, Belts and hoses 4%, Camel back 5%. However, Rubber parts for engineering industry have major role with unique application and have better replacement market.

## **2. PRODUCT & ITS APPLICATION:**

Rubber molded goods are used extensively in auto-mobiles, railways, bicycles and many industrial and domestic appliances. The products range includes Bushes, 'O' Rings, Oil seals, Channels, Wiper blades, Shock absorbers, Rubber rollers for printing machines etc. A unit manufacturing these types of items can be set up as an ancillary unit.

Almost all large scale units manufacturing domestic appliances, automobiles, industrial machinery etc., depend on small scale units for their entire range of rubber parts. Similarly railways and defense establishments also purchase many molded rubber goods from these sources.

There are different types of process for manufacturing rubber parts mainly, Custom Rubber Molding, Transfer Molding, Compression Molding, Injection Molding.

### **3. DESIRED QUALIFICATIONS FOR PROMOTER:**

Graduate in any discipline.

### **4. INDUSTRY LOOK OUT AND TRENDS**

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India, being the fourth largest producer of natural rubber in world, is considered to be one of the key players in the global rubber business. The entire requirement of rubber-based industries for natural rubber, synthetic rubber, rayon and nylon tyre cord, steel cord, carbon black and rubber chemicals, etc is being met from indigenous sources. Rapid progress has also been made in the production of natural rubber.

There are about 5000 units comprising 30 large-scale, 300 medium scale and around 4600 small-scale and tiny sector units. These units manufacture more than 35,000 rubber products.

The main producer of synthetic rubber in India has been Synthetics and Chemicals, Apar Industries, Apcotex Lattices and Unimers India. Synthetics and Chemicals had closed down.

The future for natural rubber looks bright. Ever increasing volumes are being produced. At 5.92 million tonnes per annum, natural rubber has 39 per cent of the world rubber consumption of 15.14 million tonne per annum. The rubber industry is expected to grow at over 8 per cent per annum this decade, as the per capita consumption of rubber is 0.8 kg against 14 kg in the developed world. India is likely to become the world's third-largest producer of natural rubber after Thailand and Indonesia, Rubber Board sources said. And with crude prices unlikely to come down, synthetic rubber is likely to remain a costly alternative. With accelerating demand from automobile industry and other rubber consuming industries in developing countries, the shortage of natural rubber is likely to aggravate in coming years. There exists a huge scope for expansion causing import of machinery, technology and raw materials and export of rubber goods.

## **5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:**

Thailand, Indonesia and India are the topmost rubber producing countries in the world. India, being the fourth largest producer of natural rubber in world, is considered to be one of the key players in the global rubber business. Rapid progress has also been made in the production of natural rubber.

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With accelerating demand from auto-mobile industry and other rubber consuming industries in developing countries, there exists a huge scope for rubber components, for domestic and export.

## **6. RAW MATERIAL REQUIREMENTS:**

The major raw materials required for the project are natural rubber, neoprene rubber, silicon rubber, EPDM rubber, Viton rubber and SBR rubber.

Rubber Chemicals required are DPTT- tetrone -A, Zinc oxide, Titanium dioxide, steric acid, P.F. resin, Red oxide, Petroleum resin, hydrocarbon resins, and silicon emulsion. Plasticizers required are D.B.P., D.O.P., TOLUENE, D.O.S., C.P.W., and DEG. Unit may also require reclaim rubber, carbon blacks, and other Chemicals like: blowing agents, magnesium oxide, calcium hydroxide, waxes, etc. adhesive and bonding agent.

## **7. MANUFACTURING PROCESS:**

All the rubber chemicals are mixed with rubber (both synthetic and natural) after proper mastication in a Rubber Mixing Mill.

Depending upon the nature of rubber used, it might be sometimes necessary sometimes to pass steam through the rollers. After the compounding is over, it is usual practice to extrude the same to form slabs and cut to pieces.

After weighing, they are fed into molds and cured either with steam or electrical heating in presses, which may be hand operated, hydraulic, automatic or semi-automatic.

In some cases, where metallic inserts are required (like in oil seals) these inserts are first kept in the mold and covered with rubber compound of definite weight and cured in presses. It is the usual practice to use a bonding agent over the metal and the molds are lubricated either with soap solution or aerosols or silicon.

## **8. MANPOWER REQUIREMENT:**

The enterprise requires 11 employees as detailed below:

| Sr. No. | Particulars           | Salary per Person | Monthly Salary ₹ | Number of employees required |        |        |        |        |
|---------|-----------------------|-------------------|------------------|------------------------------|--------|--------|--------|--------|
|         |                       |                   |                  | Year-1                       | Year-2 | Year-3 | Year-4 | Year-5 |
| 1       | Machine Operators     | 12,000            | 24000            | 2                            | 2      | 2      | 2      | 2      |
| 2       | Helpers               | 8,000             | 32000            | 4                            | 4      | 4      | 5      | 5      |
| 3       | Production supervisor | 15,000            | 15000            | 1                            | 1      | 1      | 1      | 1      |
| 4       | Accounts/Stores Asst  | 12,500            | 25000            | 2                            | 2      | 2      | 2      | 2      |
| 5       | Office Boy            | 9,000             | 9000             | 1                            | 1      | 1      | 1      | 1      |
|         | <b>Total</b>          |                   | 105000           | 10                           | 10     | 10     | 11     | 11     |

## 9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 4 months' time as detailed below:

| Sr. No. | Activity  | Time Required<br>(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 <i>(some activities shall run concurrently)</i> | 4.00                         |

## 10. COST OF PROJECT:

The project shall cost ₹ 86.20 lacs as detailed below:

| Sr. No. | Particulars   | ₹ in Lacs   |
|---------|---|-------------|
| 1       | Land 1000 sq. mtr@ 1000                                     | 10          |
| 2       | Building  | 8           |
| 3       | Plant & Machinery   | 35          |
| 4       | Furniture, Electrical Installations                         | 3.5         |
| 5       | Other Assets including Preliminary / Pre-operative expenses | 4.2         |
| 6       | Working Capital   | 25.5        |
|         | <b>Total</b>  | <b>86.2</b> |

## 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 contribution | 21.55       |
| 2       | Bank Finance            | 64.65       |
|         | <b>Total</b>            | <b>86.2</b> |

## 12. WORKING CAPITAL REQUIREMENT:

The project requires working capital of ₹ 25.50 lacs as detailed below:

| Sr. No. | Particulars  | Gross Amount | Margin % | Margin Amount | Bank Finance |
|---------|--------------|--------------|----------|---------------|--------------|
| 1       | Inventories  | 8.50         | 0.25     | 2.13          | 6.38         |
| 2       | Receivables  | 12.75        | 0.25     | 3.19          | 9.56         |
| 3       | Overheads    | 4.25         | 1.00     | 4.25          | 0.00         |
| 4       | Creditors    | -            |          | 0.00          | 0.00         |
|         | <b>Total</b> | 25.50        |          | 9.56          | 15.94        |

## 13. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below: Power Requirement: 35 HP

| Sr. No.   | Particulars  | UOM  | QTY.  | Rate (₹) | Value (₹ in Lacs) |
|-----------|--|------|-------|----------|-------------------|
|           | <b>Plant &amp; Machinery / equipment</b>                       |      |       |          |                   |
| <b>a)</b> | <b>Main Machinery</b>  |      |       |          |                   |
| i.        | Mixing mill of size 16" x 42"<br>Mixing mill of size 14" x 36" | Nos  | 2     | 125000   | 2.50              |
| Ii.       | Hydraulic Press 50 cm x 50 cm                                  | Nos  | 2     | 50000    | 1.00              |
| iii.      | Extruder 75 mm screw   |      | 1     |          | 12.50             |
| <b>b)</b> | <b>Ancillary machinery</b>                                     |      |       |          |                   |
| i.        | Steam heated, hand operated Fly                                | Nos. | 1     |          | 5.00              |
|           | Steam Vulcaniser 4ft. dia. and 8 ft. long.                     |      | 1     |          | 2.00              |
|           | Baby boiler- oil fired 200 Kg/hr. Molds Dies & Accessories     |      | 1     |          | 8.00              |
|           | Weighing scales:   |      |       |          | 0.75              |
|           | Platform type (100 Kg.)  |      |       |          | <b>0.25</b>       |
| a)        | Single Pan type (10Kg.)-                                       | LS   | 2     | 20000    | 0.40              |
|           | Digital type   | LS   | 1     | 30,000   | 0.30              |
| c)        | Material handling equipment                                    |      | L. S. | 5,000    | 0.05              |
|           | Testing & Inspection equipment,                                |      |       |          | 1.00              |
|           | Tools& apparatus.  |      |       |          | <b>1.25</b>       |
|           | <b>Total</b>   |      |       |          | <b>35.00</b>      |

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:

1. KabraExtrusiontechnik

402, Lalita Complex, Jain Mainder Road,  
OppositeHdfc Bank, Navrangpura,  
Ahmedabad, Gujarat 380009. Phone:079 2656 4828

2. S. A. Engineering Works

No. 17/2, Periyasamy Street, SunambuKalavai,  
Kuniyamuthur, Coimbatore-641008, Tamil Nadu, India

Phone: +91-9362233362; +91-9047476299, +91-422-2233362

3. Electrons cooling systems Pvt. Ltd.

S-27, SIDCO Industrial Estate

Kakkalur Industrial Estate

Tiruvallur – 602003, Tamil Nadu, India

4. Springboard Enterprises India Ltd.

1st, 2nd & 3rd Floor, Plot No. 7, 8 & 9, Garg Shopping Mall,

Service Centre, Rohini Sector 2

New Delhi – 110085, Delhi, India

5. Sagar Engineering Works

A-129, Road No. 9 D,

V. K. I. Area, Jaipur - 302013,

Rajasthan, India

Phone: +91-9829024358, +91-141-4064876

6. Uday Enterprises

Khasra No. 1108, Village Makanpur, Behind Indian Child School

Opposite Janta Flat No. 433, Nyay Khand 1,

Indirapuram, Ghaziabad - 201010,

Uttar Pradesh, India

Phone: +91-9212320224.

## **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 | 61.20        | 71.40        | 81.60       | 91.80       | 102.00       |
| 3       | Raw Materials & Other direct inputs | ₹. In Lacs | 47.68        | 55.63        | 63.58       | 71.52       | 79.47        |
| 4       | Gross Margin                        | ₹. In Lacs | 13.52        | 15.77        | 18.02       | 20.28       | 22.53        |
| 5       | Overheads except interest           | ₹. In Lacs | 4.98         | 5.30         | 5.92        | 6.11        | 6.23         |
| 6       | Interest                            | ₹. In Lacs | 6.47         | 6.47         | 4.31        | 3.23        | 2.59         |
| 7       | Depreciation                        | ₹. In Lacs | 10.50        | 7.35         | 5.15        | 3.60        | 2.52         |
| 8       | <b>Net Profit before tax</b>        | ₹. In Lacs | <b>-8.43</b> | <b>-3.34</b> | <b>2.65</b> | <b>7.34</b> | <b>11.19</b> |

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 liter. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

## 15. BREAK EVEN ANALYSIS:

The project shall reach cash break-even at 39.13 % of projected capacity as detailed below:

| Sr. No. | Particulars                     | UOM           | Value  |
|---------|---------------------------------|---------------|--------|
| 1       | Sales at full capacity          | ₹. In Lacs    | 102.00 |
| 2       | Variable costs                  | ₹. In Lacs    | 79.47  |
| 3       | Fixed costs incl. interest      | ₹. In Lacs    | 8.82   |
| 4       | $BEP = FC/(SR-VC) \times 100 =$ | % of capacity | 39.13% |

## 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 Manufacture, Storage and Import of Hazardous Electronic 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. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

## **17. BACKWARD AND FORWARD INTEGRATIONS**

Both forward and backward integration for any Electrical Industry are strategies to gain better control over the supply chain, reduce dependency on the suppliers and increase their competitiveness. The two strategies can help companies reduce their dependency on suppliers and increase their influence over the customers. The benefits of these strategies can be big. Both impact the bottom line directly. Integration happens if a company moves upward or downward in its supply chain. Starting from the suppliers from whom the raw materials are obtained, the chain moves downstream towards the distributors and the retailers. If the suppliers' power is very high, it can create financial burdens for the company. Suppose the number of suppliers of a company is low, then the control in their hands would be low. The burden in that case will fall upon company's shoulders. Its expenditure on raw materials will be high.

## **18. TRAINING CENTERS AND COURSES**

There is no such training required to start this business but, basic electrical 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 specialized Institutes provide degree certification in chemical Technology, few most famous and authenticate Institutions are as follows:

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

Udyamimitra portal ( link : [www.udyamimitra.in](http://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.